Invited Oral Presentations

Scientific explanation in neuroscience

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Explaining phenomena, alongside describing them, is one of the main concerns of scientists. Variety of explanations that are being proposed in scientific disciplines has fueled the philosophical debate on the nature and structure of scientific explanation. The term "scientific explanation" is used in variety of ways. It may be used in a response to a why-question, or as part of process of making something understood, and so on.

During past 70 years, different models of scientific explanation have been proposed. Most of these models are designed with a moderate intention to represent very specific and limited cases of scientific explanation. One of the first models is "Deductive Nomological (DN) Model." The DN-model which was proposed by Carl Hempel (1948) presents a logical, though not causal, structure for explanation. Hempel observed that there was a symmetry between explanation and prediction. This entailed that to model explanation one does not need to include metaphysical causal relations. DN-model has been criticized from different philosophical view points. Alternative models (causal models, unification model, etc.) are being proposed to cover the philosophical deficiencies of Hemepl's model. As a matter of fact, every alternative model has managed to respond to some, though not all, criticisms against the DN-model.

Nowadays, many philosophers of science believe that submitting a particular model of explanation that fits all scientific disciplines, is almost impossible. This has led many to follow a piecemeal strategy: develop variety of discipline-specific models of explanation. Carl Craver (2007) has introduced a model of mechanistic explanation which fits neuroscience. Neuroscientific explanations, according to Craver, are representations of the causal structure of the world. He takes that almost all generalizations in neuroscience have the following features in common. First, mechanisms in neuroscience are limited in scope. It means that a feature in a particular mechanism may change across different organisms, different brain regions and different synapses. Second, generalizations in neuroscience are stochastic. It means that they often (though not always) hold, and they are (at least partially) true because, like most biological phenomena, they are mechanistically fragile. Finally, mechanisms are historically contingent, that is, they are outcomes of evolution by natural selection and have come to existence in a very long historical process. The paper tries to examine the possibility of causal explanation in neuroscience as uncovering mechanistic structure of the world.

The role of tamoxifen (a selective estrogen receptor modulator) on neurological score, blood-brain barrier and brain edema after traumatic brain injury in male rat: the role of matrix metalloproteinase-9

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Introduction: Tamoxifen is an oral medication that is used for the treatment of breast cancer, and it acts on an estrogen receptor for agonist or antagonistic activity (effects) due to its effects on the environment. The metalloproteinase matrix is an enzyme that is produced by endothelial cells, microglia and astrocytes, and When the expression of the metalloproteinase-9 matrix will be progressed by an increased mucosal-permeability, it will be resulted in edema and nerve damage (the increased expression of the metalloproteinase-9 matrix results in an increased mucosal-permeability to edema and nerve damage). Therefore, in this study, we evaluated the effects of tamoxifen neuronal protection after induction of cerebral infarction in rats.

Materials and methods: Wistar rats received different doses of tamoxifen (2.5, 5 and 10 mg / kg) intraperitoneally after induction of brain injury. Of course, animals were anesthetized and inserted into the chip before brain stroke induction. A brain stroke was made by marmarou method and drug will be injected half an hour after the brain stroke. VCS of the animal was recorded at 0, 1, 4, and 24 hours after the traumatic brain injury. Beam Walk and Beam Balance tests were taken from an animal at this time (Beam Walk and Beam Balance). The level of permeability of the blood-brain barrier was elevated (monitored) by the Evans colored substance. After 24 hours, the animal is killed and its head is cut of, and the brain is fixed in nitrogen to be used for ELISA tests.

Results: The results showed that brain damage reduced neurological scores, but tamoxifen 5mg / kg on the third day after trauma caused minimal difference with Sham or Intact groups ($p < 0.001$). The brain edema and Evans blue content were significantly lower in the tamoxifen 5 mg / kg group than in the group receiving tamoxifen (2.5 mg / kg) ($P < 0.0001$). Traversal time (BW) in the tamoxifen group 5 mg / kg did not have a significant difference with the Sham or Intact group on the second and third day after the trauma. In addition, tamoxifen injection (5 mg / kg) also reduces the secretion of metalloproteinase-9 matrix.

Conclusion: According to the findings of this study, it can be concluded that administration of tamoxifen (5 and a little 1 mg / kg) in rats reduce the consequences of brain trauma and It can be considered as a neuroprotective drug for the treatment of neurodegenerative diseases.

Key word: Tamoxifen, Brain trauma, Metalloproteinase-9 matrix, Cerebral-edema

Apelin, a potential biomarker for Alzheimer's disease

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Neuropeptides are signaling molecules which maintain important connections within neuronal network. Apelin is one of the important neuropeptides isolated from bovine stomach. APJ receptor, which mediates Apelin effects, have been shown to broadly distribute in the neurons and oligodendrocytes of the central nervous system. Apelin-13 is known to be the predominant Apelin isoform with marked neuroprotective action involved in the processes of learning and memory as well as the prevention of neuronal damage.

Recently, Apelin-13 has been considered as a potential diagnostic biomarker for AD. A reduction in Apelin-13 serum level could predict the presence of AD in early stages. Moreover, it has been shown that in vivo and in vitro anti-apoptotic effects of Apelin-13 have prevented the neural loss in AD. In general, Apelin-13 not only provided as a promising therapeutic agent but also is a potential diagnostic biomarker for AD.

Our recent findings suggested that Apelin-13 showed neuroprotective effect in an amyloid induced Alzheimer model in male Wistar rats in a dose dependent manner which may be, in part, related to autophagy and Caspase-3-dependent cell death inhibition via the mTOR signaling pathway. Apelin-13 may be a promising approach to improve memory impairment and potentially pave the way for new therapeutic plans in AD.

Brain Signal Processing Techniques in Auditory Neuroscience

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Understanding the underlying neural activities in auditory system is a crucial issue in neuroscience as hearing disorders and maladies affect many adults in both developing and industrial countries. It is estimated that in the US, about 25% of adults have some form of tinnitus, and about 5 to 10 percent of adults have chronic tinnitus. The impact of tinnitus and other auditory disorders can be extremely disturbing and debilitating, markedly impairing mood, concentration, functioning, and overall quality of life. Biological markers of brain functioning related to symptom pathology are often studied to inform more specific treatment plans for patients. Electroencephalography (EEG) was developed in the late 1800s as a device capable of measuring electrical activity produced by the brain from electrodes placed on the scalp. The electrical activity, commonly referred to as brain waves, is produced from many neurons firing within the brain. In addition to assess brain wave production, EEG also measures a phenomenon known as *evoked potentials (EP)*, inclusive of Auditory Brainstem Response (ABR) waves, P50, N100, Mismatch Negativity (MMN) and the auditory P300 waveforms. Magnetoencephalography (MEG) has also been used to evaluate brain functions based on magnetic aspects of neural activity. As such, processing of EEG signals may positively affect the diagnostic and treatment efforts. There are three phases in EEG signal processing approach: 1) During signal acquisition, 2) Pre-processing and 3) Processing the signal. In phase one, online filtering as a bandpass filter will be performed on the ongoing signal in order to remove the environment noise, while determining appropriate sampling frequency is of importance. In the second phase, after specifying frequency range of the signal of interest, a bandpass filter will be applied on the signal. Next, noisy and high drifting channels will be removed from the signal and then Independent Component Analysis (ICA) or other source separating algorithms will be implemented on the signals in order to remove artifacts such as Electrooculogram (EOG) or Electrocardiogram (ECG) signals. The third phase would be done based on the acquired signal. Usually, for QEEG signal, in which there is no external stimulation, analyses are based on dividing the signal into brain waves and comparing the mean power of these bands using filter-banks and Fourier Transform or other time-frequency methods like Wavelet Transform. In EP signals, averaging Epochs with same stimulus is the first step of the third phase. Each epoch usually begins from the onset of target stimulus and ends after the end of the stimulus in addition to inter-stimulus interval (ISI). Time features like peak amplitudes of each wave, peak latency and area under the curve provides the primary features. These features are measured with respect to the baseline. Therefore, defining a robust and accurate baseline is the most important task in EP signals. Though the averaging process reduces the amount of background noise, it is impossible to remove this noise entirely. The period prior to the onset of the stimulus can be used as an estimate of noise remaining in the averaged EP. This pre-stimulus interval should appear relatively flat, if most of the background noise has been reduced sufficiently through the averaging process. For this reason, the pre-stimulus interval is also used to provide a baseline, approximating zero voltage from which the ensuing responses are measured. However, this baseline is not necessarily flat because there may be other stimuli or underlying processes in the brain. Each phase of the auditory signal processing may greatly enhance or degrade the results and therefore performing these tasks appropriately may prove to be more important than statistical post-analyses.

Traumatic relationship, A neuro-psychoanalytic perspective

Dr. Maryam Aslzaker, Clinic psychologist, Shahidbeheshti University of Medical Sciences

This presentation reviews the results derived from the studies of Parent–Infant Project (PIP) in the Anna Freud Centre. A significant element of our clinical work is with the severe end of trauma: parents with grave mental health problems, histories of abuse, violence and social care, refugees from genocide in their countries of origin. The minds of these parents are often suffused and saturated with unprocessed feelings, with little capacity for primary preoccupation with their baby. Relational trauma refers to the injuries of attachment in parent-infant relationship. A large body of studies now support the proposal that early childhood trauma has the long-enduring impact on limbic and cortical areas of the developing right cerebral brain. As well as emotion and face processing the right hemisphere is also specialized in auditory perception, the perception of intonation, attention, and tactile information. The organization of dendritic and synaptic networks in the orbitofrontal (and anterior cingulate) cortex, including its connections into the limbic system, are thus dramatically shaped by early relational emotional experience.

Can therapeutic interventions improve social decision making?

Mohammad Kazem Atef Vahid

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Since the early years of the introduction of the concept of social decision making, researchers in various fields have attempted to study this concept in both and have proposed different models and have also developed various strategies and games to further explain and improve the processes of social decision-making. Social decision making has been studies from perspectives of neuroscience, neuropsychology, neuropsychiatry, psychiatry, psychology, and education. In recent years, with the advances of neuroscientific instruments, our knowledge of the involvement of various structures of the brain have increased substantially. The process of social decision making has been studied in normal, as well as, psychiatric populations. However, the majority of the studies have focused on discovering the neuropsychiatric and neuropsychological processes of making decisions in social contexts. Less attention has been focused on how various types of interventions can affect this process and whether such intervention can improve individuals' performance in this area.

A review of the literature demonstrates that the field is in its infancy and at this point, there is no consensus among the scientists working in this field regarding the effectiveness of different types of interventions in improving social decision making across different spectrum of psychiatric and psychological conditions.

Lifestyle and aging brain

Zahra Badrkhahan, Assistant professor of Geriatric Medicine, Tehran University of Medical Sciences

Background: Aging is a physiological process that can develop without the appearance of concurrent diseases. It is an endogenous, progressive, and deleterious process that does not seem to be genetically programmed, but rather results from many molecular events that cause an accumulation of damaged cellular components including proteins, DNA, and cell membranes. It is proposed that lifestyle factors are powerful instruments to promote healthy and successful aging of the brain and delay the appearance of age-related cognitive deficits in elderly people. The aging brain retains a considerable functional plasticity, and that this plasticity is positively promoted by genes activated by different lifestyle factors.

Life expectancy is continuing to increase, thus making longevity is one of humanity's most astonishing successes. Lifestyle factors seem to be of crucial importance, not because they can determine how long we will live, but rather because they can determine how healthily we will age and thus maintain an independent life during aging.

Methods: The present study is a review article based on the data collected from the systematic search of resources in the PubMed, Scopus, Google scholar, Medline, Web of Science and Cochrane. It is extracted from related literature publications.

Results: Successful brain aging is possible if people maintain certain healthy lifestyle habits throughout their lives. These lifestyle factors include: the number of calories ingested, composition and quality of diet, physical as well as mental exercise, not smoking, active social life, effective use of technical innovations for social communication, maintenance of an active emotional life, and control of a stressful lifestyle. Cognitive exercise, reduction of food intake and healthy diet, aerobic physical exercise and reduction in chronic stress help to decrease the risk of cognitive dysfunctions. During aging and with a chronic stressful lifestyle, corticosterone in rats or cortisol in humans could potentially change the function of specific neuronal circuits in the brain. These effects could be modulated and attenuated in animals living in enriched environmental conditions, which emphasizes the importance of lifestyles in maintaining health during aging of the brain.

Conclusion: A major problem facing modern societies is how to change lifestyle and habits, particularly in the older population. Yet research is providing powerful evidence for the idea that prevention of many diseases can be diminished by a healthy diet and lifestyle that includes cognitive exercise, stress management, and a reduction in cardiovascular risk through regular physical exercise. Prevention of the cognitive decline and dementia that occurs during aging could well be a decisive argument to support the modification of public health policies.

Clinical and experimental stroke research

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Stroke is one of the main causes of long-term disability. Stroke syndrome involves various domains including motor, sensory, and cognitive functions. Although there are now successful physiological therapies to improve the complications of stroke, the subsequent cognitive deficiencies can greatly affect the quality of life of affected people. Considering the importance of brain health and its cognitive functions, in this panel, we aim to introduce empirical models in stroke studies and use of photobiomodulation to improve stroke by studying the epidemiology of stroke in Iran and around the world. We will continue to investigate post-stroke cognitive impairment and show how combine non-invasive stimulation of the brain and cognitive training are welcomed as a dominant strategy in the treatment of stroke and ultimately cognitive rehabilitation as the treatment of stroke.

In general, this panel deals with the importance of recognizing, researching, teaching and new treatments of stroke as a serious disease affecting brain health and the cognitive functions of human and its effects on contemporary life.

Key words: stroke epidemiology, Experimental models on stroke research, photobiomodulation in stroke recovery, noninvasive brain stimulation, Cognitive rehabilitation

Neuropsychoanalysis: Why and How?

Dr. Ali Firoozabadi, Associate Prof. of Psychiatry, Shiraz University of Medical Sciences

The brain and its relationship with the mind is a philosophical issue that dates back to ancient times. Descartes dualism influenced both science and philosophy in such a way that this two concepts considered as two separate entities. However, with the advent of new scientific approaches and technological advancement, it was cleared that the mind and the brain are the same thing that we see them from two different points of view(From inside and outside).

Psychoanalysis. as Eric Kandel pointed out 'is still the most coherent and intellectually satisfying view of the mind that we have'. On the other side, neuroscientists observe the brain objectively. The ability to observe ourselves from two points of view is an advantage that is not attainable in the other fields of science. As Solms and Thurnbull mention, neuroscientists could not go very far beyond the behavioral or observable surface and not penetrate to the real stuff of the inner world such as feeling, consciousness and the self. This two perspectives could be integrated and enlarge the scope of our view. It is time to realized that the biology ,as Freud pointed out, is truly a land of unlimited possibilities and the neuroscience is able to address the questions that had no proper answers in the beginning of twenty century. Neuropsychoanalysis is an interdisciplinary field that provide us an opportunity to develop a new "intellectual framework" for the psychiatry and neuroscience.

Nutrition & Aging Brain

Rezvan Hashemi

It is well known that the percentage of elderly population will increase dramatically in almost every country in the next few decades. Also there is a wealth of disparate data related to how nutrients, non-nutrient, food components and whole diets may impact on cognitive health and ageing brain. The capacity to repair the DNA, proteins, lipids, and the structural elements of brain cells depends on the availability of nutrients, the synthetic capacity within brain cells, and the feasibility of substituting new lipids and proteins in an appropriate functional state.

Studies have shown, the specific dietary pattern such as Mediterranean diet and Mind diet can have profound effects on the brain, furthermore evidence suggests that consumption of specific dietary compounds can improve cognition, Many of these compounds such as omega 3 fatty acid, folate, no nutrient phytochemicals have antioxidant and anti-inflammatory properties.

Psychoneuroimmunology of psychotic disorder

Dr Sara Hashempour, MD

Psychiatrist, Fellowship trainee in psychosomatic medicine, Psychosomatic department of imam Khomeini hospital, TUMS

Psychotic disorders involve disturbances in thought, perception, cognition and social functioning. Overlaps in epidemiological and genetic associations raise the possibility that autoimmune mechanisms may underlie some psychoses, and offering novel therapeutic approaches. There is increased comorbidity between Non Neurological Autoimmune (NNAI) disorders and psychosis, but also NNAI disorders increase the risk for subsequent psychosis and vice versa.

The negative association observed between rheumatoid arthritis and psychosis.

Although activation of the immune system is a core feature of all autoimmune disorders, differences in the downstream molecular immune pathways activated across the different autoimmune diseases, may partly explain different association for some NNAI disorders but not all.

Some reports note raised peripheral CD19+ and reduced CD3+ lymphocyte counts, with altered CD4 : CD8 ratios in acute psychosis. Also, post-mortem studies have found CD3+ and CD20+ lymphocyte infiltration in brain regions that are of functional relevance to psychosis. the recent paradigm of neuronal surface antibody-mediated (NSAb) central nervous system disease provides an antigen-specific model linking adaptive autoimmunity to psychopathology.

The problamatic of Psychoanatic science

Dr. Amir Hossein Jalali Nadoushan

Psychiatrist, Assist. Prof. of Psychiatry, Iran University of Medical Sciences

Two years ago during the 5th Congress of basic and clinical neuroscience, one of the authorities of the scientific community in an non official conversation showed me his concern about the expansion of non-scientific psychoanalysis in Iran. Close to such meaning, he believed that the promotion of concepts like neuro-psychoanalysis which are more scientific, is the solution to save the psychiatry and psychoanalysis in Iran.

In current lecture I am trying to demonstrate my understanding of his solution based on some of social statistics and my observation of psychoanalytical practice in Tehran and some of the big cities.

I believe that the problem of psychoanalysis in Iran is not the level of being scientific or not. The problem instead, is that it is fedding the growth of a kind of typology who is self absorbed and egocentric.

In summary what can save the psychoanalysis specifically and the Iranian community in general is not to neuroscientificasion of everything and psychoanalysis but to socialificasion of them.

Memory Deficits in Tinnitus

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Some tinnitus subjects habituate to their tinnitus but some others do not and complain of its annoyance tremendously. Normal sensory memory and change detection processes are needed for detecting the tinnitus signal as a prediction error and habituation to tinnitus. The purpose of this study was to compare auditory mismatch negativity as the index of sensory memory and change detection among the studied groups to search for the factors involving in the perception of tinnitus and preventing habituation in decompensated tinnitus subjects. Electroencephalography was recorded from scalp electrodes in compensated tinnitus, decompensated tinnitus and, no tinnitus control subjects. Mismatch negativity was obtained using the oddball paradigm with frequency, duration, and silent gap deviants. Amplitude, latency and, area under the curve of mismatch negativities were compared among the three studied groups. The results showed lower mismatch negativity amplitude and area under the curve for the higher frequency deviant and for the silent gap deviant in decompensated tinnitus group compared to normal control and compensated tinnitus group. This study revealed a deficit in sensory memory and change detection processing in decompensated tinnitus subjects. This causes persistent prediction errors; tinnitus signal is consistently detected as a new signal and activates the brain salience network and consequently prevents habituation to tinnitus. Mismatch negativity is proposed as an index for monitoring tinnitus rehabilitation.

Keywords: tinnitus, mismatch negativity, sensory memory, prediction error, change detection, habituation

How early childhood experiences influence brain development?

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Brain development can be affected by several biological and environmental factors. Psychosocial factors including early attachment, parenting, and negative experiences have been recently considered in several studies as the important elements influencing brain development. It has been shown that positive or negative parent-child relationship can lead to different consequences in terms of brain structure and functions particularly social brain development. It has also been found early psychosocial status including poverty can affect the cognitive brain functions in childhood and adolescence. Moreover, psychological trauma in early childhood and child maltreatment have also been shown to influence brain development which can cause behavioral, cognitive, and emotional disturbances later. The findings of these studies can be used in planning some programs in early childhood to improve brain development and prevent mental disorders in youth and adults.

During this talk I will focus on explaining the findings of studies considered psychosocial factors affecting brain development.

Key words: parenting, brain development, children

Social decision making in humans ; an introduction

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Real life scenarios are complicated with complexities of social environment where our adaptive decisions enhance the evolutionary chances as well as the quality of life. The main unanswered question is what the optimal decision is? Indeed, most of our social decisions are dynamic in a very specific sense: the values of one social agent choices will update based on changing mental status and behaviors of other social agents or players.

To investigate the structure of social decision making and the brain related correlates, tasks derived from game theory are frequently used. Data from reciprocal exchange and bargaining games showed that social creatures make decisions, interestingly affected by computational and biological factors. First is about expectation for social rewards; that can motivate an agent to go beyond the early cost-benefit analysis; a decision that is associated with dopamine activity in the anterior cingulate cortex. Second is certainty and predictability of environment that alter the exploratory decisions, in which the striatum, ventromedial and dorsal frontal and orbitofrontal cortices may be involved. The main neurotransmitters are norepinephrine and serotonin.

Due to computational or biological biases, the social decisions are not optimal in general population and also exacerbated in many neuropsychiatric disorders such as mood and personality disorders and autism. Thus and very recently therapeutic interventions such as Neurogame, brain stimulation, Oxytocin and new coaching methodologies have been discussed as promising venue to enhance social decision making procedure.

Social decision making in personality disorders

FatemehSadat Mirfazeli

Psychiatrist, Social Neuroscience Researcher

Human being's live is full of social decisions in which there is a need to integrate emotions, thoughts and beliefs of other individuals. In addition to capacity of mentalising, an optimal social decision making involves considering short term and long term goals depending on risk and benefits in different contexts. To do so a variety of neural systems such as emotional network, value system, emotion recognition processes are working together. These are the exact brain regions that show deficits in some personality disorders. In case of borderline personality disorder, early adverse life events or traumas, has broken the capacity to trust, leading them to maximize their benefit based on a short term relationship at cost of destroying a probably more economic long term relationship. Because it is beyond their scope of imagination. This psychopathology added to a disrupted emotional regulatory system as a result of trauma makes social lives of individuals with borderline personality disorders unstable, impulsive and unsuccessful. Furthermore, people with psychopathy-another personality disorder known for emotional callousness-make their social decisions based on taking advantaging of others, manipulating others and deceiving them to their benefit. However, they are not sometimes successful in economic social games. Because in this type of personality disorder this style of social decision making comes along with a deficit in long term planning, pleasure seeking, risky behavior and bad reputation for repetitive social deals. Therefore, although these personality disorders may seem cold or calculating in their social decision making they are indeed irrational in the long run.

May celecoxib help clinicians to improve mood disorders? Some evidences about neuroinflammation theory

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Celecoxib is a Nonsteroidal Anti-Inflammatory Drug (NSAID) and a sulfonamide pain killer that is mainly used for treatment of Osteoarthritis, Rheumatoid Arthritis, acute pain and some other purposes such as prevention and treatment of gastrointestinal benign neoplasia. Due to the possibility of inflammatory etiologies in many psychiatric disorders, this medication has been studied for the treatment of some of the psychiatric disorders.

Among all the presented articles on the influence of Celecoxib on psychiatric disorders, the effect of this drug on depression has been studies more widely and the majority of these studies have confirmed the effectiveness of this drug as a successful adjuvant therapy. On the other hand, several researches were conducted to evaluate the effectiveness of celecoxib in subjects other than adults medically healthy depressed patients. In addition, Celecoxib has been reported to work effectively, once applied as adjunctive therapy in bipolar disorders.

Celecoxib is reported to be an effective treatment for depression. In contrast, results for Bipolar disorder are variable and inconclusive and several confounding factors such as interaction of celecoxib and lithium, difference range of diagnosis and comorbidities have not been clearly studied and need further investigations.

Habituation Deficits in Tinnitus

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This project used a novel auditory event-related potential (ERP) paradigm, the orientation/habituation paradigm, to understand brain processing in response to multiple auditory stimuli in tinnitus subjects. This paradigm allowed the exploration of several neurological processes within one task: sensory gating, orientation to deviant stimulus, and habituation and dishabituation. P50, N100 and P200 were recorded in response to the auditory stimuli. Normal control group demonstrated significant sensory gating from stimulus 1 to stimulus 2. There was also a significant orientation effect of P50 and N100 to the deviant stimuli. There was no habituation of the P50 ERP component over time and there were mixed results regarding whether or not the P50 was dishabituated when a deviant tone was presented. There were significant linear trends found for N100 demonstrating habituation. In decompensated tinnitus subjects, no habituation and sensory gating was seen for P50, N100 and P200. The results show a habituation deficit to auditory stimuli in tinnitus subjects. A possible model of habituation to tinnitus is described, that of the attention system (via the frontal cortex) suppressing the response from the amygdala and the use of alternate nodes of the limbic system such as the insula and the parahippocampal gyrus when mediating emotion.

Keywords: tinnitus, auditory event-related potentials, sensory gating, habituation

Memory and Morality

Reza Mosmer

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Do we have moral responsibility to remember certain things? Are we allowed to forget things that their memories disturb us? These questions, among many others, highlight the relevance of morality to memory. On the one hand, it is widely accepted that our memories belong to us, that is, they are our private properties. This implies that we have cognitive liberty to do whatever we like with them; we may wish to erase or modify certain disturbing memories by neuro-technologies (pharmacological tools, etc.) (see Bernecker 2017, 2018) or we might simply choose to suppress our painful memories and forget them. On the other hand, modifications in memory are very likely to have harmful effects on others' lives as well as to the person's sense of identity, which is morally worrying (see Levy 2007: 157-197). These puzzling and conflicting considerations share an assumption: we have a capacity to choose to remember or forget. That we have control over our faculties of memorizing and remembering is not an indisputable presumption among philosophers and psychologists. Indeed, some philosophers have challenged this idea (see Melle 2009). They argue that remembering (and forgetting) is not a mental action, that is, it is not something that we can have control over and decide to do or not to do. For example, we can choose to do mental calculation (say adding 2 to 3), but as far as it concerns with remembering all we are capable of is bring it about that we recall that 2+3=5. We are unable to choose to remember or forget that 2+3=5, but we can set the stage for the emergence of the mental content that 2+3=5.

This account of remembering and forgetting has received critical responses from philosophers who take remembering and forgetting as mental actions (see Peacocke 2007, Wu 2013). It is argued that remembering and forgetting are actions, that is, they can be under our control. And we probably have metacognitive control over them (Arango-Munoz and Bermudez 2018). This account is supported by empirical evidence that it is possible to decide to forget, that is, "Directed forgetting" (see Bjork & Bjork 1996).

In this short talk, I focus on some particular arguments to the effect that remembering and forgetting are mental actions, and I will try to show that they are not effective.

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Normal neurotransmitter changes in aging

Dr Ferdos Nazari, M.D., Neurologist

Aging is a physiological process which occurs asynchronously in different parts of the brain and depends on individuals' lifestyle during their lives. Brain changes during normal aging include volume loss of different parts of the brain such as gray matter volume loss, changes in dendritic connections of neural cells, and also changes in amount and function of biochemical mediators between neural cells, called neurotransmitters. The major brain neurotransmitters are acetylcholine, dopamine, serotonin, noradrenalin and also GABA, glutamate and aspartate. The major change in aged brain consists of changes in dopaminergic system in midbrain and striatum, including decrease of dopamine-producing cells and changes in dopamine receptors. Another normal change of aging is reduction in cholinergic system of hippocampus and prefrontal cortex. Although this reduction is much less than cholinergic reduction of Alzheimer's patients, it is significant and notifiable. Other changes include reduction of serotonin and noradrenalin in the different parts of the brain. Although these neurotransmitters' concentration decrease by aging, but their metabolites concentration does not change. The reduction of these neurotransmitters without metabolites change suggests increased neurotransmitters turnover to compensate loss of producing neural cells. All of these changes in aged brain has no significant effect on motor and cognitive function of normal aged humans and suggest a good brain reserve.

Closed-Loop neurofeedback systems

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Feedback and closed-loop circuits exist in just about every part of the nervous system. It is curious, therefore, that for decades neuroscientists have been probing the nervous system in an open- loop manner to understand it. Instead of the linear, reductionistic "stimulate → record response" approach, a more modern approach is taking hold: closed-loop neuroscience. So, This panel will discuss about this research topic with the aim of spotlight advances in the newly emerging field of Closed-Loop Neurophysiology, Closed-Loop Deep Brain Stimulation and Closed-Loop Neurofeedback Stimulation in different levels of neural systems (from single neuron to network level) and recent methodological, scientific and theoretical advances from neuroscientists and neuroengineers who are pioneering closed-loop neuroscience.These advances have enabled a wide variety of new neuroscience approaches to understanding, modulating, controlling neuronal activity with spatial and temporal precision and interfacing with the nervous system—approaches in which the variables being monitored can influence the experiment in progress, just as active sensing can influence an animal's next input. The basic paradigm involves recording neural activity or behavior and delivering activity-dependent stimulation in real time. Closing the loop around neural systems offers advantages over traditional open-loop neurophysiological approaches by providing the ability to stimulate neural systems contingent on their behavior. Real-time stimulation feedback enables a wide range of innovative studies of information processing and plasticity in neuronal networks. In addition to advancing basic neuroscience, bidirectional neural interfaces provide novel adaptive neuroprosthetic devices that incorporate artificial sensory feedback. Activity-dependent stimulation also promises innovative paradigms for effective treatment of neurological diseases.

Localization and its discontents

Dr. Morteza Nokhostin

Psychiatrist, Gilan

The issue of neuropsychoanalysis is the possibility of a dialogue between psychoanalysis and neuroscience and the quest for the neurobiological foundations of psychoanalysis. But can we talk about brain in Freud's writing, beyond the search of neuropsychoanalytic neuronal subject? especially in freud's pre-psychoanalytic works, such as "On Aphasia" and "A project for scientific psychology"?

The approach of this lecture to such a topic is historical epistemology. That is to say, the pioneer of neuropsychoanalysis did not regard freudian brain project as the one that Freud defined against the dominant paradigm of the scientific community and neurologist of his time for localization of mental qualities such as language.

Freud developed the opposite way of Meynert and Wernicke cerebral localization project , and contrary to the notion, not by criticism of the brain research, but by taking a radical approach to a dynamic concept of the brain, he succeeded in establishing his theory about neurosis as well as its possible cure.

The concept of rearrangement in the neural circuitry of the language and the retranscription concept of the memory construction mechanism, - in contrast to classical storage of it- opened the way to the creation of the Freudian neuropsychoanalysis. But more importantly, considering the deviant circuits or detour in nervous system, not only makes possible the rearrangement but also makes it necessary.

Unlike the subject of contemporary neuropsychoanalysis, Freud's neural subject dose not containing biological homeostasis and self-preservation, but on the contrary these pathological detour circuit inevitability promote psychopathology.

Finally we will conclude that in contemporary neuroscience, the neural darwinism theory of Gerald Edelman can be cited as an example of radical conceptualization of the brain , as did Freud's pre-psychoanalytic efforts.

Psychoneuroimmunology of mood disorder

Dr Ahmad Ali Nourbala, MD

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Psychoneuroimmunology is the interdisciplinary study that links behavioral health with the neuroendocrinal system and investigates that link's bidirectional impact on the human immune system. The central nervous system is hypothesized to have a role in the modulation of immune function

For instance, researchers have indicated that negative behavioral changes from psychosocial stress and a depressive mood can increase proinflammatory cytokine levels, leaving the individual more susceptible to infection.

Other psychoneuroimmunological studies have focused on why infections can lead to secondary mood changes or feelings of general malaise. it seems that increased inflammation by itself can potentially play a major role in increasing the risk of depression in vulnerable individuals.

It is not clear whether inflammatory markers change episodically in response to mood states or are indicative of chronic pro-inflammatory activity.

Cognitive Reserve in Aging

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Maintenance of cognitive function in old age has become increasingly desirable to a human society with an aging population. Cognitive reserve is a hypothetical construct that moderates the effects of age-related decline and pathological damage and explains links between factors such as a lower level of education, lower socioeconomic status, or lower pre-morbid cognitive ability and an increased risk of cognitive impairment in older age. It is a concept that cannot be measured directly but through indirect indicators.

All of the age-related brain deteriorations, including gray matter and white matter loss, and less efficient/functional networks are more pronounced in people who are on the way to developing cognitive impairment. Cognitive reserve moderates the relationship between neuropathology and clinical status.

Physical and cognitive activities are very important in building up cognitive reserve and prevention of dementia. Physical (especially aerobic) exercise and cognitive activity work together to protect brain health in general, thus reducing the loss of brain mass with age and strengthening compensatory circuits primarily through enhancing executive function.

Importantly, cognitive reserve is not fixed but continues to evolve across the lifespan. Thus, even late-stage interventions hold promise to boost cognitive reserve and thus reduce the prevalence of Alzheimer's disease and other age-related problems.

The effect of Boswellia serrata extract and AKBA (Acetyl-11-keto-β-boswellic acid) on the neurological scores, brain edema and brain -blood barrier after severe traumatic brain injury in male rats: the role of IL-1β and IL-10

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Introduction: Gladiolus plant is a tree from the family of Khorrasa. Boswellia serrata reduces glutamate-induced peritomerial edema. It also has potent antioxidant properties and immunosuppression, and anti-apoptosis in the central nervous system, and can be used to treat neurodegenerative diseases such as Alzheimer's disease, Huntington's disease, Parkinson's disease and dementia. However, its precise mechanism is still unknown. In this study, we investigated the effects of neural protection of the condor plant after induction of cerebral inflammation in rats.

Materials and methods: The male Albino wistar rats received different doses of Boswellia serrata (125, 250, 500 mg/kg, i.p.).All animals were intubated before surgery. In the TBI groups, diffuse TBI was induced by Marmarou method using a TBI induction device. The severe TBI was induced using a weight 450 gr.In the sham groups, all stages of induction of TBI were performed except dropping weight on the head. The disruption of Blood brain-barrier (BBB) was evaluated 6 h post- TBI. The neurologic score(VCS) and brain water content, the beam-walk – balance task (WB) were determined before trauma(Pre), on trauma time(D0), and 1 hours (D1) and 4 hours (D2) and (D3) hours post- TBI. 24 hours After TBI anaesthetized animals were sacrificed and the brain was removed for IL10 and IL-1B Elisa assay.

Results: Our results showed that traumatic brain injury led to significant brain edema and disrupt of blood brain-barrier and neurological defect and vestibulomotor dysfunction in the rat brain and decrease IL1B and increase IL-10 in brain tissue. Boswellia serrata (250, 500 mg/ kg) could attenuated brain edema, improved BBB and vestibulomotor dysfunction in compare with TBI control group ($P<0.001$) but in 500 dose results were better.

Discussion: These findings showed that Boswellia serrata has a prominent role in TBI outcome's and perhaps protect neurons through modulating inflammatory and antioxidant pathways

Key word: Boswellia serrata, TBI, neuroprotective, IL, rat

The role of novel biomarkers in management of neurodegenerative diseases

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The prevalence of neurodegenerative diseases is increasing dramatically and one of the major challenges today is the need of early and accurate diagnosis, and need of more effective therapies. The main hope for an earlier and more accurate diagnosis comes from the use of biomarkers. In the past decade we have seen tremendous effort in biomarker discovery and validation for neurodegenerative diseases. The source of biomarkers has continued to grow for neurodegenerative diseases, from biofluid based biomarkers (blood or cerebrospinal fluids), to nucleic acids, tissue, and imaging. The novel biomarkers can also be used in follow up exams to assess the response of therapies, which leads to better management of neurodegenerative diseases. Incorporation of biomarkers into drug development and clinical trials, promises to aid in the development of drug efficacy for the management of neurodegenerative diseases.

The changes of brain edema and neurologic outcome and probable mechanisms in diffuse traumatic brain injury- induced rats with previous exercise

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Our objective was to examine whether previous endurance exercise influences brain edema and neurologic outcome in diffuse traumatic brain injury (TBI). Also, we assessed the probable mechanism of endurance exercise effect in TBI. Rats were randomly assigned into four groups: sham, TBI, exercise + sham and exercise + TBI. Endurance exercise was carried out before TBI. Brain edema was assessed by measuring % brain water content 24 h after surgery. Neurologic outcome was evaluated by obtaining veterinary coma scale (VCS) at -1, 1, 4 and 24 h after surgery. Interleukin-1β (IL-1β), total antioxidant capacity (TAC), malondialdehyde (MDA), protein carbonyl and histopathological changes were evaluated 24 h after surgery. The exercise prevented the increase in % brain water content, MDA level, and histopathological edema and apoptosis following TBI. The decrease in VCS of exercise + TBI group was lower than that in TBI group. In addition, a decrease in the level of serum IL-1β and the content of brain protein carbonyl was reported in exercise + TBI group compared with that of TBI group. We suggest that the previous endurance exercise prevents brain edema and improves neurologic outcome following diffuse TBI probably via decreasing apoptosis, inflammation and oxidative stress.

Keywords: Brain injury; Malondialdehyde; Interleukin-1β; apoptosis; Protein carbonyl Oxidative stress; Inflammation

The anatomy of inference: Internal models in the brain

Thomas Parr

In this talk, I will give an overview of active inference, a theoretical framework for describing (approximately) Bayes optimal behaviour. This is based upon the idea that the brain houses internal (generative) models of its environment that can be used to make predictions about incoming sensory data. We can think of perception as a process of inference, or hypothesis testing, in which we try to find the best explanations for the causes of these data. This provides a useful way of understanding the functional anatomy of perception, and the (inferential) messages passed between different parts of the brain. Crucially, through motor systems, the brain can elicit changes in the environment. This means it can change sensory data to be more consistent with its model of the world, or perform perceptual experiments (e.g. saccadic eye movements) that help to disambiguate between competing perceptual hypotheses. This endorses the metaphor of the brain as a scientist, engaging in an active exchange with the environment to seek out data that resolve uncertainty. Pursuing this, I will present a series of simulations that illustrate this notion. These show the influence of internal models upon healthy behaviours, but also highlight how neurological and psychiatric syndromes could be understood in terms of ‘broken’ models.

Next-generation biomarkers in Parkinson's disease

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Parkinson's disease (PD) is a progressive neurodegenerative movement disorder characterized by selective loss of dopaminergic neurons that project from the substantia nigra pars compacta to the striatum. The clinical diagnosis of Parkinson's disease is only possible when a large number of dopaminergic neurons are lost. Treatment with medications to increase dopamine relieves the symptoms but does not slow down or reverse the damage to neurons in the brain. The exact cause of this neurodegenerative disease has not been determined yet and finding biomarkers that help in early diagnosis of the disease is very important. It has been shown that an interaction between environmental and genetic factors play the most important role in the etiology of the disease. MicroRNAs control a range of physiological and pathological functions, and may serve as potential targets for intervention against PD to reduce damage to the brain. Recent studies have demonstrated that microRNAs can regulate PD genes and are involved in the onset or the progression of the disease. In the near future miRNA can be used as an early diagnostic biomarker in Parkinson's disease.

Neuroscience in Sleep

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Understanding the neural mechanisms of sleep is of great scientific interest and clinical importance. Sleep is essential for optimal cognition, immune function, and general health, and sleep disorders are among the most common clinical problems.

Neuroscientists have made much progress defining the key circuits that regulate sleep/wake behavior, but this is just a start as many fundamental questions remain unanswered.

The electroencephalogram (EEG) and electromyogram (EMG) are excellent biomarkers of sleep/wake states. It is important to emphasize that the EEG is simply a biomarker of an underlying state, and changes in the EEG may not always reflect changes in state.

Monoaminergic cell groups that drive arousal produce norepinephrine (NE), serotonin (5HT), dopamine (DA), or histamine, and they diffusely innervate the cerebral cortex, BF, lateral hypothalamus (LH), and many other regions. Their projections to the thalamus generally target the midline, intralaminar, and reticular nuclei of the thalamus through which they diffusely enhance thalamocortical signaling. Monoaminergic neurons also share similar firing patterns, with generally high rates of firing during wake (especially active wake), slow firing during NREM sleep, and a virtual cessation of firing during REM sleep.

Ultimately, sleep and wake states arise from dynamic interactions throughout the sleep/wake circuitry, but how do neurons acting on a millisecond time scale give rise to emergent sleep/wake behaviors that last for minutes to hours?

With a better understanding of the anatomy, physiology, and dynamics of these circuits, we should gain novel insights into the bigger mysteries of how sleep is controlled, how it benefits the brain, and how it can be improved.

Promising biomarkers in Alzheimer's disease

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Accurate diagnosis of neurodegeneration especially in its early stages remains a challenge. New diagnostic methods via measurement of biomarkers which are detectable in easily-accessible biofluids, would provide exhaustive information about more efficient therapeutic approaches in neurodegenerative diseases. Recent findings from Omics sciences are utilized for identification of new biomarkers. In this regards, selenoenzyme methionine sulfoxide reductase B1, poly-ubiquitin profile, exosomes, nano-sized extracellular vesicles, and neuroimaging of brain sigma receptors could be considered as next-generation biomarkers for diagnosis of neurodegenerative diseases.

Serum levels of Apelin-13 which has the highest plasma concentration and plays the most significant role in neuroprotection, have shown that decrease in neurodegeneration. Hence, detection and tracing of certain nanopeptides have been suggested. The novel diagnostic biomarkers may shed light on new promising therapeutic approach and efficacy monitoring of therapeutic strategies in the field of neurodegenerative diseases.

Artifact removal from intracortical channels for brain-machine interface applications

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Intracortical data recorded with multi-electrode arrays provide rich information about kinematic and kinetic states of movement in brain-machine interface (BMI) systems. Various types of information including single unit activity (SUA), multiunit activity (MUA) and local field potential (LFP) can be used as input information to extract motor commands for control of external devices in BMI. Here we combine LFP and MUA information to improve decoding accuracy of force signal from the multi-channel intracortical data of freely moving rats. For valid interpretation of force decoding from different data types, we suggest a weighted common average referencing (CAR) algorithm. The proposed spatial filter adaptively identifies the contribution of common noise on the channels employing Kalman filter method. Simulation analysis demonstrates the fast convergence of the method and improvement of signal to noise ratio (SNR) with different input SNRs and noise mixing scenarios. Also, we show that the proposed artifact removal algorithm significantly improves decoding performance of force signal compared with conventional CAR-based filters considering LFP or combination of LFP and MUA.

Keywords: Brain-machine interface, artifact removal, adaptive common average reference filter, adaptive filtering, Kalman filter, neural decoding

Cognitive functional connectivity analysis of human brain using fMRI and graph theory

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Cognitive impairments are frequently reported in many various domains in some neurological brain disorders like Multiple Sclerosis (MS) disease. The brain functional connectivity alterations induced by a cognitive task performance can be assessed through blood oxygenation level-dependent (BOLD) functional magnetic resonance imaging (fMRI). In recent years, graph theoretical methods in combination with a variety of neuroimaging techniques are highly regarded for the detection of changes in topological properties of brain networks. In this study, we applied graph analysis on cognitive task-based fMRI data to investigate significant alterations in network characteristics between the MS patients and healthy controls. In accordance with our findings, the global and local graph measures can effectively identify the abnormalities in functional connectivity patterns in patients compared to the controls from different aspects. Our research demonstrate that the significant differences in graph-based measures may help us to find the reliable markers for better reflection of altered connectivity and to detect informative brain regions which are involved in cognitive deficits.

Visual Feature Binding in the Prefrontal Cortex of Macaque Monkey

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The primate brain is able to ideally perceive distributed information as a unified entity. Previous researches reported this mechanism in several areas of the brain. In addition, several theories have been proposed to solve this problem. However, the underlying neural mechanism and the main involved areas to serve this mechanism much remain to be known.

To address these questions, we hypothesized the prefrontal cortex (PFC) as a more plausible high-level area and investigated the feature binding in it. Two macaque monkeys were trained to perform a visual delayed-match-to-sample task. We designed two binding conditions in the stimulus of test period and assessed our question in this interval. Using a microelectrode array implanted in the lateral prefrontal cortex (lPFC) of each monkey, the local field potentials (LFPs) were recorded from 96 channels simultaneously.

We found that PFC encodes the feature binding and revealed it in the delta-theta frequency band (4-12Hz) of LFP. Our data indicated that the single sites of PFC and also the between areas communication convey the information of feature binding. These findings suggest the functional role of PFC as a high-level associated area for visual feature binding.

Keyword: Feature binding, Prefrontal cortex, Delta-theta, Local field potential.

Routing information flow by using distinct neural synchrony frequencies: 'functional labeled line' in higher primate cortex

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Visually-guided behavior requires to several neural circuits\cortical mechanisms to transfer the sensory input into motor associate areas. The coordination of the activity of single neurons have a crucial role in optimally performing visuo-motor behavior.

Here, we found that MT neuron's action potentials are highly synchronized to the phase of high-gamma (180-220 Hz) LFPs in monkey's dorsal visual pathway when the animal's response was faster. This phenomenon which was irrespective of the spectral leakage of spike waveforms into the LFP, observed only among neurons with their receptive fields covered by the target visual stimulus. This observation suggests that the high-gamma synchronization locally route information to upper cortical areas. Further the absence of high-gamma synchrony in slow behavioral response trials reflects a functional role of high-gamma oscillatory activities in synchronizing neuronal inputs in area MT. Given that the spike-phase synchrony plays a similar role in areas of ventral visual pathway but in different frequency range (40-70 Hz), we hypothesize that two visual pathways (dorsal vs. ventral) use different frequency bands for transmitting information into higher level areas, enabling them to distinguish the information sources. Our modeling shows that neurons in upper level areas may take advantage "functional labeled lines" to disambiguate the source of information comes from downstream areas.

Key words: MT area, spike phase synchrony, macaque

Neural spikes are coupled to low frequency LFPs in macaque visual cortex

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Neural synchrony has been subject to many recent studies in brain science. By investigating the locking of spiking activity to local field potentials (LFP), scientists have been able to address this inter-neuronal synchrony. In previous studies, an interaction has been observed between single neuron spikes and LFP (the extremely dynamic stream of information throughout neural networks) in their low frequency oscillations (<15 Hz). However, any potential role of this locking in neural encoding of information is not known.

In order to answer this question, two behaving male macaque monkeys were trained to fixate to a central fixation point on the screen while two coherently moving random dot patterns (RDP) were presented. The RDPs were presented simultaneously at peripheral locations moving linearly in the same direction. While we recorded the LFP and single unit activity in area MT of the monkeys, one of the two RDPs was presented inside the receptive field of the recorded neuron and moved either to the preferred or anti-preferred direction of the neuron.

To examine if spike-LFP coupling contains information on visual features, we measured the interconnection between spikes and the phase of low frequency LFP oscillations as a function of the stimulus' motion direction. We found that the phase-locking follows a tuning curve based on the presented stimulus' direction. This tuning curve is reversed to the tuning based on the neural spike rate, i.e., the minimum spike-LFP coupling occurred when presenting the preferred direction, while the strongest spike-LFP coupling is caused by the anti-preferred direction. This finding suggests that the neural system employs spike-LFP coupling in macaque visual cortex to encode visual information. These observations thereby propose a novel paradigm in coding of information in the neural system.

Clinical assessment in Neuropsychiatry

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It is indubitably undeniable that clinical examination is the fundamental part of medicine. While certain ramification it related it, development of neuroimaging method and paraclinical assessment can mitigate the crucial role of interview and cognitive behavioral investigation.

There are distinct reasons linked to the importance of clinical interview in neuropsychiatry setting. First of which is facilitation of therapeutic alliance. This means when clinicians emphasize the interview and examination they try more to build an effective communication with the patients. Hence that it makes easier to get more precise information about the patient problems. In addition, a professional examination might have therapeutic effect on patients' sufferings, as an illustration evidence show a good doctor patient communication can improve symptoms in people with functional neurological disorders.

Conversely, to mitigate the adversity of effective examination in neuropsychiatry, it is incumbent on neuropsychiatrists to first examine their patient organized precisely based on different parts of brain structures and functions. In addition, applying profitable neuropsychological tools during the interview could improve accuracy of assessment.

In conclusion, the adversity of professional clinical neuropsychiatry assessment can only be solved by skillful examination and expertise on brain functions assessment.

Keywords: Clinical assessment, neuropsychiatry

Use of Neuropsychological tests in Neuropsychiatry

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Neuropsychology examines the relationship between behavior and brain functioning in the realms of cognitive, motor, sensory, and emotional functioning. The aim is to determine a particular area of brain damage or a particular diagnosis. There are two types of neuropsychological tests, screening and diagnostic. Screening tests detect potential disease indicators, while diagnostic tests establish presence or absence of a disease. Successful screening tests must be simple, cost-effective, reliable, and valid. In case of screening tests, false positive results can cause anxiety and fear from future tests, but false negative results can lead to delay in diagnosis and delay in future interventions.

Executive function, reasoning, memory, and attention are mental abilities which are impaired in psychiatric disorders and can be detected by use of neurocognitive tests. Depending on the disorder, use of neuropsychological tests can vary from being commonly practiced in clinical setting to research purposes only. Implementation of neuropsychological batteries is a routine practice in diagnosis of dementia in many centers. Also these tests can be successfully used to detect the attention impairment observed in Attention Deficit Hyperactivity Disorder (ADHD) and differentiating attention deficit caused by ADHD from other psychiatric disorders such as depression; Moreover, many tests have been introduced to the literature as screening or diagnostic means in mood, psychotic, and addictive disorders.

In conclusion, neuropsychological tests are useful means for detection of cognitive impairment in psychiatric disorders. They can be used as screening tools as well as increasing the accuracy of differential diagnosis.

Keywords: neuropsychiatry, neuropsychological tests, dementia, ADHD

The Usage of functional MRI in a Neuropsychiatry

Dr. Samira Ahrari

MD, Psychiatrist

Functional Magnetic Resonance Imaging(fMRI), provides us the data and images in the field of neuroscience which are so helpful in discovering how cognitive functions work. FMRI of the brain also has a special place in clinical and diagnostic fields of psychiatric diseases. Functional brain imaging offers the ability to safely and non-invasively imaging brain activities with a very high spatial resolution compared to older ones. The most common way of evaluating brain imaging is by changing the amount of blood flow in the different regions of the brain during the increase in activity of the neurons in that region of the brain. This increase in blood flow due to increased activity of the neurons leads to an increase in the relative oxygen levels of the region in the brain. The measurable signal in brain imaging is linked to these changes in oxygenation.
How the brain and mind were connected to the most fundamental human questions that was possible before the development of neuronal imaging techniques was possible only by assessing brain function of patients suffering from brain damage such as stroke of infection and trauma. Older methods only made it possible to determine the location of the damage, while in order to understand brain function associated with mental processes in normal conditions, researchers need methods for imaging the brain while the person is performing a mental activities. In this regard, brain imaging is a device that is available to a wide range of people without side effects, even in children, and frequently if necessary.

Research in the field of functional imaging of the brain is usable in the diagnosis of many diseases and mental disorders. Among the clinical applications of functional imaging of the brain, the changes observed in the mild cognitive impairment of autism, bipolar disorder, and the effects of the creation of schizophrenia and hyperactivity disorder are mentioned.
In addition, functional imaging of the brain is used in the mapping of areas associated with PLASTIC city speech after brain damage, mapping of complex brain activity and follow-up therapy.

Research into brain function imaging is likely to accelerate in the coming years, and the likelihood of using this method to identify and treat psychiatric illnesses has led to more research investment in using this tool in recent years.

The Poitier's experience on the treatment of sever OCD

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Abstract
Obsessive-compulsive disorder (OCD) is a chronic, often severe, psychiatric disorder leading to a dramatic impairment in interpersonal and occupational functions. Current first-line treatment strategies for OCD consist of high doses of antidepressant, and/or cognitivebehavioral therapy (CBT). And second line, the pharmacological treatment has been broadened to include low doses of atypical antipsychotics. However, even with such therapeutic options which have improved the prognosis of OCD, 30 – 60% of patients are either unable to tolerate medication side effects or respond partially, thereby being left with persistent symptoms with lasting repercussions on their global functioning. Those patients are resistant. Although the aetiology and pathophysiology of OCD remain unclear. But on the basis of a neural dysfunctional in different parts of the orbito–fronto–striato–thalamo–cortical circuit, which involved in the pathophysiology of OCD, some authors proposed brain stimulation (tDCS, rTMS and DBS) as a treatment of severe OCD. There is not enough data on the efficacy of tDCS and rTMS in severe OCD. About DBS, since 1999, 5 targets has been used on patients with severe OCD, Anterior limb of the internal capsule (ALIC), Nucleus accumbens (NC), Internal capsule / ventral striatum (VC / VS), Inferior thalamic Peduncle (ITP), Subthalamic nucleus (STN). To our knowledge, there is no target can be efficacy in all of OCD patients. The question is, a better understanding of OCD psychopathology may help clinicians to better choose the best target. That means OCD is not a homogenous but a heterogeneous disease.

Glioma of eloquent area; technique and short-term outcome

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Background: maximal safe resection and Extent of resection (EOR) has been proposed as the main prognostic factor in resection of brain, which would be challenging at eloquent area. However, recent studies challenged this finding and proposed tailored resection according to genetics, location and pathologies.
Methods: Fifty four cases of glioma involving eloquent area were included. All patients underwent preoperative planning, including DTI tractography and fMRI. Demographic data, clinical presentation, pre- and postoperative neurological exam, imaging, pathology, genetic assessment and intraoperative data were registered. Furthermore, intraoperative monitoring was used as mapping and monitoring guide. Large Craniotomy was used to facilitate intraoperative monitoring. Postoperative MRI was performed in every patient during 3 days or after 3 months.
Results: The mean age was 41.2± 8 years. Left sided lesions constituted 38 cases (70%). Clinical presentations included paresis (52%) and seizure or speech problems (23% of each one). Locations were as follows: cortical or subcortical motor (N=26), insula (N=10), butterfly (N=8), Broca's (N=4) and Wernicke (N=6). 12 cases were recurrent. The most common pathologies were GBM (N=24), Anaplastic oligo (N=12) and low grade glioma / DNET (N=8 / 8). Genetic study detected 1 positive MGMT Methylation in GBMs and 10 IDH1/2 mutations in gliomas.
The mean EOR was 84%. There was 1 permanent and one transient new postoperative neurological deficit. Neurological status improved in 15 cases with preoperative deficits. There was no need for routine awake craniotomy. Awake craniotomy was applied in 5 patients with speech disturbance and insular glioma that underwent trans-cortical approach. General anesthesia was preferred in transylvian approach. The dominant side of lesion was resected in butterfly glioma, without significant damage to corpus callosum.
Conclusions: Gross total resection (GTR) is not suggested in butterfly glioma. However, resection of the dominant part should be achieved. According to the optimal response of oligodenroglioma to chemotherapy, GTR should not be tried in high risk eloquent areas. Awake craniotomy has limited selective indications in speech disturbance. Glioma involving motor area and large or malignant tumors should undergo general anesthesia with iOM including MEP and DECS/DESS.
Key words: Glioma, Speech, Motor, Insula, Genetics

Music and Brain enjoyment

Submission author: Siamak Razavi

Presentation type: Oral

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Why we enjoy music listening? Why do some people don't enjoy more sophisticated music like Western classical music? We will examine this question psychologically. Sound is a vibration product. There are two types of waves. Vibrating irregular waves that are known as non-musical waves. The second group of waves that are regularly vibrating and known as musical sounds. One of the basic human needs is the need for security. The constructive elements of the sense of security for the brain are predictive power. Musical sounds are completely predictable due to their repetitive order, unconsciously for the brain.

The human brain needs a certain level of excitation to survive. Any change in the degree of arousal will result in complications, which in an increasing state leads to anxiety and in a decreasing state, it will lead to loss of consciousness. The basic safe assumption in music is the same frequency. But the emotion that arises in assumption is due to the composer, using composing techniques, is changing mental security at every moment and creating insecurity by sounds, and by returning to repetitive periods, brings sweet taste of security to brain. So the intrinsic predictability of the music and returning of the sense of security by the composer creates pleasure at the mental levels for the brain. Why classical music is not enjoyable for many people. The type and complexity of the repetitions and, on the other hand, the degree of collapse of psychological security in music with different genres varies widely.

The simplest kind of repetitions can be found abundantly in pop music. For this reason, pop music is one of the most popular music in the world. Because the repetitions are too obvious, simple and very superficial suspensions, the amount of excitement that it generates is tolerable for most psychological levels. As we move towards more sophisticated music, such as classical western music, we encounter complicated layers of repetition. On the other hand, the creation of insecurity and the sense of suspension in this type of music is very skillful and very intense, which in turn makes it harder for an untrained brain. Therefore, those who have grown accustomed to listening to more sophisticated music will no longer enjoy pop music. Because it will be very lethargic for them. The high level of arousal naturally increases the feeling of vitality and has a more stable effect, so it's likely for us all to give ourselves a high level of liveliness with a little effort and tolerance.

Keywords: Neurosciences, brain, music

Personality bases of creativity and beauty in art

Submission author: Alireza Farnam

Presentation type: Oral

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Creating an art piece needs not only the artistic techniques, but also a sense of beauty and creativity. Comprehension and expression of beauty renders development humane “intuitive self-awareness” and “awareness of beauty” is one of the outstanding levels of growth and development of self-awareness. According to Wilhelm Wundt, humane self-awareness includes two major components: state and content. Art influences both components simultaneously: the abstract messages are transferred and the state is also altered. Therefore, understanding details of humane self-awareness and the fundamental role of “arousal” is necessary.

The question is that what the personality bases, behavioral and neuroscientific bases of artistic beauty and creativity are. This paper focuses on three personality theories named as the “Five factor theory”, the theory proposed by Hans Eysenck, and the theory proposed by “Robert C Cloninger” in order to present an reasonable frame for artistic creativity and beauty and emphasize the point of importance for traits of self-directedness and self-transcendence in the Cloninger’s theory, psychotisism in the Eysenck theory and openness to experience in the five factor theory. Moreover, categorizations of emotions are discussed, specifically “surprise” and the background arousal which participates as the engine of creativity as well as the neurotransmiteric systems involved in this regard.

Keywords: Neurosciences, behavioral sciences, artistic performance, aesthetics

Art, beauty, and neurosciences

Submission author: Ali Ahmadalipour

Presentation type: Oral

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The reciprocal relationship between the art, beauty, and neurosciences is an interesting topic and the last findings in this field are exciting. Art and neurosciences are in relation with each other, in a way that you can consider and research in the fields of cognitive sciences and neurosciences about the artistic activities and the effects of artistic activities on the brain functions. For example, in artistic activities, process and perception of art, hemispheric dominance and area specialization are very prominent. In addition, it has been demonstrated that beautiful artistic works such as beautiful paintings and romantic music activate orbitofrontal cortex and paintings or other artistic works that are ranked ugly, activates amygdala and motor cortex. It is also demonstrated that artistic activities (for example playing music) would change the levels of neurotransmitter and serum hormone.

On the other hand, you can use art as a basic foundation of brain circuits and activities. Art is ubiquitously present in human societies and is created spontaneously only by humans and gaining insight into creativity using art can help understand the neural underpinning of general activities of brain related to creativity and other similar aspects of brain functions. Based on these information, we have done a project about the art and neuroscience as well as the beauty which will be discussed orally in the congress of neurosciences. It is obvious that the brain and its functions are very artistic and whenever this artistic functions are disrupted, mental and behavioral disorders are appearing.

Keywords: Neurosciences, behavioral sciences, art, aesthetics

Oral & Poster Presentations

Count: 1
Abstract ID: 607
subject: Cognition: Learning and Memory
Presentation Type: Poster

The effects of sildenafil on muscle strength, recognition and anxiety-like behaviors in middle-aged male rats

Submission Author: Mohsen Abedini Esfahlani

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Background and Aim : Aging and its related problems require special attention due to the increasing population of elderly people. Common aging symptoms include reduced muscle strength and memory, depression and sexual dysfunction and increased anxiety, which is related to excess free radicals. NO/cGMP signaling pathway is one of the ways for protection against the free radicals, and the drug used to induce this pathway is sildenafil. Sildenafil is a drug which acts as a phosphodiesterase inhibitor and leads to reinforcement of the nitric oxide pathway. The role of this drug in the treatment of sexual dysfunction has been determined, but its effect on other aging symptoms in the middle-aged population has not been investigated. Therefore, we evaluated the effect of sildenafil on cognition, muscle strength and anxiety-like behaviors in middle-aged male rats.

Methods : Sixteen 11-month old male rats were used as middle-aged and eight 3-4-months old male rats as a young adult model. The treatment period was 21 days (dose of sildenafil: 5 mg/kg body weight). The novel object recognition test, open field test, wire grip test was performed to investigate the cognitive memory, anxiety-like behaviors, and muscle strength, respectively. Statistical analysis was performed using SPSS16 software and one-way ANOVA.

Results : The results showed a significant decrease in the cognition index in the vehicle group compared with the young group and were observed to increase the attention of the rats to the new object by receiving sildenafil in comparison with the vehicle group. Also, about anxiety-like behaviors such as speed and rate of mobility and areas of animal presence in the open field maze, there were no significant changes in any group. However, the number of grooming and rearing in the sildenafil group significant decreased compared with the vehicle group. The results of the wire grip test indicated a significant reduction in muscle strength in the vehicle group compared with the young group, and no significant change in the sildenafil receiving group.

Conclusion : It seems that sildenafil can improve memory and reduce anxiety most probably by inhibition of phosphodiesterase enzyme and increase in the cGMP levels in middle-aged male rats.

Keywords : aging, sildenafil, cognition, anxiety

Count: 2
Abstract ID: 665
subject: Cognition: Learning and Memory
Presentation Type: Poster

Examining the capacity of iconic memory with a recognition task using Stroop paradigm

Submission Author: Mehdi Afzalinia

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Background and Aim : Iconic memory is the most transitory part of memory. In whole report condition of iconic memory tasks, the subjects have to recall as many letters as possible from the presented matrix of 12 letters. The average responses are normally 5 to 6. In partial report condition, one of the rows of the matrix is cued and the subjects have to recall all letters of the cued row. It is observed that in cuing condition, the correct responses increase compared to no-cue condition. Therefore, it is concluded the capacity of the iconic memory is more than what we can recall. In Stroop task, the subjects have to name the color of colored words. Studies show that processing speed of the word is faster than processing speed of the color when there is incongruency between the word and its color. Examining the capacity of the iconic memory in a recognition task in which the stimuli have two properties to be processed needing much effort to respond, has not been done to date. Therefore, the aim of the present study was to examine the capacity of iconic memory with recognition task using Stroop paradigm in cue and no-cue conditions

Methods : Thirty students of Ferdowsi University of Mashhad were voluntarily selected and randomly assigned to cue and no-cue groups. In whole report condition, they responded whether the target stimulus was among the four presented stimuli. In partial report condition, one of the four presented stimuli were cued and the subjects' task was to respond whether the target stimulus matched the cued stimulus. After the modified Stroop task was performed, the data were analyzed by T-dependent and covariance analysis

Results : results showed that cuing Stroop-like stimuli resulted in significant increase in processing speed compared to no-cue condition both in congruent and incongruent conditions.

Conclusion : Cuing stimuli increases the correct responses in Iconic memory recognition. Therefore, the capacity of the Iconic memory is more than what we can report.

Keywords : Iconic memory, Stroop paradigm, speed processing

Count: 3
Abstract ID: 378
subject: Cognition: Learning and Memory
Presentation Type: Poster

Evaluating effects of maternal separation on morphine-dependency and spatial learning and memory of rats

Submission Author: Fatemeh Aghighi

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Background and Aim : Facing maternal separation during early postnatal life leads to disturbances in the cognitive and neuro-chemical activities of the brain. The aim of this study was to investigate the effect of maternal separation on spatial learning and memory of morphine-dependent rats.

Methods : This experimental study was carried on 40 male 45 days old Wistar rats. Animals were divided into control group (CO), morphine dependent (MD) and 3 groups of rats which maternally separated during 1 (MS1), 2 (MS2) and 3 weeks (MS3) after birth. Except CO rats, the other groups were subcutaneously injected 10 mg/kg morphine every 12 hours for 10 days. At the 11th day signs of withdrawal syndrome were evaluated and during next 4 consecutive days spatial learning was evaluated by Morris water maze (MWM). The rats' spatial memory retrieval was also estimated at the last day

Results : Although morphine dependence did not affects spatial learning and memory of rats, but 3 weeks maternal separation caused the animals spend more time and travel more distance to find the hidden platform than the CO group ($P<0.001$ for both of comparisons). Also, they spent less time and passed less distance in the target quadrant in probe trial ($P<0.001$ for both of comparisons

Conclusion : In conclusion, maternal separation increases morphine dependence during adolescence which impairs spatial learning and memory of rats' offsprings.

Keywords : Maternal Separation, Morphine, Spatial learning, Memory, Rat

Count: 4
Abstract ID: 529
subject: Cognition: Learning and Memory
Presentation Type: Poster

Crocin improves spatial learning, memory deficits and hyperglycemia in the Morris water maze via attenuating cortical oxidative damage in diabetic rats

Submission Author: Bi Bi Marzieh Ahmadi

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Background and Aim : Diabetes is characterized by high glucose concentrations production of reactive oxygen species. The resulting oxidative stress can play a key role in diabetes pathogenesis and development of late complications of diabetes, including retinopathy, nephropathy, cardiovascular diseases and cognitive disorders. The aim of the present study was to investigate the antihyperglycemic effect, protective potential and memory improvement of the saffron extract and crocin in streptozotocin induced-diabetic rats.

Methods : Male Wistar rats (300±30 g) were randomly divided into 7 groups, including: control, diabetic (Streptozotocin, 55mg/kg) and diabetics treated intraperitoneally with crocin (at doses of 15, 30 and 60 mg/kg) or saffron extract (at doses of 50 and 100 mg/kg) for 6 weeks. The blood glucose levels were spectrophotometrically measured in all groups at weeks 0 (before diabetes induction), 3 and 6. Learning and memory was evaluated using Morris water maze during week 6. The levels of thiobarbituric acid reactive substances (TBARS) and total thiol (SH) groups were measured in 10% liver, kidney and cerebral cortex homogenates at the end of 6 th week

Results : Diabetic rats showed an elevated serum glucose level over those of control rats at weeks 3 and 6 ($P<0.001$). Under our experimental conditions, crocin at dose of 60 mg/kg and saffron at dose of 100 mg/kg was found to significantly reduce the blood glucose level in diabetic animals (respectively, $P<0.05$, $P<0.001$) at the end of week 6. In addition, there was a significant increase in TBARS levels in the liver, kidney and cerebral cortex of diabetic animals (respectively, $P<0.001$, $P<0.01$, $P<0.005$) and decrement in total thiol concentrations in the liver of diabetics ($P<0.01$) compared to controls. Treatment of diabetic rats with crocin at doses of 30 and 60 mg/kg for 6 weeks reduced TBARS content in the liver and kidney (respectively, $P<0.01$, $P<0.001$), and crocin at doses of 15 and 30 mg/kg decreased TBARS levels in the cerebral cortex ($P<0.01$) compared to diabetic rats. Treatment of diabetic rats with saffron at doses of 50 and 100 mg/kg did not change the TBARS and total thiol levels in the tissues compared to diabetics. Furthermore, evaluation of cognitive function on Morris water maze showed that the escape latency and traveled distance to find the platform was significantly increased in diabetic animals compared to control ($P<0.001$). Chronic crocin treatment at doses of 15, 30 and 60 mg/kg significantly decreased transfer latency and

distance traveled to find the platform in comparison to diabetic rats ($P<0.005$, $P<0.01$, $P<0.05$). In the probe trial of the Morris water maze study, the time spent in the target quadrant was significantly lower in diabetic animals compared to the control group ($P<0.01$). The rats treated with crocin at doses of 15 and 60 mg/kg spent more time in the target quadrant than the diabetic group ($P<0.05$) in the probe test. However, treatment of diabetic rats with saffron at doses of 50 and 100 mg/kg had no effect on mentioned parameters.

Conclusion : Our findings suggest that crocin has the hypoglycemic, protective and memory improvement properties in streptozotocin-induced diabetes and it can be used with some profit in the treatment of diabetic patients.

Keywords : Crocin, Saffron, memory, Diabetes mellitusthat lead to an increased , Streptozotocin, Hyperglycemia, stress oxidative.

Count: 5
Abstract ID: 216
subject: Cognition: Learning and Memory
Presentation Type: Oral

Sub-chronic curcumin pretreatment ameliorates inhibitory memoryimpairment induced by morphine

Submission Author: Khatereh Kharazmi

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Background and Aim : Curcumin, member of the ginger family and a natural phytochemical derived from the rhizome of Curcuma longa, exhibits a wide range of biological actions, including anti-inflammatory, anti-carcinogenic, and antioxidant activities. Curcumin is widely used in South-east Asia, India and China in food preparation. Accumulating evidence suggests the improving effect of curcumin on cognitive processes, such as learning and memory. In addition, huge bodies of evidence show the impairing effect of morphine on learning and memory, both in human and animal models. Considering the above, there is a hypothesis that curcumin pre-treatment may ameliorate cognitive impairment induced by morphine. The present study has been designed to investigate the effect of curcumin pre-treatment on morphine-induced cognitive impairment in rats.

Methods : Male Wistar rats (180-200 g) were assigned in four groups (8 rats in each group): Control; Curcumin; Morphine and Curcumin + Morphine. Animals were pre-treated with oral curcumin (10 mg/kg/35 days). Post-training morphine injection (7.5 mg/kg/ip) was made one day after the curcumin pre-treatment. Step-through test was used to assess inhibitory avoidance memory. In addition, locomotor activity of animals was assed using open field test. One-way ANOVA and post hoc Tukey tests were used for statistical analyses.

Results : Sub-chronic curcumin pre-treatment improved inhibitory learning and memory in rats with impaired memory induced by the administration of morphine ($p<0.01$). In addition, curcumin pre-treatment had no effect on locomotor activity of animals in open field test ($P>0.05$).

Conclusion : Taken together, our findings indicate that curcumin ameliorates morphine-induced inhibitory memory impairment. More studies are to do for the possible mechanisms involved.

Keywords : Curcuma: inhibitory avoidance memory; Morphine

Count: 6
Abstract ID: 506
subject: Cognition: Learning and Memory
Presentation Type: Poster

The Effects of Nigella Sativa Hydro-alcoholic Extract on Memory and Brain Tissues Oxidative Damage after Repeated Seizures in Rats

Submission Author: Vajiheh Alikhani

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Background and Aim : The role of brain tissues oxidative damage in learning and memory impairments has been well documented. It is also well known that thyroid hormones have a critical role for the brain functions. The purpose of this study was to investigate the role of brain tissues oxidative damage as a possible mechanism of deleterious effects of propylthiouracil (PTU) - induced hypothyroidism on learning and memory in neonatal and juvenile growth in rats.

Methods : Fourteen pregnant female Wistar rats were kept in separate cages. After delivery, they were randomly divided into two groups including control and PTU. Rats in the control group received normal drinking water, whereas the second group received drinking water supplemented with 0.02% PTU from the first day after delivery through the first two months of the life of offspring (the pups of rats). After 60 days, nine male offspring of each group were randomly selected and tested in the Morris water maze (MWM). Then, samples of blood were collected to measure thyroxine. Finally, the brains were removed and total thiol groups and molondialdehyde (MDA) concentrations were determined.

Results : Compared to the control group's offspring, serum thyroxine levels in the PTU group's off spring were significantly low ($P<0.001$). In MWM, the escape latency and traveled path in the PTU group were significantly higher than that in the control group ($P<0.01-P<0.001$). In PTU group, the total thiol concentrations in both cortical and hippocampal tissues were significantly lower and MDA concentrations were higher than control group ($P<0.001$).

Conclusion : It seems that deleterious effect of hypothyroidism during neonatal and juvenile growth on learning and memory is at least in part due to brain tissues oxidative damage.

Keywords : Hypothyroidism, Lactation, Neonatal, Juvenile, Learning, Memory, Oxidative stress

Count: 7
Abstract ID: 306
subject: Cognition: Learning and Memory
Presentation Type: Poster

LOW DOSE ETHANOL-PRECONDITIONING PROTECTS AGAINST PENTYLENETETRAZOLE-INDUCED MEMORY IMPAIRMENT

Submission Author: Azam Alinaghipour

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Background and Aim : Brain injury which is induced by stroke, trauma, hypoxic conditions or epileptic seizures is a leading cause for mortality and long-term disability worldwide. Preconditioning, a phenomenon in which a minor noxious stimulus protects from a subsequent more severe insult, has emerged as a novel experimental strategy for the prevention of brain damage. Preconditioning can be induced by different stimuli like pharmacological agents, hypothermia, hypoxia, and toxic agents (e.g. ethanol). The aim of present study was to examine the effect of ethanol-preconditioning on pentylenetetrazole(PTZ)-induced inhibitory avoidance memory deficit.

Methods : The experiment consisted of four groups of rats: Control, Ethanol (0.5 mg/kg), PTZ (60 mg/kg) Ethanol+PTZ, 9 rats per group. Ethanol was administered 6 days before the injection of PTZ. After the ethanol pre-treatment (preconditioning) the animals were tested in a step-through inhibitory apparatus consisted of two compartments, one light and the other dark compartment. A guillotine door opening was made on the floor in the center of the partition between the two compartments. Stainless steel grids were placed on the floor of the dark compartment to produce foot shock. Intermittent electric shocks (50 Hz, 3 s, 1 mA intensity) were delivered to the grid floor of the dark compartment by an insulated stimulator. The latency (Sec.) for the entrance to the dark chamber on test session is considered as a criterion for memory performance. Moreover, the locomotor activity of the four groups of rats was tested in an open field that consisted of a black plastic arena (90cm×90 cm) that its floor was divided into 10cm×10 cm. On the first session (habituation) the rat was introduced to the field for 5 min. On the next day, the rat was introduced to the same field and the total distance (cm) that the rat traveled during a 5 min session was recorded. One-way ANOVA showed was used for studying the difference between the groups in step-through and open-field experiments.

Results : One-way analysis of variance revealed a significant effect for the ethanol treatment among the groups ($P<0.001$). We found that administration of ETHANOL before PTZ abolished the PTZ-induced memory deficits. According to our findings the dose of ethanol that induced pre-insult protection is orders of magnitude lower than the dose that induced acute conventional effects of ethanol. In addition, One-way ANOVA for the locomotor activity showed no difference between the four groups ($P> 0.05$)

Conclusion : Our results suggest that a pre-conditioning treatment with low doses of ethanol, several days before brain injury, may provide safe and effective long-term neuroprotection. A treatment with such low dose of ethanol may therefore have a potential to provide safe neuroprotection before brain injury without the undesired psychotropic effects of the conventional dose of the drug.

Keywords : Preconditioning, ethanol, memory, PTZ

Count: 8
Abstract ID: 237
subject: Cognition: Learning and Memory
Presentation Type: Poster

Hippocampal AMPA receptor mRNA expression levels downregulates following i.c.v injection of a ghrelin receptor antagonist

Submission Author: Siamak Beheshti

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Background and Aim : We have previously indicated that intracerebroventricular injection of a ghrelin receptor antagonist impairs memory consolidation. However the underlying molecular mechanisms remain unknown. Hippocampal glutamate AMPA receptors play a crucial role on memory formation processes. In the present study we measured the hippocampal AMPA receptor mRNA levels following i.c.v injection of D-Lys-3-GHRP-6.

Methods : Adult male Wistar rats were cannulated in their lateral ventricles. Rats received different doses of D-Lys-3-GHRP-6. The control group received solvent of the drug. 24 Hours later rats were sacrificed and their hippocampus were removed and frozen in liquid nitrogen. A real time PCR method was used to quantify the expression levels of the target gene.

Results : Hippocampal AMPA receptor expression levels down-regulated significantly compared to the control group.

Conclusion : In accordance with the previous reports showing the prominence of AMPA receptors for memory formation, the results of the present study indicates that blocking the ghrelin receptor signaling in the rat brain downregulates the hippocampal AMPA receptor expression levels which might explain a possible mechanism for the impairing effects of D-Lys-3-GHRP-6 on memory formation.

Keywords : D-Lys-3-GHRP-6; Ghrelin; AMPA receptor

Count: 9
Abstract ID: 165
subject: Cognition: Learning and Memory
Presentation Type: Oral

Time profile of the hippocampal ghrelin mRNA expression during memory consolidation

Submission Author: Siamak Beheshti

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Background and Aim : It is well known that ghrelin signaling affects learning and memory formation. Ghrelin is mainly synthetized in the stomach during fasting. However, studies show that there are ghrelinergic neurons inside the brain. Previous reports show that ghrelin by acting on the hippocampal corresponding receptors affect memory formation. The aim of the present study was to investigate the time profile of the hippocampal ghrelin mRNA expression during memory consolidation.

Methods : Adult male Wistar rats were used. A passive avoidance task was used to study memory consolidation. At different time points post-training (1, 3 and 24 hours) the hippocampus of rats were removed. A real-time PCR method was used to measure the expression levels of the target gene.

Results : Hippocampal ghrelin mRNA expression levels upregulated at 24 h after initiation of the memory consolidation.

Conclusion : The results indicate for the first time that the hippocampal ghrelin expression levels upregulate during the process of memory consolidation and reinforce the hypothesis that the brain ghrelin might be responsible for its improving effects on memory consolidation rather than the ghrelin of the blood stream.

Keywords : Ghrelin; Hippocampus; Memory consolidation

Count: 10
Abstract ID: 374
subject: Cognition: Learning and Memory
Presentation Type: Oral

Role of infralimbic dopamine D2 receptor in corticosterone-induced facilitation of auditory fear memory extinction in rats

Submission Author: Masoumeh Dadkhah

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Background and Aim : Medial prefrontal cortex (mPFC) and especially infralimbic sub-region (IL) with extensive bidirectional connections, play key roles in fear and fear extinction processing. Extinction that is defined as a decline in conditioned fear responses in the absence of aversive conditioned stimulus. Previous research in rodents has pointed towards a role for brain glucocorticoids and dopaminergic activity within the infralimbic in fear memory extinction. Surprisingly, despite of the dopaminergic activity in fear extinction, its interaction with glucocorticoid receptors is not explored. Here, we dissociated the whether dopaminergic activity (D2 receptor) within the IL is required for mediation the facilitating effects of corticosterone (CORT) as a glucocorticoid receptor ligand on memory acquisition for auditory fear conditioning (AFC) task.

Methods : Male Wistar rats were trained for auditory fear conditioning and then divided into four groups: Vehicle-Vehicle, Sulpiride-Vehicle, Vehicle- CORT, Sulpiride- CORT (n= 10, per group). After training, animals subjected to CORT (20 ng/0.5 µl/ per side) and D2 receptor antagonist, SUL 500 ng/0.5 µl/ per side microinfused in IL and AFC paradigm were used.

Results : Here, we show that facilitatory effects of CORT on fear extinction. ANOVA for repeated measure showed significant difference between saline and RU38486 infused groups ($P < 0.05$). But Intra-IL infusion of SUL, changed CORT -induced enhancement of fear extinction. However, intra-IL infusion of RU38486, was effective. These findings provide evidence for the involvement of D2 receptors in area IL in RU38486-induced facilitation of contextual fear memory extinction.

Conclusion : Collectively, the findings of the present study demonstrate that the DA D2 receptors located in the IL cortex of the mPFC play a critical role in the glucocorticoid-induced enhancement of fear memory extinction.

Keywords : Dopamine receptors, Infralimbic area, Glucocorticoid, Auditoey fear conditioning

Count: 11
Abstract ID: 56
subject: Cognition: Learning and Memory
Presentation Type: Oral

Involvement of prefrontal cortex signaling pathways in stress-induced memory impairment

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Background and Aim : Stress has effects on the different aspects of life especially learning and memory processes. The stressful situation activates the sympathetic nervous system and the hypothalamus-pituitary-adrenal (HPA) axis. The prefrontal cortex is one of the important brain areas that plays a vital role in memory formation, and it is also an area that is very susceptible to stress. A large body of evidence indicated the alteration of brain-derived neurotrophic factor (BDNF), c-Fos and cAMP response element binding protein (CREB) during learning-related events. Considering these, the aim of the present study was to investigate the prefrontal cortex signaling pathways in stress induced memory impairment.

Methods : A step-through passive avoidance task was used to assess memory performance in male Wistar rats (200-220 g). An elevated platform (EP) apparatus was also used to induce stress. The alterations in the p-CREB/CREB ratio, and the levels of C-Fos and BDNF in the prefrontal cortex were examined by Western blot analysis.

Results : The results showed that post train exposure to acute stress dose-dependently induced amnesia and reduced the hippocampal p-CREB/CREB ratio and the levels of c-fos and BDNF.

Conclusion : Taken together, these findings suggest that the exposure to the acute stress induces memory impairment possibly via the attenuating of the p-CREB/CREB ratio, c-fos and BDNF levels in the prefrontal cortex of the rats.

Keywords : Stress; Prefrontal cortex; BDNF; CREB; Rat(s)

Count: 12
Abstract ID: 149
subject: Cognition: Learning and Memory
Presentation Type: Poster

Gold nanoparticles improve the working memory in mice

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Background and Aim : Memory is a mechanism for encoding, storing, and recalling information. Dementia is caused by various reasons, including diseases such as Alzheimer's disease, Lewy bodies and others leading to cognitive impairment and memory loss. There is currently no definitive treatment for this issue. Scientists are looking for compounds that can improve memory without harming the human body especially brain tissue. Considering the effective role of gold nanoparticles in the improvement of Parkinson's and brain neurodegeneration diseases and its application in drug delivery systems, we tried to evaluate the effect of gold nanoparticles on improvement of working memory in mice.

Methods : In this study, experimental groups of NMRI mice (n=10 in each group) were treated orally (1 mg/kg) with gold nanoparticles in 10 nm, 20 nm diameter and gold salt for 14 days. Sub-acute effects of gold nanoparticles on short-term memory (working memory) of different groups were evaluated and compared to a control group, using Y-maze test. Besides, the open field test was also carried out to determine how gold nanoparticles affect locomotor activity of mice.

Results : The result of our study indicates that gold nanoparticles in 20nm diameter can improve the working memory of animals by increasing the percentage of spontaneous alternation of mice comparing to the control group. These nanoparticles also have no effect on the locomotor activity of mice.

Conclusion : It seems that gold nanoparticles can be considered as memory improving agents, but future studies should be carried out to reveal the toxic effects of these agents on the central nervous system.

Keywords : Gold; Nanoparticles; Working memory; Y-maze; Mice

Count: 13
Abstract ID: 245
subject: Cognition: Learning and Memory
Presentation Type: Poster

The effect of nobiletin on learning and memory in amyloid beta-induced model of Alzheimer's disease in the rat

Submission Author: Marzieh Fakour

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Background and Aim : Introduction:Alzheimer's disease (AD) is the most common form of dementia that is considered a chronic and progressive syndrome, characterized by impaired cognitive capacity beyond what could be considered a sequence of normal aging, that affects memory, thinking, comprehension, orientation, learning language and judgment. AD is an age dependent disease that leads to the irreversible loss of neurons, particularly in the cortex and hippocampus. Although intensive laboratory and clinical researches have done during the last three decades, but unfortunately pharmacological options for the prevention and effective long-term treatment of AD are not currently available. Previous studies have shown that nobiletin, a polymethoxylated flavone from the peel of citrus, has anti-dementia activity, therefore, in this study we considered whether nobiletin has any effect on memory and learning in amyloid beta-induced model of AD.

Methods : Methods:To get the purpose of this study, 32 rats were randomly divided into four groups as follows: group A (Sham), group B (sham+nobiletin), which were administrated nobiletin (10 mg/kg) daily one hour after surgery for one week via gavage, group C (lesion): which amyloid β1-40 (2 nanomol/2 µl) was injected into hippocampal region (CA1) bilaterally, and group D (lesion+ nobiletin), which were administrated nobiletin (10 mg/kg). Furthermore, three behavioral tests were used including Y-maze alternation to measure working memory, passive avoidance task that is a fear-aggravated test to assess learning and memory and novel object recognition (NOR) task to evaluate cognition, particularly recognition memory.

Results : Results:The results showed that group C has significant reduction regarding alternation, step-through latency and discrimination ratio comparing with the sham group. Moreover, Aβ group which was treated with nobiletin exhibited significant improvement of the aforementioned parameters. Meanwhile, no significant changes were observed in nobiletin-treated sham group.

Conclusion : Conclusion:Taken together, these findings suggest that nobiletin could improve memory and learning impairment in amyloid beta-induced model of AD in the rat.

Keywords : Keywords: Alzheimer's disease, Amyloid beta, Nobiletin, Y-maze, Passive avoidance, Novel object recognition

Count: 14
Abstract ID: 466
subject: Cognition: Learning and Memory
Presentation Type: Poster

Investigation of Bdnf and TrkB genes expression in the presence and lack of Fish oil treatment in male rats hippocampus region following memory damage caused REM sleep deprivation

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Background and Aim : Sleep is composing of two distinct: Rapid Eye Movements phase (REM) and Non-Rapid Eye Movement (NREM) which have unique features with the ability to adjust by separate neural centers. Sleep plays a key role in memory processing by using the REM phase which is important to generate memories and also learning as a part of the sleep cycle. Sleep deprivation which is known as one of the most serious problems in developed countries, causes many disorders, especially abnormalities of consciousness and memory. Brain and its different nuclei and segments are the only major player in learning and producing memory. It has been argued that the most important nucleus which is responsible for the process of memorizing in the brain is called “Hippocampus”. Many genes have their own proteins which are responsible for memory creation. One of them is the gene-derived brain-derived neurotrophic factor (BDNF), which increases the transmission efficiency of the stimulant and enhances the synaptic plasticity that supports memory and cognition. The TRKB gene, which is the coding for the BDNF protein receptor, also plays a vital role in the process of memory formation. Marine foods are rich in unsaturated fatty acids of the omega family. Fish oil (FO) is, also, known to have high levels of omega-3, which is worked as a developer of the central nervous system. The effect of these unsaturated fatty acids on the change in the expression of different genes at different tissues has also been proven.

Methods : In this study, we investigated the effect of fish oil on changes in Bdnf gene expression (neuronal factor gene) and its receptor gene (Trk-B) in the hippocampus of male rats by using Real-Time PCR technique. In this research, rats were divided into five groups. Which included: control, sham (under stress), Sham was treated by FO, deprived of REM sleep and Deprived REM sleep-treated by FO. Then, the RNA was extracted from the tissue of the hippocampus and from that cDNA was made. Real-Time PCR reaction was performed for each cDNA sample. Finally, the gene expression was analyzed using GEnEX software.

Results : The findings showed that the expression of Bdnf gene in Sham, Sham-treated by FO, and REM sleep-deprived groups were not significantly different from the control group. But the expression of the Bdnf gene in the deprived of REM sleep treated by FO group increased compared with the REM sleep-deprived group. In Trk-B gene, there was no significant difference between sham and sham-treated by FO groups with the control group. But the comparison between the deprived REM sleep group and control group showed a significant decrease in Trk-B gene expression in deprived REM sleep group compared to the control group. Also, Trk-B showed a significant increase in deprived REM sleep treated by FO group compared with the deprived REM sleep group.

Conclusion : It can be concluded that (FO) contributes to the improvement of neuronal and memory damage by affecting cellular and molecular mechanisms and increasing the expression of Bdnf and Trk-B genes in REM sleep deprived rats.

Keywords : Sleep deprivation, REM sleep, Memory, Hippocampus, Fish oil, Rat

Count: 15
Abstract ID: 400
subject: Cognition: Learning and Memory
Presentation Type: Poster

Effect of ghrelin on the cognitive function and apoptosis pathway in methamphetamine received male rats

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Background and Aim : Methamphetamine, a psychostimulant and one of the amphetamines subset, affects the central nervous system and reduces cognitive function so that users experience memory deficits and apoptotic complications. The neuroprotective effect of ghrelin has been shown in various diseases and multiple parts of the brain, including hippocampus. Previous studies have shown that ghrelin improves learning and memory by various mechanisms in the hippocampus. This study aimed to investigate the effects of ghrelin on cognitive function and apoptosis pathway in methamphetamine-received male rats.

Methods : Sixty adult male Wistar rats were used in this study which were divided into six groups (10 in each group): Saline/Saline (S-S), Saline/Ghrelin (S-G), Methamphetamine/Simultaneous Saline (M-SS), Methamphetamine/Simultaneous Ghrelin (M-SG), Methamphetamine/Delayed Saline (M-DS), and Methamphetamine/Delayed ghrelin (M-DG). Methamphetamine(5mg/kg) and ghrelin (5nm/kg) were injected intrapreritonealy. Spatial and passive avoidance memories and hippocampal apoptosis were evaluated by MWM, Shuttel box, and Tunnel assay respectively. Expression levels of Caspase 3, Cytochrome C, Bax/Bcl-2 ratio were also evaluated by western blotting.

Results : our results showed that time spent in the target quadrant in both MSS and MDS groups was significantly ($P<0.05$) less than control group. whereas delayed ghrelin treatment could significantly ($p<0.05$) increase it. Moreover, none of the initial latency (IL) and step through latency (STL) parameters of passive avoidance test were significant between groups. Tunnel assay showed a significant ($p<0.001$) increase of apoptosis in methamphetamine-received animals, however, ghrelin treatment significantly ($p<0.001$) decreased apoptosis. Expression levels of Caspase 3, Cytochrome C, and Bax/Bcl-2 ratio were significantly ($p<0.001$) more than control group in methamphetamine-received groups. However, ghrelin treatment significantly ($p<0.001$) decreased these parameters.

Conclusion : These results indicated that ghrelin treatment could improve cognitive function and decrease expression of apoptosis mediators and apoptosis in the hippocampus of methamphetamine-received animals.

Keywords : Methamphetamine; Acylated ghrelin; Memory; Apoptosis; Hippocampus

Count: 16
Abstract ID: 371
subject: Cognition: Learning and Memory
Presentation Type: Poster

The effect of CA1 5HT3 receptors in fear memory and anxiolytic-like behaviors induced by cannabinoids

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Background and Aim : : Cannabinoids, exert their biological effects by interacting with specific receptors (CB1 and CB2, CB3 receptors). Progress is being made in development of novel agonists and antagonists with receptor subtype selectivity which should help to understanding the physiological and pathological functions of the endocannabinoid system. The psychoactive cannabinoid compounds cause a wide. 5HT3 inhibits or excites conditioning fear, by controlling the signal connection in “PTSD” or “Phobia” states.The aim of present study is clarifying the interaction between the hippocampal serotonin (5-HT3) receptor and the cannabinoid CB1 receptor in the acquisition of fear memory and anxiety.

Methods : : Adult male NMRI mice (25-30gr) anesthetized with intra-peritoneal injection of ketamine hydrochloride plus xylazine. Two cannulas were placed 1 mm above the CA1 region of dorsal hippocampus by stereotaxic apparatus. Seven days after surgery. The drugs (2- M-Chlorophenyl as a 5-HT3 receptor agonist and Y-25130 as a 5-HT3 receptor antagonist) injected into CA1 (bilaterally) in a total volume of 1µl/mouse (0.5 µl in each side) before training (pre-train) in fear conditioning task. During training, mice were placed in a square Plexiglas chamber (25 cm×25 cm×25 cm) with an electrifiable grid floor consisting of parallel stainless steel rods (0.3 cm diameter spaced 1 cm apart), and were typically allowed to explore the chamber freely for 120 seconds. Thereafter, a tone (conditioned stimulus [CS], 4 kHz, 35 dB) was presented for 30 seconds, and a foot shock (unconditioned stimulus [US], 1 mA, 50 Hz) was given to the mice during the last two seconds of the sound After 24 hours Fear conditioning task and hole board apparatus was used for the assessment of the fear memory and exploratory-like behaviors (anxiety) respectively.

Results : : according to examines statistical analysis, pre-training intraperitoneal administration of ACPA (Arachidonylcyclopropylamide) (0.05 and 0.5 mg/kg) decreased the percentage of freezing time in both context- and tone-dependent fear conditions but didn’t alter the head dip number in hole board . So it causes impairment of fear memory and amnesia but didn’t effect on anxiety. Moreover, pre-train intra-CA1 microinjection of a subthreshold dose (0.01µg/mouse) of 5-HT3 receptor agonist (2- M-Chlorophenyl), and 5-HT3 receptor antagonist (Y-25130) did not alter the fear learning and anxiety in saline treated mice. while the subthreshold dose of 2- M-

Chlorophenyl increases the impairment of the acquisition of fear memory in ACPA-treated mice without any effect on head dip number.and the subthreshold dose of Y-25130 restored the acquisition of fear memory deficit induced by ACPA in ACPA-treated mice with no observable effects on anxiety.

Conclusion : our results showed that ionotropic receptor of serotonergic system (5HT3) in the CA1 of hippocampus induced by ACPA, interferes in impairment of fear memory but doesn't interfere on anxiety. We suggest that the hippocampal 5-HT3 serotonergic system modulates cannabinoid signaling induced by the activation of CB1 receptors in conditioned fear while the anxiety isn’t affected in this process.

Keywords : ACPA, Dorsal hippocampus, 5HT3, Fear memory, Fear conditioning, Hole board

Count: 17
Abstract ID: 614
subject: Cognition: Learning and Memory
Presentation Type: Poster

Improving effect of spirulina microalgae on memory deficit induced by scopolamine in male pup rats

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Background and Aim : It has been shown that spirulina plathensis microalgae have medicinal properties. There are no reports about its effect on learning and memory in female pup's rat. We hypothesized that spirulina plathensis can enhance memory consolidation in rats. This study was conducted to investigate the effect of Spirulina on Scopolamine-induced memory impairment in female pup rats.

Methods : In this study 66 male pup's rat, 30 days old were randomly divided into ten groups (6-8 rats in each group). Spirulina intragastrically was administered daily for 12 days by a gavage tube. For inducing memory deficit, Scopolamine (2 mg/kg) was used intraperitoneally immediately after training. To evaluate memory consolidation, pup's rat were trained in an inhibitory avoidance (IA) task (0.7 mA, 3s footshock). For habituation to apparatus, each rat was placed in the illuminated compartment and the guillotine door was raised 3s later. After entering to the dark compartment, animals were transferred into the home cage. 30 minutes later, rats were trained in IA task. Consolidation of memory was examined 24 h later during which the latency to re-enter to the dark compartment was recorded. This latency time was considered as the measure of memory retention.

Results : The results showed that Spirulina microalgae improves memory deficit due to scopolamine. Our results revealed that spirulina at a dose of 200 and 400 mg/kg significantly increases latency time to entering into the dark compartment in memory impaired group compared to control group.

Conclusion : It can be concluded that Spirulina microalgae has a role in improving memory deficit.

Keywords : Memory consolidation, Pups rat, Scopolamine, Spirulina microalgae

Count: 18
Abstract ID: 298
subject: Cognition: Learning and Memory
Presentation Type: Poster

The possible effects of memantine (NMDA antagonist) on prevention of retrieval and reconsolidation of methamphetamine reward memory in rat

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Background and Aim : Considering the fact that addicitve behavior elicit through the neural mechanisms of learning and memory, it would not be surprising that NMDA receptors play an important role in specific aspects of drug reward memory. So,it be susceptible to interference following retrieval/reconsolidation of methamphetamine-related reward memory. The purpose of this study was to examine whether memantine, a NMDA receptor antagonist, would disrupt the consolidation and reconsolidation of methamphetamine-related reward memory, using conditioned place preference paradigm (CPP).

Methods : Separate groups of male Wistars rats were trained to acquire methamphetamine CPP. Vehicle or memantine (20 mg/kg, i.p.) was given at different time points: immediately after each CPP training session (consolidation), 30 min before the reactivation of CPP (retrieval), or immediately after the reactivation of CPP (reconsolidation). Methamphetamine CPP was retested 24 h and 1 and 2 weeks after rimonabant administration.

Results : memantine significantly inhibited the consolidation of methamphetamine CPP. Also , memantine disrupted the retrieval and reconsolidation of methamphetamine CPP. memantine had no effect on methamphetamine CPP in the absence of methamphetamine CPP reactivation.

Conclusion : Our findings suggest that NMDA receptors play a major role in methamphetamine reward memory, and NMDA receptors antagonists may be a potential pharmacotherapy to manage relapse associated with drug-reward-related memory.

Keywords : NMDA receptors antagonist . Conditioned place preference . Methamphetamine . Consolidation . Reconsolidation

Count: 19
Abstract ID: 411
subject: Cognition: Learning and Memory
Presentation Type: Poster

Therapeutic effects of thymoquinone on cognition, axiety-like and locomotion behaviors in Thioacetamide - induced hepatic encephalopathy in rats.

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Background and Aim : Hepatic encephalopathy (HE) is a neuropsychiatric syndrome that causes brain disturbances, ranging from behavioral alterations as confusion or depressed consciousness to ataxia and coma. Thioacetamide (TAA), a selective hepatotoxin, is well known to induce progressive hepatic disorders with the parallel involvement of the brain. Thymoquinone (TQ) formed mainly 30–48% of Nigella sativa. TQ has wide spectrum of activity as antioxidant, antiinflammatory, anticancer, antidiabetic and antibacterial. The aim of this study was to assess the effects of TQ on behavioral tests, including locomotion, anxiety – like and memory on rats with TAA-induced liver damage and hepatic encephalopathy.

Methods : HE was induced by intraperitoneal injection of TAA (200 mg/kg) once every two days for consecutive 14 days. Male Wistar rats were divided into 5 groups randomly: 1) Control; received normal saline. 2) HE; received TAA (200 mg/kg). 3) HE + TQ5. 4) HE + TQ10. 5) HE + TQ 20 (mg/kg, i.p. for 7 days after HE induction). Shuttle box, elevated-plus-maze (EPM) and open-field (OF) tests performed to evaluate the behavioral changes. Data were analyzed by one-way ANOVA followed by Tukey's post hoc test and changes with p value less than 0.05 assign as significant difference

Results : Data showed that HE induction shortened step through latency (STL) in shuttle box and the time spent in the open arms of the EPM ($P< 0.01$). TQ administration prolonged STL as improving the memory in a dose dependent manner ($P<0.05$) and also improved anxiety – like behavior in EPM and the locomotion in OF tests when compared with HE group ($P<0.001$).

Conclusion : Our results showed that HE caused memory and locomotion impairment and increased anxiety in rats. Administration of TQ after HE induction exhibits therapeutic potential to improve short-term memory, locomotion activity which is most likely related at least to its antioxidative and free radical scavenging actions

Keywords : Hepatic encephalopathy; Thioacetamide; Thymoquinone; passive avoidance memory; anxiety; locomotion

Count: 20
Abstract ID: 242
subject: Cognition: Learning and Memory
Presentation Type: Poster

Effect of parasiteon memory and neuronal cells

Submission Author: Samin Hakimi

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Background and Aim : The electromagnetic wave noise is microwave, which is from satellite waves but stronger than that. This causes the satellite signal to interfere.The ability to remember what is learned or experienced is called memory or the ability to act as a recallThe aim of this study was to investigate the effect of microwave waves and parasites on neural cells and the effects of waves on memory and brain function.

Methods : We compiled the articles by reviewing the related key words in this subject published at and google scholar and science direct since 2008

Results : According to studies conducted, electromagnetic waves of electromagnetism can disturb memory as the brain continually receives electromagnetic waves, and all the information that comes from the environment is converted into electromagnetic waves and is received by the brain. But frequencies above the range of cerebral fractures can affect memory. In fact, memory is a network that works with a protein. Disturbing the waves of the movement of this protein and preventing data from being transmitted to the next cell results in disrupted memory function. Also, according to a study conducted on a (kind of rat), a change in learning ability and spatial memory errors were reported from exposure to these waves.

Conclusion : Since research has shown that irradiation waves can reduce brain and memory function and impair memory and learning ability and endanger the health of the brain and its cells. Therefore, by conducting a wider investigation, these waves of people's lives should be helped.

Keywords : Memory, electromagnetic, brain, parasite

Count: 21
Abstract ID: 395
subject: Cognition: Learning and Memory
Presentation Type: Poster

Increased plasma ghrelin level could not prevent induced memory impairment by nutrition stress (high/ low calorie)

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Background and Aim : Several lines of evidence strongly have indicated that ghrelin hormone increases memory retention. It was also found that dietary composition/calorie content has important role in control of ghrelin secretion as well as neuronal function particular memory processing. In this study investigated the relation between endogenous ghrelin response to different fat diets and memory performance.

Methods : In this experimental study, thirty male Wistar rats (180-200¬gr) were distributed into three groups (n=10) with different caloric intake in 3 types; high fat, standard (control) and restricted diet for 16 days. Plasma ghrelin levels were determined by tail blood sampling technique on 0, 8 and 16 fasted days. At the end of study, initial and step-through latencies were evaluated by using the passive avoidance test for learning and memory evaluation.

Results : Plasma ghrelin levels were significantly different among all groups over the course of 16 d, the standard feeding rats having the lowest ghrelin levels on 8d ($p < 0.05$), and the restricted feeding rat having the highest ghrelin levels on 16d($p < 0.05$). It was worthy to mention that the high fat group showed ghrelin levels as much as the control group at the end of experiment exception restricted diet that reached to a peak of ghrelin secretion. After 16 days, rats on the high fat and restricted feeding displayed significantly memory retention impairment compared to control group.

Conclusion : In general, current findings indicated the memory retention impairment in the high fat and restricted groups despite of similarity in plasma ghrelin levels as protective factor for memory assessment. These findings may be due to cellular stress induced nutrition (in high/ low caloric) on impaired learning and memory, although compensatory mechanisms such as ghrelin response attempt to recover the cellular injury.

Keywords : Memory; Ghrelin; Nutrition stress; Passive avoidance; Rat.

Count: 22
Abstract ID: 290
subject: Cognition: Learning and Memory
Presentation Type: Poster

Study the role of cathodal trans cranial direct current stimulation upon the left prefrontal region on conditional fear memory changes induced by lithium injection male mice

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Background and Aim : In recent years, there has been an increasing interest in brain stimulation methods such as tDCs,TMS,DBS. Along with this growth in brain stimulation methods, however, there is increasing concern over trans cranial direct current stimulation(tDCs) such as noninvasive method that uses widely in clinical approaches with effective protocol and neuroscience studies which biological bases and effects on neurotransmitters pathways that its persistence on cognitive functions like memory (fear memory).Lithium chloride clinically used to treat mental diseases however it has cognitive impairment side effects like memory deficit within some dosage. The aim of the paper is to provide a conceptual theoretical framework based on behavioral and cognitive effects of tDCs on memory changes induced by Lithium in male mice.

Methods : The methodological approach taken in this study is a mixed methodology based on previous studies in animal models. We used fear memory setup which was design based on Pavlovian's methods. A major problem with the previous experimental method is that was designing for Rat and it is not efficient for mice model and it wasn't competence based on tDCs protocols and subjects can move freely during stimulation, so we designed especially for this study and we have 4 groups (1:saline-L-cathodal tDCs ,2: Li-L-cathodal tDCs,3:Lithium,4:saline)which was sugared for implantation of electrode on Left prefrontal, after 7days recovery they had 3 consecutive days Lithium/saline IP injection and for 20min with 2mA cathodal tDCs, fourth day, trained in fear condition and finally the day after which tested their memory persistency factors(freezing-grooming and rearing time) in the fear conditioning and compared them with SPSS(one way ANOVA).

Results : A two-way ANOVA revealed that at least one of our groups in fear memory components(freezing-rearing-grooming) has significant differences in freezing and rearing (freezing; p=0.002,rearing; p=0.009,grooming;p=0.015) Post hoc analysis revealed that during Li injection freezing time in second context which has different context with the same sound of train session has significant different with forth group had Li

injection and tDCs in context without sound(freezing, p=0.018).Mean of freezing time during Li(context) group and Li,tDCs(context) shows tDCs increases memory and Li(contex) has the lowest memory in comparison of control group and groups with tDCs. In summary, these results show that Lithium has destructive effect on memory otherwise tDCs can improve memory.

Conclusion : The results of this study indicate that cathodal trans cranial direct current stimulation upon the left prefrontal increased memory and reduced Lithium side effects on memory consolidation. However, the observed difference between control(saline) and control tDCs(saline) in this study was not significant.

Keywords : tDCs, anode, cathode, left, fear memory, PFC

Count: 23
Abstract ID: 130
subject: Cognition: Learning and Memory
Presentation Type: Oral

Cross-frequency coupling and synaptic efficiency

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Background and Aim : One of the central questions in neuroscience is how neural activity is coordinated across different spatial and temporal scales. As larger populations oscillate and synchronize at lower frequencies and smaller ensembles are active at higher frequencies, cross-frequency coupling (CFC) would facilitate flexible coordination of neural activity in time and space.

Methods : Thus, CFC may serve as a mechanism to transfer information from large-scale brain networks operating at behavioral timescales to the fast, local cortical processing required for effective computation and synaptic modification, and integrating functional systems across multiple spatiotemporal scales.

Results : However, changes in CFC patterns have been linked to certain neurological and mental disorders such as Parkinson's disease, schizophrenia. Studies showed that CFC has functional roles in neural information processing and cognition including learning and memory. Published peppers showed that the theta-gamma CFC in hippocampus reflect memory process and synaptic plasticity. For example, synaptic plasticity on CA3-CA1 pathway was reduced in line with the decreased CFC strength from CA3 to CA1.

Conclusion : It seems that CFC indicator probably be used as a measure of synaptic efficiency (LTP/LTD).

Keywords : Cross frequency; Synaptic plasticity; Hippocampus

Count: 24
Abstract ID: 10
subject: Cognition: Learning and Memory
Presentation Type: Oral

Cross state-dependency of learning between arachidonylcyclopropylamide (ACPA) and muscimol in the mouse dorsal hippocampus

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Background and Aim : Considering that CB1 receptors are highly expressed in brain reward circuitry, and GABAergic mechanisms have an important role in cannabinoid-induced reward effects and reward-associated learning and that state-dependent learning (SDL) may be a form of reward-associated learning,the main aims of the present study were to investigate the effects of (1) ACPA on memory retrieval and state of memory, (2) muscimol on memory retrieval and state of memory, and (3) the functional interaction between muscimol and ACPA in memory retrieval (cross SDL between ACPA and muscimol) in a step-down inhibitory avoidance learning task in male adult mice.

Methods : A single-trial step-down passive avoidance task was used for the assessment of memory retention in adult male NMRI mice. The dorsal hippocampal CA1 regions of adult male NMRI mice were bilaterally cannulated, and all drugs were microinjected into the intended sites of injection.

Results : Post-training and/or pre-test administration of ACPA (1 and 2 ng/mouse) dose-dependently induced amnesia. Pre-test microinjection of the same doses of ACPA reversed the post-training ACPA-induced amnesia. This event has been named ACPA state-dependent learning (SDL). Post-training and/or pre-test microinjection of muscimol (0.05 and 0.1 µg/mouse) dose-dependently induced amnesia. Pre-test administration of the same doses of muscimol reversed the post-training muscimol-induced amnesia, suggesting muscimol SDL. The amnesia induced by post-training administration of ACPA was reversed by pre-test administration of muscimol (0.05 and 0.1 µg/mouse). Furthermore, the pre-test microinjection of muscimol (0.025 and 0.05 µg/mouse) with an ineffective dose of ACPA (0.5 ng/mouse) significantly restored memory retrieval and induced ACPA SDL. In another series of experiments, the amnesia induced by post-training administration of muscimol was reversed by pre-test administration of ACPA (1 and 2 ng/mouse). Moreover, pre-test microinjection of ACPA (0.5 and 1 ng/mouse) with an ineffective dose of muscimol (0.025 µg/mouse) significantly restored memory retrieval and induced muscimol SDL. It is important to note that pre-test intra-CA1 injection of a selective GABAA receptor antagonist, bicuculline (0.125 and 0.25 µg/mouse), 5 min before the administration of muscimol (0.1 µg/mouse) or ACPA (2 ng/mouse) dose-dependently inhibited muscimol- and ACPA-induced SDL, respectively. Pre-test intra-CA1 administration of bicuculline (0.0625, 0.125 and 0.25 µg/mouse) by itself did not affect memory retention.

Conclusion : In conclusion, the data strongly revealed a cross SDL among ACPA and muscimol in the dorsal hippocampal CA1 regions.

Keywords : ACPA; Muscimol; Bicuculline; State-dependent learning; Dorsal hippocampus; Mouse

Count: 25
Abstract ID: 55
subject: Cognition: Learning and Memory
Presentation Type: Poster

Regulation of learning and memory by proinflammatory cytokines

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Background and Aim : Cytokines are regulators of host responses to infection, immune responses, inflammation, and trauma. Some cytokines act to make disease worse (proinflammatory), whereas others serve to reduce inflammation and promote healing (anti-inflammatory). Proinflammatory cytokines such as interleukin 1, interleukin 6, and Tumor necrosis factor alpha are also produced by neuron and glia cells. Recent studies had demonstrated that manipulations of individual cytokines can modulate learning, memory, and synaptic plasticity. In this review, the role of cytokines and their downstream signaling cascades on the modulation of learning and memory is described.

Methods : We conducted a vast review to consider the correlation between proinflammatory cytokines and learning and memory. Articles with keywords cytokines, interleukin 1, interleukin 6, Tumor necrosis factor alpha, learning and memory, memory impairment and amnesia have been searched in google scholars, PubMed and Springer within years 2000 until now. These keywords exist in the title and whole sections of article's texts.

Results : Results suggest that high levels of Proinflammatory cytokines such as interleukin 1, interleukin 6, and Tumor necrosis factor alpha are involve with memory impairment. Interleukin 1 has a reverse U-shape effect on memory and very low and very high level of interleukin 1 can impair memory formation. In other hand, interleukin 6 and Tumor necrosis factor alpha can impair memory formation in a dose dependent manner.

Conclusion : Taken together, this study suggests that proinflammation cytokines produced during inflammation and stressful situations can impair cognitive functions.

Keywords : inflammation, cytokines, interleukin, Tumor necrosis factor alpha, learning and memory

Count: 26
Abstract ID: 60
subject: Cognition: Learning and Memory
Presentation Type: Poster

Naringenin ameliorates learning and memory impairment following systemic lipopolysaccharide challenge in the rat

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Background and Aim : Systemic inflammation following infection is usually associated with long-term complications including cognitive deficit and dementia. Neuroinflammation and cognitive decline are also main hallmarks of several neurological conditions. Naringenin is a citrus flavanone with anti-inflammatory, neuroprotective, and antioxidant potential. In this study, the protective effect of naringenin against lipopolysaccharide (LPS)-induced cognitive decline was evaluated in the rat.

Methods : LPS was daily injected at a dose of 167 µg/kg for 1 week and naringenin was administered p.o. at doses of 25, 50, or 100 mg/kg/day.

Results : Treatment of LPS-injected rats with naringenin dose-dependently improved spatial recognition memory in Y maze, discrimination ratio in novel object discrimination task, and retention and recall capability in passive avoidance test.

Conclusion : Taken together, naringenin could alleviate LPS-induced cognitive deficits.

Keywords : Naringenin; Lipopolysaccharide; Learning and memory; Cognition

Count: 27
Abstract ID: 510
subject: Cognition: Learning and Memory
Presentation Type: Oral

Neuroprotective effect of chrysin on cognitive, brain electrophysiology deficits and lipid peroxidation in animal model of cerebral ischemia/reperfusion

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Background and Aim : Cerebral ischemia/reperfusion (I/R) induces brain injury due to stress oxidative and neuronal death result in decay the brain hippocampus electrophysiology followed by cognition impairment. Chrysin, a natural substance with multiple biological effects has been suggested to be neuroprotective after stroke. The aim of the present study was to investigate the effects of chrysin on passive avoidance task (PAT) as a short-term memory, hippocampal long-term potentiation (LTP) and brain tissue oxidative stress of rats with cerebral ischemia/reperfusion (I/R).

Methods : Twenthy eight adult male Wistar rats (300±20g) were divided into four groups: 1) sham-operated, 2) Transient global cerebral ischemia/reperfusion (TGCI) and 3) chrysin 10 mg/kg + TGCI, 4) chrysin 30 mg/kg + TGCI. Rats in all groups pretreated by vehicle (DMSO 5%,) or chrysin (10 or 30 mg/kg) by gavage once daily for 21 consecutive days before I/R induction. In order to induction of TGCI, the bilateral common carotid arteries (BCCA) were clipped for 20 minutes. 72 hours after TGCI, PAT in shuttle box and in vivo LTP recording from brain hippocampal dentate gyrus (hDG) were done. LTP was recorded during 5, 15, 30, 45 and 120 min after high frequency stimulation (HFS) respectively. Amplitude and slope of fEPSP were measured. At the end of behavioral and LTP tests, brain was removed from skull following irreversible deep anesthesia of rats to measure the brain tissue level of lipid per-oxidation (MDA) by Elisa kit.

Results : : Data showed that memory and population spikes (PS) amplitude and fEPSP slope were lowered significantly in rats with TGCI compared to the sham group (***$P < 0.001$). Level of MDA in brain tissue in TGCI was higher than sham significantly (***$p<0.001$). Pretreatment of injured rats with chrysin (30 mg/kg, gavage)

attenuated cognitive deficits (**p<0.01) and reversed amplitude of PS (***P<0.001) and fEPSP slope (**P<0.01) after HFS significantly. Crysin also lowered the level of MDA level in brain tissue of TGCI group significantly (**p<0.01).

Conclusion : Our findings indicate that chrysin by decreasing the stress oxidative due to cerebral I/R thereby improved synaptic plasticity as a main mechanism for memory formation in hippocampus and leading to improves memory performance. So, these results provide useful information for considering chrysin as an alternative treatment choice for cerebrovascular insufficiency states.

Keywords : Chrysin; Cerebral Ischemia/Reperfusion; LTP; fEPSP; MDA; Rat

Count: 28
Abstract ID: 475
subject: Cognition: Learning and Memory
Presentation Type: Oral

Behavioral study of acute and chronic modafinil, on ecstasy neurotoxicity in male and female rats

Submission Author: Golshad Kowsari

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Background and Aim : Since ecstasy as a psychoactive drug has harmfull effects on the nervous system, especially the hippocampus and cerebellum, and these areas of the brain are important in the process of recognition, learning and memory, Here in we are studying protective effects of Modafinil on avoidance learning and spatial memory impairment of male and female rats.

Methods : For the behavioral tests of this project, the morris water maze and shuttle box methods for spatial memory checking and avoidance learning, in 5 groups including control group, sham groups, MDMA treated group, acute and chronic groups treated with MDMA and (IP injections).

Results : MDMA Caused impairment in spatial memory .modafinile improve spatial memory and inactive avoidance in both males and females rats.

Conclusion : Modafinil application in an acute and chronic manner in the hippocampus of treated rat with MDMA, is expected to increase neurogenesis also reducing apoptosis of the neuron in both males and females.

Keywords : Modafinil - 3, 4 methylenedioxymethamphetamine(MDMA) – neurotoxicity -behavioral tests.

Count: 29
Abstract ID: 454
subject: Cognition: Learning and Memory
Presentation Type: Poster

The effect of crocin on total sleep deprivation induced amnesia in male Wistar rats

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Background and Aim : In recent years, Crocin has been used for its pharmacological functions, such as memory and learning enhancement. Based on the available evidence, the aim of the present study was to assess the effect of Crocin on total sleep deprivation (TSD)-induced amnesia in male Wistar rats .

Methods : To this end, the water box apparatus and passive avoidance task were in turn used to induce sleep deprivation and assess memory retention.The rats were divided into 12 groups, 8 rats in each group, which include four control groups, four sham groups, and four TSD groups. Each group received saline and Crocin at doses of 1, 5 or 15 mg/kg twice a day.

Results : : The findings revealed that TSD for 24 h impaired memory function. In addition, the intra-peritoneal injection of Crocin at all doses (1, 5 and 15 mg/kg) did not change the step-through latency in sham of TSD, whereas it restored the responses induced by the TSD groups.

Conclusion : The findings showed that an intimate interaction between the Crocin and SD. Crocin seems to possess a modulatory effect on SD-induced amnesia .

Keywords : Total sleep deprivation (TSD); Crocin; memory; Step-through; rat

Count: 30
Abstract ID: 131
subject: Cognition: Learning and Memory
Presentation Type: Poster

Effect of Momordica charantia on Spatial Memory of Rats Receiving a High-Fat Diet

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Background and Aim : Momordica charantia or bitter melon is a tropical vine of the family Cucurbitaceae, widely grown in India. Its fruits have potent anti-oxidant activity due to the presence of tannins, vitamin C and flavonoids. There is much evidence it has protective on cognitive function and cholesterol level. In addition there are reports the effect of high-fat diet on memory. In this study, the effect of bitter melon on spatial memory in rats following a high-fat diet in a water maze was examined.

Methods : In this study, 28 male Wistar rats aged 10 weeks and weighing 180-250 grams were divided into four groups (N=7). Control, High-fat, High-fat + bitter melon and Control + bitter melon. The control group was fed a standard rat diet, whereas the high fat groups were fed the same standard diet containing 5% cholesterol for eight week and treated group in addition received 1 g/kg bitter melon fruit powder in their diet, Learning and spatial memory were evaluated by Morris water maze for a 6-day period including 5 days training and the last day, test day (probe day).

Results : High fat diet for two months reduced learning ability in the high-fat group, which spent longer time and travelled a longer distance compared to the control group. However, administration of bitter melon improved memory function only in high fat group.

Conclusion : bitter melon improves spatial memory performance in rats receiving a high-fat diet.

Keywords : Momordica charantia;Spatial Memory;Diet

Count: 31
Abstract ID: 360
subject: Cognition: Learning and Memory
Presentation Type: Poster

Glucocorticoid interacts with hippocampal 5-HT6 receptors in enhancing emotional memory consolidation in rats

Submission Author: Rajab Mohammad rezaei

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Background and Aim : Post-training administration of glucocorticoids enhance memory consolidation of inhibitory avoidance learning. Given the involvement of 5-HT6 receptors in memory processing and that glucocorticoids interact with brain serotonergic system in modulating memory processing, we investigated whether glucocorticoid influences on the consolidation of emotionally arousing training depend on hippocampal 5-HT6 receptors.

Methods : In first experiment immediately after training, the animals received vehicle or different doses of CORT (1.25, 2.5. 5 and 10 mg/kg). 48 hours later, the animals were re-exposed to the same context and their step-through latencies and time spent in the lit side during 540 sec were recorded. In this experiment the most effect dose of CORT (5 mg/kg) was obtained for the next experiment. In experiment 2, rats were randomly divided into 10 groups (n = 10 in each group) and trained under shock according to described procedures. Immediately after training, the animals received bilateral intra-hippocampal injections of EMD 386088 or SB-271046 which followed by systemic CORT admiration. The 10 experimental groups were: VEH + VEH, VEH + CORT, EMD (5 ng/1µl) + VEH, EMD (5 ng/1µl) + VEH, SB (5 ng/1µl) + VEH, SB (10 ng/1µl) + VEH, EMD (5 ng/1µl) + CORT, EMD (5 ng/1µl) + CORT, SB (5 ng/1µl) + CORT, SB (10 ng/1µl) + CORT. Moreover, at the conclusion of behavioral tests, 5-HT6 receptor mRNA or protein expression was examined in half of the animals randomly selected from each group.

Results : We found that post-training injections of different doses of corticosterone (CORT, 1.25, 2.5. 5, and 10 mg/kg) enhanced memory retention in a dose dependent manner. Subsequently, we found that CORT-induced enhancement of memory consolidation was blocked by bilateral intra-hippocampal injections of 5-HT6 receptor antagonist SB271046 (3 or 10 ng/per side), but not agonist EMD386088 (3 or 10 ng/per side). Furthermore, systemic CORT reduced 5-HT6 receptor mRNA and protein expression in the hippocampus. Both doses of 5-HT6 receptor

agonist and antagonist significantly enhanced and reduced the expression of 5-HT6 receptor, respectively, and both ligands at the higher dose (10 ng) enhanced memory consolidation. Moreover, corticosterone injection attenuated and enhanced, respectively, the effects of agonist and antagonist on 5-HT6 receptor expression.

Conclusion : These behavioral and molecular findings indicated an interaction between glucocorticoids and hippocampal 5-HT6 receptors in the consolidation of emotionally arousing experiences.

Keywords : 5-HT6 receptor; Memory consolidation; Inhibitory Avoidance; Corticosterone

Count: 32
Abstract ID: 641
subject: Cognition: Learning and Memory
Presentation Type: Poster

Nitric oxide system and Empathy

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Background and Aim : Pain is a complex form of an undesirable feeling, accompanied This feeling of pain reduces the quality of life, not only in patient, but also in their relatives and family. Empathy is the ability to recognize, process and respond to another's emotional state and emphatic functions which is linked with a multitude cognitive, affective and motor processes. Nitric oxide (NO) is an important neurotransmitter, involved in the nociceptive process, and contributes to the development of central sensitization. The aim of this study was to investigate the role of NO system in empathic behavior in Wistar rats.

Methods : We used an established formalin- based rat model of pain during which . During the pain induction, the rats were seen by their siblings. Male Wistar rats (n = 8 in each group, weighing 150-180 g) were divided into control, sham (observe with Saline; 0.9%, i.p), pain (formaline 10%, s.c.), L-Arg (10 mg/kg, injected 1 h before observe) and L-NAME (10 mg/kg injected 1 h hasbefore observe) groups. Open field, rotarod, wire grip, and shuttle box tests were used to evaluate motor and cognitive performance.

Results : Our data showed a significant difference in motor coordination and muscle strength in intervention groups compared with controls. However, this study did not reveal any significant difference between the intervention groups.

Conclusion : The results indicated that administration of L-Arg and L-NAME had no effect on locomotor, passive avoidance learning and memory impairments and anxiety-like behaviors in empathic rats.

Keywords : Empathy; Nitric oxide ; Rat

Count: 33
Abstract ID: 153
subject: Cognition: Learning and Memory
Presentation Type: Poster

Oxytocin stands against memory impairment in female 3-NP injected rats even in those experienced prenatal stress

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Background and Aim : Oxytocin)OXT(plays a role in different pathways that are involved in various pathophysiological processes but several studies implicate that these effects can vary depending on sex and environmental circumstance

Methods : In our study, Three month old male and female offspring rats that experienced the PS, were injected intracerebroventricular OXT(10µg) and the next day 3-NP injected for 5and/or7 days respectively (20mg/kg). After the last day of 3-NP injection, passive avoidance task were conducted, Finally, animals decapitated and the expression level of receptor interacting protein3 (RIP3) as a critical regulator of metabolism and acetylcholinesterase (AChE) enzymes activities, the enzyme that degrades the neurotransmitter acetylcholine which is important for learning and memory function, in different brain regions were studied.

Results : The results indicate that 3-NP considerably decreased step-through latency in male rats from 199.2±18.84 to 29.62±6.47 seconds and from 206.5±13.65 to 37.75±3.33 in female rats, OXT injection increased it up to 142.2±16.28 seconds in male and 96.1±3.71 in female rats so improved learning and memory impairment in both sexes. This was along with a significant decrease in the expression level of RIP3 and also AChE enzymes activity in different brain regions. However, when 3-NP was administered in the context of prenatal stress, the OXT effects exerted in a sex-dependent manner and improved learning performance with increasing step-through latency to 158.88±25.66 seconds exclusively in females concomitant with modulating the RIP3 expression level in hippocampus (HIP) and AChE activity in HIP and prefrontal cortex.

Conclusion : In conclusion although, OXT could cope with 3-NP induced memory impairment, but its sex and context dependency should be considered strictly as an attractive therapeutic agent.

Keywords : Oxytocin, Prenatal stress, 3-NP

Count: 34
Abstract ID: 499
subject: Cognition: Learning and Memory
Presentation Type: Poster

Activation of endocannabinoid system in the rat basolateral amygdala improved scopolamine-induced memory consolidation impairment.

Submission Author: Seyed Ershad Nedaei

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Background and Aim : The current study was designed to examine the involvement of cannabinoid CB1 receptors in the basolateral amygdala (BLA) in scopolamine-induced memory impairment in adult male Wistar rats.

Methods : The animals were bilaterally implanted with the cannulas in the BLA and submitted to a step-through type passive avoidance task to measure the memory formation. The results showed that intraperitoneal (i.p.) administration of different doses of scopolamine (0.5-1.5mg/kg) immediately after the training phase (post-training) impaired memory consolidation.

Results : Bilateral microinjection of the cannabinoid CB1 receptor agonist, arachydonilcyclopropylamide (ACPA; 1-4ng/rat), into the BLA significantly improved scopolamine-induced memory consolidation impairment. On the other hand, co-administration of AM251, a cannabinoid CB1 receptor antagonist (0.25-1ng/rat, intra-BLA), with an ineffective dose of scopolamine (0.5mg/kg, i.p.), significantly impaired memory consolidation and mimicked the response of a higher dose of scopolamine. It is important to note that post-training intra-BLA microinjections of the same doses of ACPA or AM251 alone had no effect on memory consolidation. Moreover, the blockade of the BLA CB1 receptors by 0.3ng/rat of AM251 prevented ACPA-induced improvement of the scopolamine response.

Conclusion : In view of the known actions of the drugs used, the present data pointed to the involvement of the BLA CB1 receptors in scopolamine-induced memory consolidation impairment. Furthermore, it seems that a functional interaction between the BLA endocannabinoid and cholinergic muscarinic systems may be critical for memory formation.

Keywords : Basolateral amygdala; Endocannabinoid system; Passive avoidance task; Rat(s); Scopolamine

Count: 35
Abstract ID: 471
subject: Cognition: Learning and Memory
Presentation Type: Poster

Protective effects of Allo against 6-OHDA-induced rat model of Parkinson's disease: in vivo electrophysiological study

Submission Author: Akram Nezhadi

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Background and Aim : According to prevalence of Parkinson's disease, as one of the most common neurodegenerative disease and the fact that treatment options for the disease so far have been insufficient and not convincing. Since these patients suffer from movement disorders and cognitive impairment, so find ways to improve treatment of both disorders seem necessary. Cognitive deficits have an extensive influence on the quality of life of the Parkinson's disease (PD) patients. Research has shown that the main cause of these disorders is abnormality in synaptic levels in hippocampus that occur in these patients. Neuroprotective role of neurosteroids mentioned in a number of studies, but there is not any directly on synaptic disorders caused by Parkinson's disease. We studied the effects of neurosteroid allopregnanolone (Allo) on synaptic plasticity in the hippocampus of a rat model of PD induced by 6-OHDA.

Methods : In this study were used of male Wistar that they have been divided into five groups: control, sham, lesion, lesion group treated with Allo5 mg/kg and lesion group treated with Allo20 mg/kg. To simulate PD, rats received 8 pg 6-OHDA in the right substantia nigra pars compacta (SNc) by stereotaxic surgery. Allo was administered on the day after the 6- OHDA injection and continued every other day for 8 weeks. hippocampal long-term potentiation (LTP) was assessed using in vivo field potential recordings in the CA1 region of the hippocampus.

Results : Although, dopamine denervation does not alter basal synaptic transmission and pair-pulse facilitation (PPF) of field excitatory postsynaptic potentials (fEPSPs) but the induction and maintenance of long-term potentiation (LTP) were impaired in the CA1.

Conclusion : These abnormalities were abolished by the treatment with Allo, a neuroactive metabolite of progesterone. These findings showed that partial dopamine depletion leads to abnormal synaptic plasticity in the CA1. Our results also demonstrated that Allo corrects these deficits. So Allo may be an effective factor to protect synaptic integrity in mesolimbic pathway.

Keywords : Parkinson's disease, Allopregnanolone, Hippocampus, Long-term potentiation, CA1, Synaptic plasticity

Count: 36
Abstract ID: 470
subject: Cognition: Learning and Memory
Presentation Type: Poster

Cognitive-Enhancing Effect of Allopregnanolone in a Rat Model of Parkinson's Disease Induced by 6-Hydroxydopamine

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Background and Aim : Parkinson's disease (PD) is a progressive neurodegenerative disease that characterized by the progressive degeneration of the dopaminergic neuronal in the midbrain resulting in a well-known decline of motor abilities and in less-well understood non-motor symptoms. Recently, some evidence indicates that cognitive impairments are also associated with PD and significantly have an extensive influence on the quality of life in patients. Neurosteroids are derivatives of steroid hormones that can be synthesized in the brain without the aid of peripheral sources. Of all endogenously occurring neurosteroids, the progesterone metabolite allopregnanolone (Allo) is the most potent known positive modulator of GABAA receptors. The sex difference in Parkinson's disease, with a higher susceptibility in men, suggests a modulatory effect of sex steroids in the brain. We studied the effects of neurosteroid Allo on cognitive performance of a rat model of PD induced by 6-OHDA.

Methods : To simulate PD, 6-hydroxydopamine (6-OHDA) was injected into the rat's substantia nigra. Allo were administered on the day after the 6-OHDA injection and continued during the entire treatment period. Cognitive behaviors were assessed by Moris water maze (MWM), novel object recognition (NOR) and object location tasks.

Results : The data indicated that Allo significantly improved the 6-OHDA-induced cognitive impairment which revealed by the reduction of time spent to find out platform (escape latency) and the increase of retention time in MWM test and also with increase in the exploration index in NOR and object location tasks.

Conclusion : Present study showed that Allo strongly enhances learning and memory in 6-OHDA model of Parkinson's disease in rats. The results provide some interesting cues regarding the effects of Allo and its useful area of research in order to study non-motor stages in animal models, and the possible utility of Allo as a neuroprotector agent.

Keywords : Parkinson's disease, Allopregnanolone, Cognitive impairment, Moris water maze, Novel object recognition, Object location tasks.

Count: 37
Abstract ID: 99
subject: Cognition: Learning and Memory
Presentation Type: Poster

Lithium protects sumatriptan-induced memory impairment in mice

Submission Author: Vahid Nikoui

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Background and Aim : Lithium is a drug used for the treatment of bipolar disorder. It has several mechanisms of action, and recently it is shown that lithium can antagonize the 5-HT1B/1D serotonin receptors. Sumatriptan is a 5-HT1B/1D receptor agonist used for the treatment of cluster headaches and migraine which might cause memory impairment as a potential side effect. In this study, effects of lithium on sumatriptan-induced memory impairment have been determined in a two-trial recognition Y-maze and passive avoidance tests.

Methods : Male mice weighing 25-30 g were divided into several groups randomly. In Y-maze test, effects of lithium (1,5,10,20,40,80 mg/kg) and sumatriptan (1,5,10 mg/kg) were assessed on memory acquisition, then lithium (0.1,1,10 mg/kg) and sumatriptan (1,10 mg/kg) were studied in passive avoidance test. Effects of lithium (1mg/kg) on sumatriptan (10 mg/kg)-induced memory impairment were studied in both of tests.

Results : The present study demonstrated that sumatriptan impaired memory in Y-maze and passive avoidance tests ($P<0.05$, $P<0.01$, respectively). Lithium did not show any significant effect on memory function compared to salinetreated control group in both tests ($P>0.05$), but significantly reversed sumatriptan-induced memory impairment in Y-maze and passive avoidance tests ($P<0.001$, $P<0.05$, respectively).

Conclusion : It is concluded that lithium reverses the sumatriptan-induced memory impairment probably through 5-HT1B/1D receptors antagonism.

Keywords : Lithium; Sumatriptan; 5-HT1B/1D; Spatial recognition memory; Mice

Count: 38
Abstract ID: 232
subject: Cognition: Learning and Memory
Presentation Type: Oral

Effect of agmatine on deteriorations induced by methamphetamine on passive avoidance learning and memory, oxidative stress, memory related genes expression and hippocampal field potentials of rat

Submission Author: Maryam Noorbakhshnia

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Background and Aim : Methamphetamine (METH) abuse is one the most worldwide problems with wide-ranging effects on the central nervous system (CNS). This psychostimulant has strong actions in the brain and immune function; it could induce nerve terminal degeneration, oxidative stress and neuronal apoptosis. METH administration induces depletion of different neurotransmitters such as serotonin, glutamate, acetylcholine, and dopamine. Since memory impairment correlated with disruption of neurotransmitters, oxidative stress, apoptosis and cortisol level, it seems that METH has deleterious effect on learning and memory but the exact mechanism is not clear. Agmatine, a cationic polyamine, has been proposed as a neuromodulator that modulates many effects of abused drugs. There are interactions between agmatine and other neurotransmitter systems such as glutaminergic and so on. Agmatine exhibits anti-oxidative, anti- inflammation anti-nociceptive, anti-stress and neuroprotective effects and it modulates some processes involved in learning and memory. The aim of this study was to determine if agmatine can decrease the effects of METH on passive avoidance learning (PAL), hippocampal memory related genes,oxidative stress and also induction of LTP in the dentatate gyrus (DG) region.

Methods : Male wistar rats (200–220 g) were used and treated with METH (1, 2 mg/kg), agmatine or gmatine plus METH. All injections were done intraperitoneally and agmatine was administrated 10 min before METH treatment. Furthermore, Passive avoidance learning (PAL) test was assessed on the 5th day. Retention test was done 24h after training and the rats were sacrificed immediately. Hippocampi were removed and stored at _80 °C. Finally, hippocampal CaMKII-α, Synapsin1 ,CREB and BDNF gene expression were measured using Quantitative Real-Time PCR (RT-PCR). Furthermore, field potential recording was performed in the DG of anesthetized rats.

Results : Our data showed that chronic METH dose-dependently impaired PAL retrieval, as it decreased step-through latency (STL) and increased time spent in the dark compartment (TDC). METH dose-dependently decreased CaMkII-?, Synapsin1 and increased CREB and BDNF mRNA in the hippocampus. Furthermore, it increased catalase (CAT), superoxide dismutase (SOD), malondialdehyde (MDA) and decreased Glutathione reductase (GR) activity in the hippocampus of rat. Electrophysiological results showed that METH increased LTP in the DG region of hippocampus. Moreover, Agmatine significantly decreased impairment effect of METH (2mg/kg) on PAL and memory and significantly modulated the changes induced by METH on gene expression and oxidative parameters. Also it significantly modulated the enhancement effect of METH on LTP in the DG of hippocampus.

Conclusion : Taken together, METH could change the expression of different genes variously. It seems, the increase of CAT and SOD in METH treated rat is a defensive mechanism. Furthermore, our results propose that agmatine may provide a potential therapy for learning and memory, gene expression and also oxidative stress deficits induced by METH. On the other hand, it is suggested that enhancement of LTP in the DG is related to the maladaptive learning induced by METH and our results revealed that agmatine can prevent and block this synaptic plasticity and may prevent drug seeking behavior.

Keywords : Methamphetamine; Memory; Oxidative stress; Real Time PCR; LTP; Agmatine; Rat

Count: 39
Abstract ID: 625
subject: Cognition: Learning and Memory
Presentation Type: Poster

Investigating the relationship between individual and clinical characteristics and memory impairments of multiple sclerosis individuals

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Background and Aim : Objective: the current investigation to examine the influence part of individual and clinical characteristics on memory impairments in multiple sclerosis (MS). Back-ground: recent investigations of learning and memory in MS have shown that many subjects have impaired new learning ability. However, heterogeneity in the memory and learning abilities of subjects has been documented. Some evidence in the literature suggests that this heterogeneity may be in part attributable to individual and clinical characteristics.

Methods : Methods: The present study was conducted on a cross-sectional descriptive-analytic method on multiple sclerosis patients of Rofideh Rehabilitation Hospital in 1396. In this research, instruments such as Pittsburgh Sleep Quality Questionnaire, Fatigue Assessment Scale, Depression Scale Form, Physical Disability Scale (EDSS), and Brief Visuospatial Memory (BVMT-R) and the California Verbal Learning (CVLT-II) tests were administered to 71 individuals with MS.

Results : Results: results indicate that age, gender, marital, disease type, fatigue and the first symptom of the onset of the disease had a significant relationship with memory and learning abilities of MS individuals. Education, sleep, depression, and EDSS scores no significant relationship with learning abilities of MS.

Conclusion : Conclusions: In this study, the relationship between individual and clinical characteristics with memory impairments was investigated. A significant relationship was found between the first sign of the onset of the disease and the level of performance. People who started with vision problems had a weaker cognitive performance than others. This can be considered as an important finding in the early stages of diagnosis and the development of therapeutic programs to prevent cognitive complications. The degree of physical disability observed in patients with MS does not appear to be related to the degree of cognitive decline because of the distinct patterns and severity of memory dysfunction noted within each disease type, independent of physical disability.

Keywords : multiple sclerosis, memory, individual and clinical characteristic

Count: 40
Abstract ID: 162
subject: Cognition: Learning and Memory
Presentation Type: Poster

The effects of high intensity exercise on learning and memory impairments followed by combination of sleep deprivation and demyelination induced by etidium bromide.

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Background and Aim : MS (Multiple Sclerosis) is a chronic inflammatory demyelinating disease of the central nervous system associated with autoimmune manifestations. In this condition, demyelination is widely observed in the cortex, thalamus, and hippocampus, which has broadly spread to the hippocampus region. In addition to motor disorders, cognitive impairment occurs in MS patients. Including learning and memory impairments. Common symptoms of MS, which severely reduce quality of life, include disorders and poor sleep quality. More than 50% of MS patients suffer from sleep problems .It has been suggested that exercise has direct neuroprotective effects in MS model and sleep deprivation model in animals. In this study, the effect of treadmill exercise on the demyelination model as an indicator of MS disease and its combination with sleep deprivation was investigated.

Methods : Male wistar rats were used in the present stydy.Exercise groups exercised daily for 1h/day during 10 consecutive days with treadmill. (Speed: 18m/min &inclination: 25°). The multiple platform method was applied for the induction of 72h sleep deprivation. The cognitive functions was evaluated using by morris water maze.Animals were anaesthetized with certain dose of ketamine and xylazin and placed on rat stereotaxic instrument in the skull-flat position. Demyelination was induced bilaterally by direct single injection of 3 µl of 0.01% ethidium bromide in sterile 0.9% saline at the rate of 1µl/min into the hippocampal formation, using appropriate stereotaxic coordinates.

Results : All of the learning and memory indices in the MWM task showed that sleep deprivation and hippocampal demyelination following by ethidium bromide injections destroy learning and memory. It has also been observed in a group that has both sleep deprivation and demyelination.It seems that exercise can modulate the destructive effects of sleep deprivation and demyelination on learning and memory at the behavioral level .This adjustment was observed when sleep deprivation and demyelination were applied separately (this study and other studies) as well as when they were applied simultaneously (this study).

Conclusion : In general, our results showed that exercise has a positive effect on learning and memory in sleep deprivation and demyelination at the behavioral level, but more information is needed to more resaerches.

Keywords : Exercise,sleep deprivation,demyelination,etidium bromide,learning and memory

Count: 41
Abstract ID: 234
subject: Cognition: Learning and Memory
Presentation Type: Poster

The effect of probiotics on passive avoidance learning and spatial memory of rats

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Background and Aim : There are growing evidences for a link between the enteric microbiota and brain function. It has been shown the proliferation of Bifidobacteria and Lactobacilli strains in the large intestine, have anxiolytic effects in both rodents and humans. Probiotics are described as single or mixed cultures of live microorganisms that when applied to animals or humans beneficially affect the host by improving the properties of the indigenous microflora.It has been proposed that Probiotics could improve memory. In this study, we assessed this subject by using one mixer of selected probiotics.

Methods : Experiments were performed on male Wistar rats with an initial weight of (200–220 g). Rats were randomly classified in 2 groups :(1Control group 2): Probiotics-treated. Three types of lactobacillus were used in this study: L. rhamnosus, L. reuteri, L. plantarum . The probiotic group received sequentially 1 cc mixed probiotics for 42 days and the control group received a physiological saline for 42 days. After the last day of the injection, rats' memory were evaluated by passive avoidance learning (Shuttle box) and moriss water maze equipments.

Results : our results showed that mixture of L. rhamnosus, L. reuteri, L. plantarum significantly improved passive avoidance learning as it increased step-through latency (STL) and decreased time spent in the dark compartment (TDC). Also, it significantly improved spatial memory that evaluated by the morris water maze.

Conclusion : Probiotics are new therapies that are used for most mental illness diseases. Various types of these bacteria are used to treat different diseases, such as Alzheimer's, Parkinson's, and etc.. Our results suggest that the mixture of L. rhamnosus, L. reuteri, L. plantarom . increase learning and spatial memory and might be a cure for dementia.

Keywords : probiotics, memory, rats

Count: 42
Abstract ID: 588
subject: Cognition: Learning and Memory
Presentation Type: Poster

The brain booster and nootropic herbs from the perspective of 3 important Iranian medicine reference points

Submission Author: Leila Rasi marzabadi

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Background and Aim : : In traditional(Iranian)medicine,Nesyan means forgetting what humans are remembering or inability to learn new things, due to the destruction of the part of the power of mind, namely memory, thinking and imagination, which, in accordance with the modern concept of dementia. By definition, dementia is the progressive degradation of cognitive functions occurring in the field of consciousness. Dementia shows itself as a set of functional disorders, including memory impairment, language disorder, psychological changes, and psychiatry, as well as disorders of daily activities. According to statistics, more than 15% of the population over 65 and 45% of people over the age of 85 have Alzheimer disease. This is equivalent to more than 5 million people in the United States and more than 30 million people worldwide.

Methods : : This study was conducted to investigate and collect medicinal plants that have an effect on brain and memory enhancement in three important sources of Traditional Medicine in Al-qanoon-Filtib from Avecenna, Al-Hawi of Mohammad Bin Zakriya Razi and Makhzan-al-advieh of Aghili Khorasani.

Results : According to the study, 102 plants were used as brain toners and neurotonic in 3 important Iranian medicine sources. 55 plant as brain tonic and 24 plants are mentioned in connection with treatment of Nesyan(dementia) in Makhzan-al-advieh. Plants mentioned in the Qanun as well as in the Makhzan-al-advieh as a brain tonic include: matricaria recutita, Valeriana diocorides, Polyporus officinalis Fries, Citrus medica var, cinnamom zeylanicum, origanum vulgare, pistacia lentiscus and Symplocos racemosa.

Conclusion : The brain as one of the three "Main organs" in the body (along with the heart and liver) has a special importance in Iranian medicine. The brain tonic plants in Iranian medicine have been considered and prescribed by physicians. For example, in Makhzan-al-advieh book(Pharmacy reffrence of Iranian medicine), 55 plants have been named as brain tonal and the way of prescribing has been explained. The design of the study based on the use of brain-tonic plants mentioned in Iranian medical sources as food or in combination with chemical drugs can be used to improve the memory and recognition of patients with dementia.

Keywords : Dementia,Nesyan,Iranian medicine,Alzheimer,Cognitive disorders,Traditional medicine

Count: 43
Abstract ID: 631
subject: Cognition: Learning and Memory
Presentation Type: Oral

Chronic Cannabidiol attenuates cognitive deficits induced by methamphetamine - addicted rats

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Background and Aim : Methamphetamine is a highly addictive drug of abuse, addiction to which has increased to epidemic proportions worldwide. It has been suggested that chronic use of Meth causes long-term cognitive deficits.Furthermore, Cannabidiol (CBD) has a large-spectrum therapeutic potential to treat many neuropsychiatric disorders, such as addiction .Several studies have indicated that learning and memory, and particularly contextual memories, play a critical role in establishing conditioned responses in addiction

Methods : The aim of the present study was to investigate the effects of CBD treatment after addicted Meth on two hippocampus-dependent memory tasks: Novel Object Recognition as a non spatial memory task and Y maze as a spatial memory task.Male rats were addicted with Meth (twice, 2.0 mg/kg, s.c.) for 10 days , Then, we evaluated the effect of CBD (50 µg/5 µl; ICV) on spatial working memory, by using Y maze test, and recognition memory, by using novel object recognition test (NORT), on extinction period (10 days).

Results : we found Meth-induced impairment in memory performance whereas CBD could improve the effect of Meth destruction also chronic METH had deficit effect on spontaneous behavior and recognition memory impairment obviously seen in METH group compared to control group in Novel Objective test ,more ever CBD administration could reverse long term memory

Conclusion : .in conclusion CBD can be considered an agent that Reinforce learning and memory system however, this requires more investigation .

Keywords : Methamphetamine; Cannabidiol; Spatial working memory; Recognition memory

Count: 44
Abstract ID: 512
subject: Cognition: Learning and Memory
Presentation Type: Oral

Transgenerational Effects of Maternal Spatial Memory Exercise on Spatial Learning of Female Offspring

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Background and Aim : Previous studies have shown that the environmental experiences of parents such as environmental toxins, educational behaviors, stress and fear contribute in generating phenotypes of children's traits in several generations (Lim et al, 2013). Some evidence suggests that the experiences obtained by parents and ancestors greatly affect the physiological, metabolic and cellular functions of living organisms, which can be transmitted among generations through epigenetic modifications in certain circumstances (Wang et al, 2017). the inheritance of epigenetic patterns including DNA methylation, histone modification, and non-coding RNA to living organisms allows the information related to the ancestral environment to be passed on to their offspring (Wang et al, 2017). Presently, the acquired traits related to the acquired memory and the learning and memory capabilities are among the most important issues in the field of epigenetic transmission. Considering that methylation DNA, histone methylation and histone acetylation are three major epigenetic processes involved in the regulation of memory which leads modification of epigenetic patterns, and given the possibility of transmitting epigenetic symptoms from parents to offspring, it is anticipated that the phenotypes created in the learning process and memory formation in parents will be passed on to their children, which facilitates the learning process and memory formation of the offspring. Therefore, the aim of this study was investigation of the effect of Maternal Spatial Memory Exercise before fertilization on the learning process of spatial memory tasks in their female offspring.

Methods : In the present study, the first eight female rats were randomly divided into two groups: spatial memory training group (n=4) and control group n=4). The rats participated in the spatial memory training group in the Morris water maze Protocol and the control group did not participate in any training. After the end of the training session, female rats of both groups mated with male rats that had not experienced any training. After the end of mating, pregnancy, birth and lactation, Four female offspring from each mother was randomly selected in each group and in the two groups Maternal train (n=16) and Maternal no-train (n=16) they were practicing Morris water maze within 5 days.

Results : The results of ANOVA with repeated measurement showed that the main effect of trials ($F_{11,330}=25.31$, $p\leq0.001$), main effect of group ($F_{11, 30}=40.22$, $p\leq0.001$) and Interactive effect of trials and group ($F_{11,330}=2.20$, $p\leq0.014$) is significant. The results of post-hoc test showed that in trials 5, 6 and 9 there was a significant difference between the time to find the platform in the maternal train and maternal no-train groups, and female offspring of maternal train group had better performance. Also, the independent t-test results showed that in the probe test the female offspring of maternal train was significantly better than the female offspring of maternal no-train.

Conclusion : Maternal spatial memory exercise before fertilization lead to improved learning and performance of their female offspring and facilitates the learning process of spatial memory tasks

Keywords : Transgenerational Effects, Maternal Exercise, Spatial Memory, Female Offspring

Count: 45
Abstract ID: 295
subject: Cognition: Learning and Memory
Presentation Type: Oral

Effect of insulin on scopolamine-induced memory impairment in male rats.

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Background and Aim : Cholinergic neuronal cells deficit is known to be one of the main causes of Alzheimer's pathology. Scopolamine a muscarinic cholinergic antagonist is commonly used to mimic Alzheimer's disease (AD) pathological appearance. Insulin also regulate learning and memory function through an action on particular central sites of the brain.

Methods : Thus in this study, the rats (n=59) were divided into 6 experimental groups. Then the animals were injected into the right lateral ventricle a muscarinic cholinergic antagonist, scopolamine (70 nmol/2µ) 35 min before retrieval test of the inhibitory avoidance task. Then the effects of three doses of insulin (4, 8, or 16 mU/2µl) were investigated on the passive avoidance learning.

Results : Our results indicated that retrieval of passive avoidance memory were significantly improved by insulin Intracerebroventricular (icv) administration in 4 and 8 mU/2µl doses but not in 16 mU/2µl.

Conclusion : This information confirmed that insulin could improve retrieval phase of avoidance memory that was impaired by scopolamine.

Keywords : Insulin; Scopolamine; Passive avoidance learning

Count: 46
Abstract ID: 54
subject: Cognition: Learning and Memory
Presentation Type: Poster

Comparing of Rey Auditory Verbal Learning Test Results between men and women in middle age

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Background and Aim : Auditory verbal memory is the ability to receive verbal information, process, and storage and finally retrieve heard stimuli. So, without those the language doesn't have any meaning. One of the common methods for studying auditory-verbal memory is neuropsychological behavioral tests including Californiya, Hapkings and Rey. Within these tests, Rey auditory verbal learning test (RAVLT) is a fast and straightforward test to administer. The aim of this study is to compare RAVLT results between male and female in middle age

Methods : In this study one hundred twenty individuals (60 female and 60 male) in fourth and sixth decades have been investigated by Persian version of Rey auditory verbal learning test.

Results : Scores of women in comparison to men in Total recall, Interference and Delay stages of RAVLT were statistically significant.

Conclusion : Superiority of the women scores than men score in two age groups and in Total recall, Interference and Delay stages is the main result in this study. In addition to confirming the superiority of women in using auditory verbal therapy, necessity of using separated normal data between two genders is indicated.

Keywords : memory- auditory verbal memory- rey auditory verbal learning test- gender

Count: 47
Abstract ID: 467
subject: Cognition: Learning and Memory
Presentation Type: Poster

M1 Muscarinic-immunoreactive neuron density increases by vitamin E treatment in the rat's hippocampal CA3 area

Submission Author: Ali Sayyahi

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Background and Aim : Alzheimer's disease (AD) is a neurodegenerative disorder representing the major cause of dementia. It is characterized by memory loss, and cognitive and behavioral decline. In particular, the hallmarks of the pathology are amyloid-β (Aβ) plaques and neurofibrillary tangles (NFTs), formed by aggregated hyperphosphorylated tau protein. Aβ peptides are derived from the sequential processing of the amyloid precursor protein (APP) by enzymes called secretases, which are strongly influenced by the lipid environment. Several vitamins have been reported to be reduced in the plasma/serum of AD-affected individuals indicating they have an impact on AD pathogenesis. The term vitamin E includes different fat-soluble compounds, divided into tocopherols and tocotrienols, that possess antioxidant action. In this Study, we focused our attention on the effects of vitamin E supplementation in AD animal models.

Methods : Forty-eight male Wistar rats (200±20 g) were distributed randomly into six groups (n=8) including control group (dissected samples), saline group, oil group and 3 experimental groups of vitamin E in 25, 50 and 100 mg/kg dosages. In order to induce amnesia in rats, scopolamine was injected interperitoneally (IP) to these rats at the dosage of 3 mg/kg. Then, these animals received vitamin E at three doses of 25, 50 and 100 mg/kg/day IP for the next 14 days. After this period, the rats were tested using a passive avoidance task (shuttle box), acquisition test - retrieval test step through latency (STL)) and time in the dark compartment (TDC) was recorded. Finally, the brains of rats were dissected and stained with cresyl violet and Immunohistochemistry techniques for the detection of neurons and M1 muscarinic receptor containing neurons, respectively and then neurons of hippocamp CA3 region were counted. The data was analyzed using ANOVA followed by Tukey's post hoc analysis.

Results : study results showed that scopolamine has significantly impaired learning and memory in rats ($P < 0.05$). TDC was not significantly different between salin and scopolamine group but it was significantly increased in vitamin E and scopolamine groups and TDC was significantly decreased in these two groups ($P < 0.05$).

Conclusion : The results of present study and previous works on the effect of vitamin E on learning and memory indicate that antioxidant function of vitamin E could improve learning and memory impairments in alzheimeric-like rats.

Keywords : Vitamin E, Scopolamine, Passive Avoidance Memory, M1 Muscarinic Receptor,Hippocampus

Count: 48
Abstract ID: 644
subject: Cognition: Learning and Memory
Presentation Type: Oral

Role of Autobiographical Images in the Formation of False Memory

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Background and Aim : Recently, the topic of false memory has received a lot of attention in eyewitness testimony and psychotherapy reports. Memory errors fall into two categories: omission errors as in what happens in amnesia and addition errors which happen when one fabricates memories which never happened or when they distort them. False memory research focuses upon addition errors of memory.

Methods : The current study aimed to investigate the role of autobiographical images in the creation of false memory using the visual DRM (Deese/Roediger—McDermott method) paradigm. We used eight different categories of products which were available on the market for at least five years. The participants included 10 men and 10 women aged eighteen to thirty years. After giving their informed consent, the participants filled out the depression anxiety stress scale, a handedness questionnaire and the DRM test. Then the subjects were administered a computerized test during which pictures of products were presented in a blocked design. We totally used 8 blocks each presenting products of a particular brand name. Picture sequences were randomized in each block. To preclude mental rehearsal of the pictures, the subjects were required to take their pulse for one minute when finishing a block and before moving to the next one. The recall phase included pictures presented previously as well as new ones. Upon viewing each picture, the subjects were required to answer whether they had seen the picture before and how confident they felt about their answer. Reaction times and accuracy were recorded

Results : The results revealed no significant differences between men and women in terms of false memory formation (t(18)=0/60. sig-2tailed=556). Considering the accuracy, no differences were found between the two groups (t(18)=0/41. sig-2tailed=640). On average, the subjects formed false memory in 20.75% of all presented pictures.

Conclusion : Research into false memory formation can help prevent memory distortion in eye witness testimony. Further, our increased knowledge about false memory formation can be used to create positive false memories through replacing negative emotions with positive ones. Findings from research into false memory can also be applied when inventing games for therapeutic purposes or devising new therapeutic methods for autism or the Alzheimer's disease.

Keywords : false memory

Count: 49
Abstract ID: 567
subject: Cognition: Learning and Memory
Presentation Type: Poster

Comparison of direct and indirect cognitive and metacognitive language learning strategies among English language students and non-English language students

Submission Author: Shaghayegh Shahriary

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Background and Aim : learning second language is a difficult and complex process that needs special language learning strategies. Language learning strategies are behaviors or thoughts that people use to understand, learn or save new information more effectively. Since 1970 s , several strategies models have been presented, that the most notably is Oxford's language learning model (1990). Therefore, the aim of this study is to compare the direct and indirect language learning strategies among English language students and non-English language students.

Methods : The research method was casual-comparative. In this research, 100 English language students and 100 non-English language students were selected from two universities and responded to the Oxford language learning strategies questionnaire. This questionnaire consists of six learning strategies and designed for using in non-English language environments. These strategies included three direct strategies (memorial, cognitive, compensatory), and an indirect strategies (emotional, meta cognitive and social). The data were analyzed with independent T formula.

Results : The results showed significant differences between two groups. English language students got more scores in direct and indirect language learning strategies than non-English language students, and the differences were statistically significant. These differences in cognitive and meta cognitive strategies were much more especially rather than other language learning strategies.

Conclusion : According to the findings of the study, English language students in all of language learning strategies, especially cognitive and metacognitive strategies got more scores than non-English students that it is caused their motivation and rate of English learning becomes higher than non-English students. So, with regard to the increasing the use of English language as an important language in communication between people in the world, it is advised to emphasize on the use of these strategies in combination and in accordance with the requirements when learning English.

Keywords : cognitive and meta cognitive.direct/indirect language learning strategies, English language students, non-English language students

Count: 50
Abstract ID: 528
subject: Cognition: Learning and Memory
Presentation Type: Poster

Effects of Orexin Injections into Hippocampus on memory in the Wistar Rats

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Background and Aim : Many factors affect memory. One of these factors might be orexin, which is produced from posterior lateral hypothalamus. The goal of this experiment is to find out whether injection of orexin into hippocampus might affect memory and learning.

Methods : Twenty male rats were randomly divided into four groups. Rats in groups 1, 2, and 3 received 1.5, 0.75, 0.75 µg of orexin into their hippocampus respectively, while group 4 was not given any peptide. In addition, animals in groups 2 and 3 received 0.75 µg antagonist OX1 and OX2 respectivety.Rota Rod was utilized during three intervals of 30 miniutes prior to the microinjection as well as 30 minutes and 24 hours after it. To research passive avoidance, shuttle Box was used before injection for habituation to and acquisition of information as well as 24 hours after it for information retrieval.

Results : Primary results reveals that passive avoidance and balanced memories were improved by orexin neuron activation. The current behavioral study showed that microinjection of both antagonist OX1 and OX2 receptors into the hippocampus decreased passive avoidance and balanced memories.

Conclusion : Overall,based on the data collected in this study,it can be concluded that orexin improves memory functions.

Keywords : Memory, Orexin, OX1R, OX2R, Hippocampus, Male Rats,

Count: 51
Abstract ID: 482
subject: Cognition: Learning and Memory
Presentation Type: Poster

The Effectiveness of Autobiographical Memory Specificity Training on Depression: A meta-analysis

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Background and Aim : Depression is always known as one of the most common mood problems in the world, which disrupts the daily functions of depressed people. Several cognitive factors in vulnerability, persistence and recurrence of depression. One of the factors that has attracted the attention of many researchers, is autobiographical memory. So far, several studies have been conducted to evaluate and improve the autobiographical memory of depressed people. The purpose of the present study was to collect and combine the results of these researches and calculate their effect size using a meta-analysis research model in order to achieve a more comprehensive view on the effectiveness of autobiographical Memory specificity training (MEST) in patients with Mood depression disorder

Methods : Among the several studies conducted in this field, 10 researches that were methodologically acceptable were selected and a meta-analysis was carried out on them. The tool was a meta-analysis checklist

Results : The meta-analysis findings showed that the effect size of the intervention of autobiographical Memory specificity training (MEST) in depressed patients was 1.86 ($p < 0.00001$)

Conclusion : According to Cohen's table, the effect size obtained in this study is high, which confirms the effectiveness of autobiographical Memory specificity training (MEST) in depressed patients

Keywords : Meta-analysis, Autobiographical Memory Specificity Training, Depression

Count: 52
Abstract ID: 576
subject: Cognition: Learning and Memory
Presentation Type: Oral

Effects of maternal deprivation on synaptic plasticity of hippocampal CA1 neurons of morphine-dependent rats

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Background and Aim : Maternal deprivation as a stressor causes disruption of cognitive and neuro-chemical activities of the brain. The aim of this study was to investigate the effects of maternal separation on LTP induction in CA1 area neurons of morphine-dependent rats.

Methods : This experimental study was conducted on 40 male 45 days old rats. Animals were divided into control, morphine dependent and 3 groups of rats which maternally separated during 1, 2 and 3 weeks after birth. Except control group, the other groups were subcutaneously injected 10 mg/kg morphine every 12 hours for 10 days. At the 11th day signs of withdrawal syndrome were evaluated by Gellert-Holtzman method and at the next day the synaptic plasticity of CA1 neurons was evaluated.

Results : The Gellert-Holtzman score of morphine dependent rats was 14.98±4.16 and increased up to 31.79±5.12 in 3 weeks maternal separated ones ($P<0.001$). Although morphine dependence did not affect basic responses of CA1 area neurons and LTP induction, but maternal separation decreased amplitude of basic responses from 1.01±0.04 in morphine dependent rats to 0.68±0.09 in 3 weeks maternal separated ones ($P<0.001$) and inhibited LTP induction ($P<0.001$), time dependently.

Conclusion : Maternal separation deteriorates field post-synaptic potentials recorded from CA1 area of the hippocampus following morphine consumption and also disrupts synaptic plasticity of neurons of this area.

Keywords : Morphine; Maternal deprivation; Long-term potentiation; Hippocampus; Rat

Count: 53
Abstract ID: 596
subject: Cognition: Learning and Memory
Presentation Type: Oral

Role of Neurotransmitter systems in fear memory extinction

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Background and Aim : Previous studies demonstrated that fear extinction is induced when the conditioned stimulus is repeatedly presented without the aversive outcome unconditioned stimulus, resulting in a decline of conditioned fear response. In rodents, fear responses are typically assessed via freezing behavior or the fear-potentiated startle reflex. Also It has been showed that brain neurotransmitter systems are involved in many processes such as fear extinction that drive learning and memory. Neurotransmitters released from many areas of the brain can modulate different kinds of learning and memory such as auditory and contextual fear memory within different brain regions including the hippocampus, basolateral amygdala and medial prefrontal cortex. In this review, we discuss the role of neurotransmitter systems such as dopamine, endocannabinoid and GABA on fear memory extinction. Also we review some behavioral, pharmacological and neurochemical studies from our laboratory on rodents, which might contribute to our understanding of the complex processes of memory extinction. More importantly, we discuss the pre-reactivation (memory extinction) effects of systemic as well as intra-amygdala, intra-hippocampus and intra-infralimbic of medial prefrontal cortex infusions of agonist and antagonist of the certain neurotransmitter systems on fear memory extinction. Our findings indicate that dopaminergic and GABAergic together with endocannabinoids play important role in modulating fear extinction memory in these brain areas.

Methods : -

Results : -

Conclusion : -

Keywords : Neurotransmitter systems, Fear memory extinction, Amygdala, Hippocampus, Medial prefrontal cortex

Count: 54
Abstract ID: 502
subject: Cognition: Learning and Memory
Presentation Type: Poster

The therapeutic effect of curcumin on ketamine-induced amnesia in rats

Submission Author: Malahat Valizadeh khesmakhi

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Background and Aim : : The glutamatergic system plays an important role in learning and memory. Administration of extracts of Curcuma longa or its constituent, curcumin, facilitates the formation of memory. This research investigated the effect of curcumin on antagonizing retrograde amnesia induced by ketamine, a glutamatergic receptor antagonist, in rats by shuttle box

Methods : : Male Wistar rats were tested to measure their learning behavior in the passive avoidance task. All animals were trained by a 1.5 mA shock. The drugs were injected immediately after the training was successfully performed. The animals were tested 24h after training to measure Step Through Latency (STL)

Results : On the test day, administration of ketamine (15 mg/kg, ip) impaired the memory after training. Different doses of curcumin (10, 20 or 30 mg/kg, ip) were injected 30 min after ketamine, but only 30 mg/kg crocin could improve retrograde amnesia and 10 and 20 mg/kg doses did not have any significant effect on retrograde amnesia. Moreover, administration of curcumin (10, 20 or 30 mg/kg, ip) after training had no significant impact on passive avoidance memory by itself

Conclusion : Considering the therapeutic effect of post-training administration of curcumin on ketamine-induced retrograde amnesia, it can be argued that curcumin has an interaction with glutamatergic system in formation of passive avoidance memory in rats

Keywords : Ketamine; curcumin; retrograde amnesia; shuttle box

Count: 55
Abstract ID: 301
subject: Cognition: Working Memory
Presentation Type: Poster

Working memory deficits in patients with temporal lobe epilepsy

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Background and Aim : Epilepsy is one of the common neurological disorders characterized by recurrent and unprovoked seizures. Epilepsy is divided into two major categories: partial seizures and generalized seizures. The most common form of partial seizures is temporal lobe epilepsy (TLE), which accounts for approximately 2/3 of all epileptic cases. Previous studies have frequently reported impairments in different aspects of cognitive function among patients with TLE, including memory, language, attention, and executive function. To our knowledge memory deficits have been the most studied domain among all cognitive aspects in patients with TLE. Several sub-domains of memory can be affected by TLE i.e. working memory and episodic memory.

Methods : So far we have enrolled 11 patients with temporal lobe epilepsy (6 male/ 5 female, mean age= 32.4) and 10 healthy controls (5 male/ 5 female, mean age=28.9) matched by age, gender, and education. All included patients were receiving anti-epileptic drugs for 1-10 years, and their last seizure varied from one day to three years before the memory assessment. Memory functions of patients and healthy controls were assessed by a battery of memory tests including auditory verbal learning test (AVLT), for the evaluation of auditory-verbal working memory, and Digit span forward and backward test for working memory assessment. Regarding the AVLT test, five trials of this test (trail 1 to 5) have been performed consecutively and recognition trial phase has also been performed 30 minutes after the last trial (trial 5).

Results : Regarding AVLT scores, group differences on trial 1 (P=0.045) and trial 2 (P=0.022), trial 3 (P=0.003), trial 4(P=0.001), trial 5 (P=0.003), recognition trial (P<.001) and the total score of trials 1–5 (P=0.001) were statistically significant. Moreover on digit span forward (p<.001) and backward (p<.001) tests patients' performances were significantly poorer than controls. .Statistical analysis was carried out using SPSS 24 software.

Conclusion : These preliminary results can represent the existence of working memory deficits among Iranian patients with temporal lobe epilepsy. In future, more accurate studies with bigger sample sizes are needed in order to characterize these impairments in patients with temporal lobe epilepsy.

Keywords : Temporal lobe epilepsy, working memory, cognitive tests

Count: 56
Abstract ID: 603
subject: Cognition: Working Memory
Presentation Type: Oral

Visuospatial Working Memory Modulates αβ brain rhythms within MT cortex of macaque monkey

Submission Author: Zahra Bahmani Dehkordi

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Background and Aim : Psychophysical studies have shown that memorizing a location improves visual discrimination performance at that location. Recent studies in our lab indicate that neurons in extrastriate visual areas receive a strong top down signal from prefrontal cortex during working memory (WM). However, memory related activity in terms of firing rate is very weak or nonexistent in these visual areas, their sensitivity is improved by spatial memory signal. One possible hypothesis for the reason of this improvement is that the top down signal provides a kind of subthreshold modulation in visual areas. It is believed that the local field potentials (LFPs) reflects the level of input to an area. So, we want to determine whether extrastriate LFPs are modulated during maintenance of spatial signals within visual areas.

Methods : Here, we simultaneously recorded the spiking activity and LFPs within the middle temporal (MT) cortex using an array electrode with multiple sites. The activities were recorded during two versions of memory guided saccade (MGS) task. In the first version of MGS task, which was used for measuring memory related modulation with in MT cortex, after one second of successful eye fixation by monkey, the visual target was presented for one second; The monkey had to remember the target location during a 1.5-2 second memory period, and then saccade to the remembered location after disappearance of the fixation point. In the second version of the task, a set of visual probe stimuli were presented during the fixation and memory periods. This version was used to study the interaction between top-down and bottom-up signals with in MT cortex. We measured the power density function (PSD), locking between phases of αβ ongoing oscillations and both spikes and amplitude of αβ oscillations. We also used mutual information to measure the amount of information between brain signals and incoming visual stimuli.

Results : However, WM didn't change the firing rate of neurons in the MT cortex of rhesus monkeys, it enhanced the PSD of the local field potentials in the frequency range of ?? (8-25 Hz). Assessing the temporal relationship between spikes and phases of LFP signals during the memory period showed a significant increase in the value of locking between spike times and the phases of ongoing ?? oscillation. Besides, phases of low frequency signals were significantly locked to the amplitude of higher frequency component. More surprisingly, the modulation in spike timing brought about the benefits of WM for the improvement of sensory improvement. Measuring mutual information between the phases of ?? oscillations at which spikes occurred and the visual stimulus location during

working memory increased. This effect means that WM could enhance the ability of MT neurons to carry visual information.

Conclusion : These results suggest a mechanistic mechanism of how a spatial WM signal, by modulating the brain rhythms within visual areas, is capable of improving the visual sensory processing, potentially underlying the improvement of performance at the level of behavioral by WM.

Keywords : working memory; visual representation; brain oscillation; phase Modulation; LFP; spike-phase locking

Count: 57
Abstract ID: 324
subject: Cognition: Working Memory
Presentation Type: Poster

Evaluate the effect of event-related potentials on working memory

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Background and Aim : Event-related potentials (ERPs) are small changes in the scalp-recorded electroencephalogram time-locked to the onset of an event such as a sensory stimulus or a motor act. Working memory has been conceptualized as consisting of a number of components, such as an articulatory loop for rehearsing verbal material, a visuospatial sketch pad for maintaining visual images and a central executive that controls which information is made available for conscious processing. The aim of this study is to evaluate effect of event-related potentials on working memory.

Methods : This review article was carried out by searching for studies in PubMed, Embase, and Scopus and Cochrane library (from Jan 2008 to Mar 2018), by using the search terms “event-related potentials” “ERP” and “memory”. The search was limited to articles published in English. In this review, 183 articles that are associated with the subject, were found and of these, 18 articles were applied.

Results : A review of the results of such ERP mapping studies suggests that there is the good correspondence between ERP results and those from brain imaging studies that map hemodynamic changes and will provide a greatly increased understanding of the spatiotemporal dynamics of the brain networks that encode and retrieve explicit memories. Recognition memory was associated with two ERP effects: an early on-setting FN400 (325-600 ms) effect, and a later parietal old–new effect [late positive component (LPC); (1,300-1,900ms)], which have been associated with familiarity and recollection, respectively. The FN400 increased gradually with item recognition confidence, whereas the LPC was only observed for highly confident recognition responses. On the other, in test words, ERPs to correctly assigned words were more positive than those evoked by words correctly judged to be new.

Conclusion : The variety of ERP activity, observed that this technique is effective in the central nervous system during working memory tasks. These results illustrate the strong relationship between event-related potentials and recognition memory.

Keywords : Event-related potentials , ERP, electroencephalogram , Working memory , memory

Count: 58
Abstract ID: 260
subject: Cognition: Working Memory
Presentation Type: Poster

The Effectiveness of Family-based Cognitive Games on Working Memory of Children with Learning disability in Mathematics

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Background and Aim : The purpose of the research was to study the effectiveness of cognitive activities on working memory of the students with learning disability.

Methods : This was evaluated by a semi- experimental with pretest-posttest and a control group. 15 students in the experimental group participated in this program, and 15 students in the control group did not receive any treatment. Wechsler digit span was used to measure working memory was used to measure their attention span, and K-math (2003) was used to evaluate their mathematics performance.

Results : The obtained data were analyzed using Analysis of the Covariance. The findings showed significant differences ($p<0.5$) between the experimental and the control group in working memory in these students.

Conclusion : At the end, using cognitive games for improving working memory was discussed. Further discussions as well as suggestions for future research are presented.

Keywords : Working memory, cognitive games, students with learning disability in mathematics.

Count: 59
Abstract ID: 468
subject: Cognition: Working Memory
Presentation Type: Poster

The Role of Prefrontal Cortex to Control the Posterior Areas

Submission Author: Mohsen Parto

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Background and Aim : The primate prefrontal cortex (PFC) is widely known to reserve many cognitive processes such as working memory, attention, decision making, and perception. Numerous evidence suggests that PFC plays a functional role in top-down processes. But what happens for the brain if this critical area defects?

Methods : In the current study, we address this issue by comparing the whole brain connectivity, during a WM task, between two groups of subjects; the healthy control group and PFC lesion group. Throughout the task, Electroencephalogram (EEG) signal was recorded from 64 channels over the whole brain of 20 healthy and 14 PFC lesion subjects.

Results : Based on the control group, we found a significant PFC to posterior connectivity in ?? band (2-7Hz). We further found some functional communication of posterior regions (temporal-parietal connectivity) in ?? band. Our data show that the lesion in the PFC area causes the diminishing in the posterior connectivity and also PFC to posterior connectivity.

Conclusion : These results highlight the functional role of PFC, as a high-level associated area, to control the posterior areas in an active task.

Keywords : Connectivity, Prefrontal cortex (PFC), Working Memory (WM), Lesion study.

Count: 60
Abstract ID: 82
subject: Cognition: Working Memory
Presentation Type: Poster

Interaction of Opioidergic system and Dopaminergic system in Working memory processing.

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Background and Aim : Working memory is a dynamic neuronal system which is involve in temporary processing and maintaining of information for cognitive functions. Prefrontal cortex is the main processing center of working memory. Since different neurotransmitter systems can modulate many form of memories at the same time, in this study the role of Opioidergic system in medial prefrontal cortex and Dopaminergic system in Basolateral Amygdala was investigated.

Methods : The male Wistar rats were grouped in 6. Rats cannulated in mPFC and BLA sites with stereotaxic surgery. After a recovery period, according to DSWS protocol they were injected of Morphine and Chloropromazine as an agonist and antagonist of Opioidergic and Dopaminergic systems. By using Radial maze test, Parameters such as working and reference memory errors and time spend in working and reference memory arms were calculated.

Results : Data analysis showed that injection of both Morphine and Chloropromazine in high dose (2µg/rat) have improving effects on working and reference memory $P \leq 0/05$. Time spend in working and reference memory arm, after injection of Morphine in mPFC had no significant change. But injection of Chloropromazine in 2 µg/rat reduced this parameter $P \leq 0/05$. Coadministration of uneffective dose of Morphine in mPFC with triple dose of chloropromazine in BLA couldn't change that parameters compared to morphine control group $P > 0/05$.

Conclusion : Data analysis show Opioidergic system in mPFC have modulating role in working and reference memory and stimulation of different level of these receptors have different effects. block of Dopamine receptors in BLA have improving effects on processing of working memory. Also an optimum working memory needs to appropriate activity of these receptors.

Keywords : Working memory; Prefrontal cortex; Basolateral Amygdala; Morphine;Chloropromazine

Count: 61
Abstract ID: 50
subject: Cognition: Executive Function (Decision Making, Reasoning, Problem Solving)
Presentation Type: Poster

Plastic brain: cognitive rehabilitation of neuro-cognitive disorders in patients with stroke

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Background and Aim : The vascular lesions of the brain are very common, and is the resulting of neurological defect depends on the size of the blocked artery, the position of the lateral vessels, and the region involved in the brain. Of the 380,000 deaths in Iran in 2011, 43,000 were due to stroke. Cognitive-vascular dysfunction is a progressive brain disorder that is the common cause of stroke-induced neurological deficits, including reduced information processing speed, memory, attention, and loss of executive functions. On the other hand, based on the concept of neural plasticity, cognitive rehabilitation measures are being undertaken to organize the re-functioning of brain systems on people with stroke.

Methods : In this article, we will review the history of theories and models of cognitive rehabilitation over the past two decades and examine the results of experimental research conducted from 2000 to 2017. For this purpose, 33 articles from PubMed, Science Direct and Google Scholar sites were collected and analyzed with keywords of cognitive rehabilitation and stroke.

Results : The study of the history of cognitive rehabilitation includes four theoretical and basic models including theories and models of cognitive function, behavior, learning and organization that led to the presentation of a comprehensive neuropsychological rehabilitation model, and experimental research has shown the significant effect of cognitive rehabilitation among people with stroke.

Conclusion : In sum, cognitive rehabilitation based on the principles of neuroplasticity in the brain aims to rebuild and empower cognitive functions in people with stroke, which has resulted in relative satisfaction and recovery for affected people.

Keywords : stroke, cognitive rehabilitation, neuro plasticity, cognitive functions

Count: 62
Abstract ID: 14
subject: Cognition: Executive Function (Decision Making, Reasoning, Problem Solving)
Presentation Type: Poster

What is going on? Changes in main executive functions (working memory, attention and problem solving) after cognitive rehabilitation in adults with stroke

Submission Author: Parya Abravani

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Background and Aim : According to the World Health Organization, stroke is a collection of sudden clinical symptoms. Also, they are related to the regional (or general) function of the brain that lasts for more than 24 hours and has no obvious cause other than vascular origin. Working memory deficit is one of the most commonly occurring phenomena after brain damage. People with memory deficits face distraction, forgetfulness, and difficulty in complex assignments. Attention and problem solving and brain flexibility have close relationship with working memory. Cognitive Rehabilitation is a cognitive and neuropsychological interventions program designed to rehabilitate and resolve cognitive deficiencies. This study investigates the effect of working memory rehabilitation on verbal/spatial working memory, selective and divided attention and problem solving and brain flexibility in adults with stroke.

Methods : 20 patient with stroke participated in this study that 10 patients were placed in experimental group and 10 patients were placed in control group. All patients in experimental group underwent computerized working memory rehabilitation. All 20 patients were tested twice (pre-test and post-test) by Wechsler Working memory scale, spatial N-back test, Wisconsin card sorting test and selective and divided attention test. Patients who participated in experimental group significantly improved their verbal working memory and selective attention.

Results : Descriptive statistics showed that the mean and standard deviation of auditory and visual working memory and selective attention components of the experimental group was higher than the control group. Also, Multivariate analysis of covariance indicated that cognitive rehabilitation has an effect on audio/visual working memory and selective attention, as the calculated F is statistically significant ($p<0.05$). But there are no significant changes found in spatial working memory, divided attention and problem solving.

Conclusion : The results showed significant improvement in verbal working memory, it may occur as a result of changes in neural organization in response to injury. As a result of the cognitive rehabilitation program used in this study reemerges subjective acts and based on brain flexibility, it improves the working memory of people with

stroke. It seems that the lack of improvement in divided attention and the problem solving is due to the lack of harmony and parallel exercise in different regions of the brain because of infarct tissue.

Keywords : Cognitive Rehabilitation, Working Memory, Stroke, Attention, problem solving

Count: 63
Abstract ID: 387
subject: Cognition: Executive Function (Decision Making, Reasoning, Problem Solving)
Presentation Type: Poster

Age-related changes in components of executive function

Submission Author: Sadaf Agah

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Background and Aim : Executive function (EF) is an umbrella term used for a variety of cognitive abilities. There is clear evidence that EFs are vulnerable to the effects of age over lifespan but the patterns of decline and the age of significant decrease are somewhat conflicting. The aim of the present study was to investigate the changes in EF components across the lifespan.

Methods : A sample of 586 adults aged 25-81 years (M=47.95, SD=14.01) participated in this study and divided into 5 age groups: 25-34 (25.3%), 35-44 (10.2%), 45-54 (24.9%), 55-64 (28.5%), and 65< (11.1%). Participants completed a personal information questionnaire and carried out neuropsychological tests. One-way analysis of variance (ANOVA) was performed to determine EF decline across age groups.

Results : ANOVA results showed that all EF task scores including Backward digit span [F(558 , 4) = 38.92, p = 0.01] and Corsi blocks [F(577 , 4) = 30.03, p = 0.01] for working memory, Wisconsin card sorting test [F(557 , 4) = 15.25, p = 0.01] for shifting, Stroop interference score [F(555 , 4) = 3.49, p = 0.01] and Incongruent reaction time [F(558 , 4) = 60.35, p = 0.01] for inhibition and Tower of London [F(570 , 4) = 3.12, p = 0.01] for planning exhibited a significant decline with aging.

Conclusion : Our findings add to the previous literature on age and cognitive changes in the healthy population. Moreover, we have also indicated that this cognitive decline begins by the age of 45 and that is consistent with previous studies.

Keywords : Executive function, Healthy population, Age-related decline

Count: 64
Abstract ID: 201
subject: Cognition: Executive Function (Decision Making, Reasoning, Problem Solving)
Presentation Type: Poster

Attentional functions and working memory capacity in students with anxiety disorder in compared with normal controls

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Background and Aim : Patients with anxiety disorder suffering from a range of dysfunctions in problem solving and adjusted response according to cognitive capability. The aim of present study was to comparison the performance of female students with anxiety disorder in behavioral inhibition and working memory in compared with normal controls.

Methods : 20 female student (15-19 years) with symptom of anxiety disorder by using Cattle Anxiety Scale and 28 normal aged and gender matched student performed Test of Variables of Attention (TOVA) and visual N-back task to investigate attentional functions and working memory. Performance of all participants in this tow task was analyzed by MANOVA.

Results : : There was no difference between performances of groups in visual N-back task, but anxiety group have more errors in omission (go errors) and commission (no go errors) in TOVA as sustained attention and behavioral inhibition deficits.

Conclusion : These findings would suggest that students with anxiety disorder have the same performance in working memory task in compared with participants in control group. But, anxiety group have most impairments in attentional functions including sustained attention, selective attention and behavioral inhibition. This findings would suggest that attentional control in anxiety disorder impaired mainly due to sensitivity to pesky information, in fact troubles in concentration in anxiety patients combine with several impairments in focusing attention to information.

Keywords : Attentional functions, working memory, anxiety disorder

Count: 65
Abstract ID: 676
subject: Cognition: Executive Function (Decision Making, Reasoning, Problem Solving)
Presentation Type: Oral

Epigenetic signature of noise pollution may induce depression and deficiency on executive functions

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Background and Aim : Noise pollution is the disturbing sound with effects on somatic and psychological functions of human or animal life. Effects of noise pollution on cognitive and executive functions of brain is not completely clarified. Present study aimed to evaluate the effects of noise pollution on brain abilities in rat model.

Methods : Two groups of wistar rats (each group was including 3 male and 3 female) were selected. Test group rats were experiencing two months of noise pollution in Brickworks and control group rats were stayed in noise free laboratory situation. After two month period, forced swimming test, shuttle box and Oasis maze were obtained from both groups. After scarifications and brain tissue extraction, RNA extraction from frontal lobe and cDNA synthesis were conducted and DNA microarray operated for whole genome expression profiling. Finally results confirmed by quantitative Real time PCR.

Results : Findings showed significant over expression of 153 genes including dopamine receptors and neurotrophic factors and down expression of 221 genes including transcription factors, tumor suppressor, immune system and methyl transferase genes. In addition noise polluted rats stayed significantly higher seconds in floating mode ($p=0.003$) in forced swimming test in compare with control group. In addition shuttle box test showed significant memory deficiency ($p=0.005$) in noise polluted rats versus control group. Also in Oasis maze, noise polluted rats showed significant latency to find the correct way ($p=0.008$) in compare with noise free rats.

Conclusion : Results showed chronic effects of noise pollution could make an epigenetic signature that alter the behavior and executive function abilities of rats. Depressive behaviors, memory deficiency and latency in problem solving have been observed in rat model. It may increase the concerns about harmful effects of noise pollution on psychological health of individuals who take the noise pollution.

Keywords : noise pollution, behavioral tests, memory deficiency, epigenetic

Count: 66
Abstract ID: 367
subject: Cognition: Executive Function (Decision Making, Reasoning, Problem Solving)
Presentation Type: Poster

Developing a Carpet Weaving Training Program and Evaluating its Effectiveness on Carpet Weaving Competency, Self-esteem of adolescents with

Submission Author: Zahra Hamedi

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Background and Aim : A carpet weaving training program was specifically designed based on cooperative learning, and needs and competencies of adolescents with intellectual disability. Its effectiveness on self-esteem and social skills of slow-paced adolescents was studied. Participants of the research were all students with intellectual disability of second and third grades of Ershad & Noor Exceptional Schools of Tehran in 2017 & 2018. Effectiveness of this intervention was evaluated by a semi- experimental with pretest-posttest and control group. 10 students in the experimental group participated in this program, and the control group did not receive any treatment. Self-respect Rozenberg questionnaire (1965) was used to evaluate self-esteem. Questionnaires were completed by the trainees before and after learning. The obtained data were analyzed using Analysis of the Covariance. The findings showed significant differences ($p<0.5$) between the experimental and the control group in self-esteem (0.644) and carpet weaving (0.830). At the end, using carpet-weaving training package for improving self-esteem and weaving learning was discussed. Further discussions as well as suggestions for future research are presented.

Methods : semi-experimental

Results : The findings showed significant differences ($p<0.5$) between the experimental and the control group in self-esteem (0.644) and carpet weaving (0.830). At the end, using carpet-weaving training package for improving self-esteem and weaving learning was discussed. Further discussions as well as suggestions for future research are presented.

Conclusion : At the end, using carpet-weaving training package for improving self-esteem and weaving learning was discussed. Further discussions as well as suggestions for future research are presented.

Keywords : carpet weaving training, self-esteem, adolescents with intellectual disability.

Count: 67
Abstract ID: 619
subject: Cognition: Executive Function (Decision Making, Reasoning, Problem Solving)
Presentation Type: Oral

The Contribution of Emotional and Cognitive Dysfunctions to Reflection Impulsivity in Male Abusers of Methamphetamine

Submission Author: Hashem Jebraeili

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Background and Aim : The neurologic research on methamphetamine abusers indicates the cognitive and emotional dysfunctions in brain and theoretical models reveal the negative effect of these dysfunctions on the abusers' decision-making. Yet no research has been conducted on the potential role played by emotional and cognitive dysfunctions in information collection required for decision-making. Therefore, current study is aimed at investigating the role of abuse indices as well as emotional and cognitive dysfunctions in reflection impulsivity of the methamphetamine abusers.

Methods : The statistical sample was made up of all male abusers of methamphetamine under the treatment at drug rehabilitation centers located in Tehran. 320 out of all male abusers were selected, using convenient sampling. Then they were examined, using Information Sampling Task, Rapid Visual Information Processing Task, The Trail Making Test, emotional dysregulation questionnaire, Five Factor Impulsive Behavior Scale. Pearson correlation test and hierarchical regression in SPSS package were used to analyze the data.

Results : Statistical results showed that the number of boxes opened in Fixed Win (FW) condition is correlated with abuse duration ($r=0.13$, $p<0.05$), abstinence duration ($r=0.31$, $p<0.01$) and age of onset of methamphetamine use (0.16, $p<0.01$). The number of boxes opened in decreasing Win (DW) condition is correlated significantly with age ($r=0.16$, $p<0.05$), abstinence duration ($r=0.31$, $p<0.01$), age of the onset of methamphetamine use ($r=0.22$, $p<0.01$), sustained attention ($r=0.20$, $p<0.05$), lack of emotional awareness ($r=0.14$, $p<0.05$), limited access to emotion regulation strategies ($r=0.14$, $p<0.05$), sensation seeking ($r=0.18$, $p<0.01$), and positive urgency (0.18, $p<0.01$). The results of hierarchical regression show that while the number of boxes opened in Fixed Win (FW) condition is influenced by abuse indices ($F=13.93$, $p<0.01$), the number of boxes opened in decreasing Win condition is influence not only by abuse indices ($F=15.18$, $p<0.01$) but by cognitive variables ($F=4.26$, $p<0.01$) and emotion variables ($F=3.46$, $p<0.01$) as well.

Conclusion : Although it seems that Fixed Win condition measures only impulsivity, the scores in Decreasing Win Condition provide a measure of risky decision making, which is considered a more complex ability compared to impulsivity and is influenced not only by abuse indices but cognitive and emotional difficulties as well.

Keywords : Cognitive Flexibility, Continuous attention, Decision making, Emotional regulation, Executive control, Reflection impulsivity

Count: 68
Abstract ID: 90
subject: Cognition: Executive Function (Decision Making, Reasoning, Problem Solving)
Presentation Type: Poster

Examination and comparison processing speed, reaction and decision time in clinically-stable schizophrenia and bipolar disorders

Submission Author: Ali Keyhani

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Background and Aim : Evidence suggests that the speed of information processing in people with schizophrenia is low. Schizophrenia patients also show defects in motor speed and coordination (Bachman et al., 2010). Studies have shown that there is a lack of cognitive function in patients with bipolar disorder (Krabbendam, Arts, Van Os & Aleman, 2005). Processing speed is the cornerstone of many cognitive processes. Many studies have shown that the rate of cognitive processing in bipolar patients is weaker than those of normal people (Daban et al., 2006). In bipolar patients, higher levels of cognitive impairment are associated with frequent hospitalization, behavioral, emotional and cognitive reactions, as well as the inability to postpone rewards. In schizophrenic patients, cognitive deficits are more associated with prolonged periods of illness and more negative symptoms (Rajji et al., 2014). According to the CHC theory, one of the main components of cognitive speed is the processing speed. The processing speed refers to the ability to quickly perform cognitive and simple duplicate assignments. Also, the reaction time and the decision time is defined as the speed at which judgment is made in very simple situations when it comes to delivering items at one time (Flanagan & Harrison, 2012).

Methods : After receiving the code of ethics (IR.KAUMS.MEDNT.REC.1396.7) and with informed consent, a group made of 40 patients with schizophrenia, 40 patients with bipolar disorder and also 40 subjects as control group was created. Inclusion criteria include schizophrenia and bipolar disorders, ages 18 to 45, and minimum 8th grade education; while exit criteria include: manic and psychotic's courses as well as other untreated psychiatric problems during the study. All patients with schizophrenia and diphtheria were under medication. Participants completed a demographic characteristics and predictive intelligence, Trial Making Test (TMT), reaction time (Four Choice) and ruler drop method. Data were analyzed using Chi-square, independent t-test, analysis of variance (ANOVA) and multivariate analysis of variance (MANOVA).

Results : The mean of the general intelligence in schizophrenia patients was more than bipolar patients but less than healthy controls ($P < 0.001$). The mean of the TMTa (processing speed) in bipolar patients was higher than in the other two groups. Also, the mean of the TMTb (processing speed) in schizophrenia patients was higher than that of

healthy controls (P <0.001) that represents a lower processing speed for these patients than healthy controls (P <0.001). The mean of the reaction time in Ruler test (RT time and RT accuracy) in bipolar patients was higher than in the other two groups (P <0.001). The mean RT accuracy in the healthy controls was higher than in the other two groups, indicating a greater number of responses in these patients than schizophrenia and bipolar patients.

Conclusion : The results showed that processing speed in bipolar group was higher than schizophrenia group but lower than the control group. Also, reaction time and decision in bipolar group was higher than schizophrenia group, but lower than the control group.

Keywords : Processing Speed, Reaction and Decision Time, Schizophrenia Disorder, Bipolar Disorder

Count: 69
Abstract ID: 208
subject: Cognition: Executive Function (Decision Making, Reasoning, Problem Solving)
Presentation Type: Poster

Prediction of cognitive flexibility basic on cultural resilience

Submission Author: Sadegh Khodamoradi

Sadegh Khodamoradi[1]

1. Sadegh Khodamoradi

Background and Aim : Resilience is the ability to solve a problem in difficult situations and cultural resilience is being considered as the ability dependent to ethnic and evolutionary social conditions to cope with unpredictable difficulties. On the other hand, cognitive flexibility is the ability to provide various solutions for solving challenging and non-challenging issues.

Methods : In this research, two ethnical groups (Kurds & Turks) using purposeful sampling were selected. Each group was given 150 questionnaires of Khodamoradi's Cultural Resilience (CR-30) and Dennis's Flexibility questionnaire.

Results : The results showed that there is a positive and significant correlation between cultural resilience and cognitive flexibility.

Conclusion : This finding proves that cognitive flexibility in problem solving and the skills of controlling excitement, behavior and thought in critical situations in conjunction with each other, has a desirable role in coming out of anxiety-provoking periods.

Keywords : cognitive flexibility, cultural resilience, problem solving

Count: 70
Abstract ID: 215
subject: Cognition: Executive Function (Decision Making, Reasoning, Problem Solving)
Presentation Type: Poster

Review of relationship between executive function (EF) and theory of mind (ToM) in ADHD

Submission Author: Mahsa Mehdizadeh behtash

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Background and Aim : Executive Functions are a series of capacities that regulate, control, and plan behavior and cognitive Processes so, proactive, and productive activities can develop. Theory of Mind (ToM) is an individual's ability to attribute intentions, desires, and beliefs to both others and the self. The Diagnostic and Statistical Manual of Mental Disorders (DSM-5) defines ADHD as an alteration in development of early childhood, characterized by a persistent pattern of inattention or hyperactivity-impulsivity that occurs with greater severity than expected at that level of development. As we can see in the case of individuals with Attention Deficit Hyperactivity Disorder (ADHD), deficits in either EF or/and ToM can generate difficulties in interaction with others because Both EF and ToM constructs are associated with social functioning. The ToM deficit in ADHD would be related to the deficit in the disorder's EF characteristics: firstly, the close relationship between EF and ToM; secondly, the participation of the frontal lobe in both EFs and ToM, and thirdly, the different clinical populations in which deficits in ToM and correlations between EF and ToM have been reported.

Methods : Studies were identified from PubMed, PsycINFO, Science Direct, Medline and Neuroscience (1990 to August 4, 2018), systematic reviews, reference lists, and exports. The evidence reviews included only English-language, published articles that are available through libraries.

Results : EFs and ToM are related basically through three aspects: neuroanatomical proximity, evolutionary development, and the connection that occurs between both processes in some mental and neurodevelopmental disorders. Findings also indicate that EFs associated with ToM in ADHD are, as hypothesized, inhibitory control, working memory, and cognitive flexibility. Sometimes, Attention considered as an EF. Significantly, EFs and ToM have been reported to be low and moderately correlated in ADHD; despite this correlation, the relationship between EFs and ToM is not sufficient to explain the social problems experienced by children with ADHD.

Conclusion : The researches show that the most relevance between TOM and EFs are inhibitory control, working memory, cognitive flexibility, and attention. Contrary to the difficulty of diagnosing ADHD in preschool children,

we can identify the relationship between TOM and EFs using the risk symptoms. Considering the changes in ADHD symptoms during adulthood, the study of the association between TOM and EFs is proportionate to study.

Keywords : Theory of mind , Executive function , ADHD . Social cognition

Count: 71
Abstract ID: 233
subject: Cognition: Executive Function (Decision Making, Reasoning, Problem Solving)
Presentation Type: Oral

Delay Discounting in Depression: Fatalistic Time Perspective as a Unique Explanation for Preference in Immediate Rewards

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Background and Aim : Delay discounting has been typically considered as a component of impulsivity. However, there may exist other reasons as to why some people discount the value of delayed rewards more than the others. Some of the probable reasons fit in the context of Time Perspective theory, which introduces five perspectives, namely Past Negative, Past Positive, Present Fatalistic, Present Hedonistic, and Future. On the other hand, research on delay discounting in depressed samples has led to contradicting results. The purpose of this study was to assess if Time Perspectives can explain why the results in depressed samples are inconsistent.

Methods : 72 depressed and 41 healthy students completed BDI-II, SCL-90-R, and ZTPI questionnaires, together with a Delay Discounting test. SCL-90-R scores were used for excluding participants with low mental health from the control group. The five time perspectives were each analyzed separately as a mediator for the effect of depression on Delay discounting. The effect of age and gender was controlled, and the null hypothesis for the indirect effect was assessed using the bootstrapping method.

Results : Except for Present Hedonistic, depression significantly predicted all Time perspectives. Moreover, the Present Fatalistic mediated the relationship between depression and delay discounting. That is, by strengthening the present fatalistic time perspective, depression indirectly led to a steeper delay discounting.

Conclusion : Present Fatalistic describes a feeling of distrust about the future and a belief that one has no control over things whatsoever. The results suggest that when depressed, these beliefs may lead people to find reasons to distrust future, and therefore choose immediate but smaller rewards over larger but later ones. Therefore, steep Discounting of delayed rewards may happen not because people are impulsive, but because their distrust in the future creates a justified reason for them to do so.

Keywords : delay discounting; depression; time perspective; present fatalistic

Count: 72
Abstract ID: 380
subject: Cognition: Executive Function (Decision Making, Reasoning, Problem Solving)
Presentation Type: Poster

Efficacy of Mindfulness Based Cognitive Therapy on cognitive fiexibility in Patients with Bipolar Disorder under Medical Treatment

Submission Author: MALIHE MOHAGHEGHIAN

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Background and Aim : Bipolar disorder is combined with chronic symptoms that have effect on cognitive abilities and executive functions. Executive functions disabilities such as cognitive inflexibility is associate with functional and interpersonal problems. The purpose of present study was to investigate efficacy of mindfulness based cognitive therapy (MBCT) in cognitive flexibility between patients with bipolar disorder under medical treatment.

Methods : This study was quasi-experimental, pretest-post test design with the control group. 30 men and women with bipolar disorder referred to psychiatry center of Almahdi welfare in Esfahan were selected through convenience sampling method and divided in two group experimental (14) and control (16) randomly. Both groups performed cognitive flexibility inventory (CFI) in pretest and post test phases. Experimental group was treated with mindfulness based cognitive therapy (MBCT) for 8 sessions, whereas control group did not received any treatment. The data was analyzed by Mancova.

Results : based on this finding mindfulness based cognitive therapy (MBCT) can be effective to increase cognition flexibility in patient with bipolar disorder under medical treatment

Conclusion : covariate analyze demonstrated that (MBCT) was effective on cognition flexibility (EF=%0/31) in experimental group.

Keywords : : bipolar disorder, cognitive therapy based on mindfulness, cognitive flexibility

Count: 73
Abstract ID: 288
subject: Cognition: Executive Function (Decision Making, Reasoning, Problem Solving)
Presentation Type: Poster

The effect of mental fatigue on function attention networks among elite athletes

Submission Author: Sahar Mohammadzadeh

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Background and Aim : Mental fatigue is a psychobiological state caused by prolonged periods of demanding cognitive activity. It can manifest subjectively (increased feelings of tiredness, lack of energy, decreased motivation), behaviorally decline in performance (accuracy and reaction time on a cognitive task), and physiologically (alterations in brain activity). The studies has showed that mental fatigue impairs cognitive performances such as focus attention, working memory performance, planning, executive control processes, sustained attention, goal-directed attention, alternating attention, response inhibition particularly conflict-controlling selective attention (response inhibition), is highly vulnerable to mental fatigue. Therefore, in order to prevent or deal with fatigue related to deficit of attention, it is important to understand the nature of mental fatigue and its specific effects on behavior. As attention is specifically affected by mental fatigue. Attention is an important selection mechanism that filters out irrelevant stimuli and ensures that stimuli relevant to goals or survival gain priority in utilizing higher-level processing resources According to the attention network approach, human attentional system can be subdivided into three functionally and anatomically independent networks: alerting, orienting, and executive control. In the present study we have examined how mental fatigue affects attention networks in athletes.

Methods : For this purpose 22 elite's athletes (15 males and 7 females) 18-30 years with five years the professional sports activities volunteered to participate in this study. Experiment included two sessions, first session, the participants performed attention networks test (ANT) (Spagna et al., 2015) in E-Prime 2.0 software in general condition for 30 minute, 48 hours after the first session, participants have recompiled the questionnaire Visual analogue scale (VAS) before the onset of the test. Then, in order to causes of mental fatigue, they performed the Stroop test for an hour, immediately after completing the Stroop test, they filled the questionnaire (VAS) for subjective assessment of mental fatigue, mental effort and motivation.

Results : The results of the analysis repetitive ANOVA 2*2 showed that in reaction time (RT), executive function affected by mental fatigue. As main effect of the time ($F(1, 22) = 4.80$; $p = .039$; $\eta 2 = .179$), the main effect of the condition ($F(1, 22) = 424.864$; $p = .001$; $\eta 2 = .95$) were significant and the interaction between stimulus and target

(F(1, 22) =3.03 ; p =.096; η2 = .12) was not significant. However, there were no significant difference in alerting (F(1, 22) =0.009 ; p =.92) and orienting (F(1, 22) =.212 ; p =.65) networks following mental fatigue.

Conclusion : Results of the current study confirmed the effect of mental fatigue in increscent of RT executive function networks. As attention is one of the most important cognitive functions in sport. Our study showed that fatigued athletes had difficulties in sustaining attention and also in preparing their responses just as response speed decreased and ignoring irrelevant information. Mental fatigue leads to reduction in goal-directed attention. We found that mental fatigue as a failure to sustain attention to optimize task performance during mental fatigue and processing speed is reduced due to fatigue mental

Keywords : perception-action coupling, vigilance, executive function

Count: 74
Abstract ID: 518
subject: Cognition: Executive Function (Decision Making, Reasoning, Problem Solving)
Presentation Type: Poster

A Pilot Study to Compare Executive Functions in Patients with Stroke and Healthy people Using CANTAB

Submission Author: Sajjad Montazerghaem

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Background and Aim : Stroke is one of the neurological disorders that causes cognitive, physical and behavioral impairments. The aim of this study was to compare Executive Functions (EF) in stroke patients and healthy subjects.

Methods : This study was descriptive and causal-comparative. Among all of the patients referred to our selected clinic, 20 patients were selected by convenience sampling method. For the comparison group, 20 healthy subjects were matched in terms of age and education through an internet call. Data were collected by using Addenbrooke's Cognitive Examination-Revised and CANTAB and analyzed by MANOVA and t-test in SPSS.

Results : The Patients had significantly lower scores in some EF related measures in CANTAB compared to the healthy group. Significant differences were found after adjusting age and education ($P < 0.05$).

Conclusion : According to what has been found in this study, stroke patients need more specific Cognitive Rehabilitation programs which emphasize on different dimensions of EF.

Keywords : Neuropsychological Assessment; Executive Functions; Stroke; Addenbrooke's Cognitive Examination-Revised; CANTAB

Count: 75
Abstract ID: 199
subject: Cognition: Executive Function (Decision Making, Reasoning, Problem Solving)
Presentation Type: Oral

Application of beta index in measuring of risk taking: signal detection theory analysis

Submission Author: MohammadAli Nazari

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Background and Aim : By analyzing the data of cognitive tests based on the signal detection theory, two indicators are obtained: 1. d-prime index (d´), which is the perceptual sensitivity, and implies that the person's ability to distinguish the target's stimulus from non-target stimulus, and 2. The beta index (β), which indicates conservatism or liberalism strategy of the individual in responding to the stimuli. Based on this theory, one can hypothesize that the score of individuals with high and low risk profile is different in beta index.

Methods : For this purpose, 57 subjects performed The Balloon Analogue Risk Task (BART) and then were divided into two high and low risk groups based on the mean score. Then they all run the Go/Nogo test. Then, based on the signal detection theory, their beta score was calculated using the number of correct answers and the commission errors.

Results : The results showed that the beta score in the high risk group was significantly lower than the low risk group.

Conclusion : The results of this study show that using cognitive tests such as Go/Nogo, one can measure the risk level of individuals without knowing that this test measures the risk profile of them.

Keywords : signal detection theory, beta index, risk taking, Go/Nogo

Count: 76
Abstract ID: 110
subject: Cognition: Executive Function (Decision Making, Reasoning, Problem Solving)
Presentation Type: Poster

Relationship between Hypothalamic-pituitary-adrenal axis and Executive Functions in Chronic Methamphetamine Users, a Cross-Sectional Study

Submission Author: Bijan Pirnia

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Background and Aim : The aim of this study was to determine the relationship between the plasma cortisol index and executive functions in chronic methamphetamine users in face with inguinal hernia.

Methods : In the cross- sectional design, 70 men users and non-users of methamphetamine with inguinal hernia were selected through Respondent-Driven Sampling method and was to determine the relationship between the plasma cortisol index and executive functions.

Results : The primary outcomes showed that there is a significant difference between the two groups in two indices. Secondary outcomes indicated a negative significant relationship between the cortisol level and executive functions.

Conclusion : chronic consumption of methamphetamine is associated with damage to executive functions.

Keywords : Executive Functions, Methamphetamine, Cortisol

Count: 77
Abstract ID: 4
subject: Cognition: Executive Function (Decision Making, Reasoning, Problem Solving)
Presentation Type: Poster

Investigating Efficacy of Structured Play on the Executive Functioning in 5– to 12–year-old Children with High-functioning Autism

Submission Author: Nasim Pourjabbar

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Background and Aim : This study aimed to investigate efficacy of structured play on the executive functioning in 5- to 12- year old children with high-functioning autism.

Methods : The present study is a pre-test post-test quasi-experimental study with an experimental group and a control group. Population of the study included 5- to 12-year-old children with high-functioning autism, who referred to the Children's Medical Center in Tehran in 2015. Study sample was 24 children with high-functioning autism, who were selected from among all autistic children referring to the Children's Medical Center Hospital in Tehran and assigned to the experimental and control groups. Behavior Rating Inventory of Executive Function was used for data collection. The experimental group received structured play for 16 sessions of 90 minutes.

Results : : Results of multivariate analysis of covariance indicated that there was a significant difference between experimental and control groups in mean scores of monitoring ability, planning ability, organization ability, working memory ability, initiation ability, emotional control ability, change ability and inhibition ability ($p<0.05$). In other words, structured play affected executive function ($P<0.05$).

Conclusion : antly increased the executive functions in the children with high-functioning autism in post-test of the experimental group. By using the child's natural interest and motivation to learn, Lego therapy will result in behavioral change.

Keywords : Structured Play, Executive Function, Autism, High-functioning.

Count: 78
Abstract ID: 284
subject: Cognition: Executive Function (Decision Making, Reasoning, Problem Solving)
Presentation Type: Poster

The role of cognitive flexibility and mindfulness in predicting Alexithymia

Submission Author: Reza Rajabpanah

Reza Rajabpanah[1], sadegh khodamoradi[2]

1. Reza Rajabpanah
2. sadegh khodamoradi

Background and Aim : Alexithymia is the inability to experience and display excitement that triggers multiple psycho-physical problems. This study aimed to investigate The role of cognitive flexibility and mindfulness in predicting Alexithymia.

Methods : Study this cross-sectional and is descriptive type. The study population included all students of Islamic Azad University (science and research), in the first semester of academic year 2017-2018 were investigated. The sample of this study was 230 students Faculty of Education and Psychology; and using multi-stage cluster sampling method and sample size Morgan formula were selected. Each student was given questionnaires of Toronto Alexithymia scale, mindfulness scale and Dennis's Flexibility questionnaire.

Results : The results showed that between cognitive flexibility and Alexithymia (R= - 0.228) negative correlation which in level (P ?0.05) is meaningful, and between Alexithymia and Procrastination (R=-0.387) had a negative correlation which in between the level (P? 0.01).

Conclusion : Considering the role of Alexithymia in students' academic performance and psychosocial health, and the relationship between mindfulness to this variable it seems that with mindfulness training to students can be helped to improve their Alexithymia and did a good psychological action.

Keywords : Alexithymia , Cognitive Flexibility, Mindfulness,

Count: 79
Abstract ID: 41
subject: Cognition: Executive Function (Decision Making, Reasoning, Problem Solving)
Presentation Type: Poster

Predicting the smoking behavior according to cognitive decision-making, response inhibition and problem solving

Submission Author: Hasan Soleimani Rad

Hasan Soleimani Rad[1], Mahsa Hatam Vishkaii[2], Abas Abolghasemi[3]

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Background and Aim : In these years, health and lifestyle are widely considered. So that the health of each person depends to nearly on his lifestyle. On the other hand, many factors can affect a person's lifestyle, For example smoking (Everitt, 2016). Smoking is a visible behavior with cognitive, emotional and physiological backgrounds (WHO, 2017), which can have economic and health negative effects. Researches have shown that smokers have relative defects in the types of cognitive processes and behavioral capacities of executive functions (Loprinzi et al., 2015). Probably, based on these functions, it is possible to predict the smoking behavior. Therefore, the purpose of this study is to predicting the smoking behavior according to cognitive decision-making, response inhibition and problem solving, which are considered as important components of executive functions. They are frequently associated with neural networks that include the frontal lobe, particularly the prefrontal cortex (VandenBos, 2015).

Methods : This descriptive research is of the correlation study. A sample of 97 subjects were chosen through convenience sampling from the University of Guilan. After the informed consent and the assurance of secrecy, participants initially answered the researcher-made cigarette checklist and questionnaire of smoking behavior in the form of Pencil-paper. In continue, respectively, with detailed explanation of how to work with any of the software tests, for measure cognitive decision-making was used the Cambridge Gambling Task (Zois et al., 2014), for response inhibition was used the Simple Stroop Test (Stroop, 1992), and for problem-solving was used the Tower of London Test (Shallice, 1982). The final data was entered into the PASW software for multiple regression analysis.

Results : The mean (and standard deviation) of participants' age was 24/38 (1/04), in the age range of 21 to 29 years. Participants were male students, mostly from undergraduate and non-native that resident of the dormitory. With observance statistical assumptions, the results of the multiple regression analysis have shown that the variable of cognitive decision-making, response inhibition and problem-solving can predict the smoking behavior ($p<0,05$). These variables together explain 34.2% of the variance of smoking behavior ($R2=0/342$, $P<0/05$). To compare predictor variables, the beta coefficient of each of the variables of cognitive decision-making, response inhibition, and problem solving obtained respectively 0/265, 0/235 and 0/281($P<0/05$).

Conclusion : The results showed that smoking behavior is related to cognitive decision-making, response inhibition and problem solving. This indicates an increase in smoking behavior in people with relative weakness in cognitive decision-making, response inhibition and problem solving. According to the results, these variables can predict the smoking behavior. In explaining these findings, it can be said cognitive decision-making, response inhibition and problem solving are components of executive function (VandenBos, 2015). Researches have shown that defects in these functions can be seen in a variety of impulsive and addictive behaviors (Pentz, 2016). Smoking as an addictive behavior can be linked to this defect (Pentz, 2015). Therefore, it seems that smoking behavior can be predicted according to functions of cognitive decision-making, response inhibition and problem solving. Although it is unclear whether defects in these variables cause smoking or not, smoking in the long run will create this defect.

Keywords : Smoking Behavior; Cognitive Decision Making; Response Inhibition; Problem Solving.

Count: 80
Abstract ID: 13
subject: Cognition: Executive Function (Decision Making, Reasoning, Problem Solving)
Presentation Type: Poster

The effect of Neurofeedback Training on Anxiety of The Amature Ping-Pong Players

Submission Author: Hamid Sourni

Maryam Ershad[1], Hamid Sourni[2]

1. Master of Clinical Physiology
2. Master of Clinical Psychology

Background and Aim : Present project designation is applicable from the viewpoint of aim and half experimental type from the perspective of implementation, with two experimental and control groups.

Methods : This research accomplished aiming to evaluate the effectiveness of the Neurofeedback on competitive anxiety of athletes. Statistical universe is consisted of elementary Ping-Pong athletes. The sampling method was available sampling, which 30 person of elementary Ping-Pong athletes were arranged into two experimental and control groups randomly, each one 15 person. The experimental group was learned 20 half-an-hour sessions.

Results : The athletes of both groups were evaluated and compared using Competitive Anxiety Test and Neurofeedback Device in two pre- and post-test steps. The Independent T Test was used to examine the research assumptions.

Conclusion : Results demonstrated that after the Neurofeedback learning, the experimental group had a considerable difference with the control group from the viewpoint of competitive anxiety reduction. Thus, people with the utilizing of the Neurofeedback can control their brain waves volitionally and improve their performance through that.

Keywords : Neurofeedback, competitive anxiety, athletes, electroencephalogram

Count: 81
Abstract ID: 230
subject: Cognition: Executive Function (Decision Making, Reasoning, Problem Solving)
Presentation Type: Poster

Prediction of cognitive fusion and self-control Based On Psychological Flexibility Components

Submission Author: Parasto Vilamehr

Parasto Vilamehr[1], sadegh khodamoradi[2]

1. Parasto Vilamehr
2. sadegh khodamoradi

Background and Aim : This paper aimed predicting role of 3 components of psychological flexibility (acceptance and action, values and cognitive diffusion) for cognitive fusion and self-control.

Methods : Samples of this study involve 200 Tehran university students selected by convenience- sampling procedure. The instruments used in this study consisted of self control tangeny, cognitive fusion scale , Acceptance and Action second revised (AAQ-II), Value-oriented life and Cognitive Diffusion Questionnaire.

Results : Results of the present study showed that self-control and cognitive fusion meaningful correlation with acceptance and action, values and cognitive defusion. Acceptance and action explained 45% of the variance of the self-control and cognitive diffusion 87% of the variance of the cognitive fusion.

Conclusion : Self-control creates the ability of having optimal impact on behavior and environment in order to gain pleasant experiences. On the other hand, cognitive defusion is the ability of experiencing events regardless of attitude and thinking type.

Keywords : cognitive fusion , self-control , Psychological Flexibility Components

Count: 82
Abstract ID: 320
subject: Cognition: Cognitive Aging
Presentation Type: Poster

Thymol inhibits Aβ-induced neurotoxicity in Alzheimer's disease animal model by activating the protein kinase C pathway

Submission Author: Zahra Azizi

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Background and Aim : Protein konase C (PKC) is one of the cognitive kinases, and plays an essential role in both memory acquisition and maintenance. PKC activators have been shown to reduce the accumulation of neurotoxic β Amyloid (Aβ). All potential therapeutic agents that target PKC or upstream/downstream mechanisms which lead to its activity could be consider useful in treating the disease. Thymol is monoterpenic phenol present as main constituent in the essential oil of many aromatic plants such as species of Zataria, Origanum, Thymbra and Thymus. Recentely, the evidence has been illustrated that thymol increased the phosphorilation of mitogen-activated protein kinase (MAPK). Since MAPKs, such as ERK, are common downstream factors of PKCs, the central hypothesis this study is that thymol may play as PKC activator in protection against Amyloid β toxicity.

Methods : Aβ25-35 was injected into the CA1 region of rats' hippocampus and bryostatin (0.2 nM), a highly potent PKC activator, and different doses of thymol (0.5, 1, 2 mg/kg) on cognitive function were investigated in the Morris water maze. Animal were subjected to 5 days of training in the maze; 4 days with the visible platform to test spatial learning and the 5th day with the visible platform to test motivation and sensorimotor coordination. Hippocampus of rats were rapidly dissected and homogenized. The protein concentration was assayed by Bradford reagents. PKC activity was measured using Elisa.

Results : The results showed increases in escape latency in A?-treated group. These impairments were reversed by pretraining administration of bryostatin and thymol. In addition, thymol as well as bryostatin increased PKC activity compared to A?-trated animals.

Conclusion : Thymol has been shown to possess memory enhancing in rat model of Alzheimer's disease. In addition, thymol can promote PKC activity. These findings provide positive evidence for the effectiveness of thymol in alleviating cognitive impairments caused by increases Aβ levels, and increasing PKC activity may be the mechanism contributing toward their beneficial effects in these models. However, the effects of thymol in Alzheimer's disease animal models on the expression of PKC should be investigate.

Keywords : Protein Kinase C, Thymol, Morris Water Mase, Alzheimer's disease.

Count: 83
Abstract ID: 5
subject: Cognition: Cognitive Aging
Presentation Type: Oral

Dietary and plasma antioxidants in mild impaired and normal cognitive elders: A case-control study

Submission Author: Neda Dolatkhah

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Background and Aim : Antioxidants are considered an important component in neurodegenerative disease management since they can protect cells from oxidative damage. The aim of this study is to evaluate the intake and serum level of selected antioxidants in subjects possessing mild cognitive impairment (MCI) compared with a cognitively intact control.

Methods : This retrospective case-control study was conducted in Tabriz from December 2016 to August 2017. A total of 45 patients with MCI as a case group and another 45 healthy subjects matched for age and sex were recruited for the control group. After completing the Mini-Mental State Examination (MMSE-12) questionnaire, the MCI cases were identified using the modified Peterson standard. Using a semi-quantitative food frequency questionnaire (FFQ), the common dietary intakes during the previous year were recorded and blood samples were collected.

Results : Of the 90 subjects in this study, 61% were men and 39% were women, with an average age of 68.8 ± 5.5 years. There was no significant differences between the two groups with respect to dietary intakes of Vitamin C, beta-carotene, and lycopene (p=0.079, p=0.413, and p=0.455, respectively). The results of the studied parameters showed that serum beta-carotene and lycopene (p=0.004 and p=0.044, respectively) in healthy subjects were significantly higher than those in elderly people with MCI. There was a significant correlation between Vitamin C dietary intakes and plasma level and cognitive scores in MMSE-12 (r = 0.231, p= 0.028 and r=0.224, p=0.033, respectively) and also between plasma level of lycopene and cognitive scores(r=0.388, p=0.000)

Conclusion : The subjects with MCI had a significantly lower plasma level of lycopene beta-carotene antioxidants compared to healthy subjects and there was a positive correlation between plasma level of Vitamin C and lycopene and also Vitamin C dietary intakes and scores in the MMSE-12 test.

Keywords : Mild Cognitive Impairment (MCI), Vitamin C, Lycopene, Beta-carotene

Count: 84
Abstract ID: 83
subject: Cognition: Cognitive Aging
Presentation Type: Poster

Memory performances of patient with amnestic mild cognitive impairment versus healthy old individuals.

Submission Author: Golita Emsaki

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Background and Aim : Amnestic mild cognitive impairment (MCI) is one of the cognitive profiles of aging which is considered as a condition between normal aging and Alzheimer disease. Petersen criteria for MCI include: (i) evidence of objectively measured cognitive deterioration (iii) activities of daily living are preserved and (iii) the person is not demented; However the impairment in different domains of memory has not been clearly specified in these criteria. Therefore an accurate assessment of performance of MCI patient in different memory tasks and comparing with healthy individuals is necessary. Having the memory profile of MCI patients can help the clinicians in offering appropriate interventions. So the aim of this study was to compare the mean scores of different memory dimensions in amnestic Mild Cognitive Impairment and healthy controls.

Methods : In this study 40 patients with amnesic Mild Cognitive Impairment were selected and compared with 40 healthy controls. Wechsler Memory Scale, Autobiographical Memory Test and Retrospective-Prospective Memory test were administered for assessing immediate visual memory, delayed visual memory, immediate auditory memory, delayed auditory memory, working memory, retrospective and prospective memory and autobiographical memory and data was analyzed by ANOVA and Mann-withney U tests.

Results : The results showed that there is a significant difference between the mean scores of immediate visual memory, delayed visual memory, immediate auditory memory, delayed auditory memory, working memory, retrospective and prospective memory between patients and healthy controls ($P<0.05$). But there was no significant difference in the scores of autobiographical memory between the two groups ($P<0.05$).

Conclusion : The results were almost congruent with previous research. The difference was significant in almost all short term memory dimensions and with considering Mild Cognitive Impairment in Dementia spectrum and difference in brain structure and function between patients and healthy controls the difference can be explained. This difference will discuss in detail for each domain. How ever considering autobiographical memory as a remote

memory test and since neocortex structures such as frontal and occipital lobe are still intact in MCI the difference in autobiographical memory was not significant between patients and healthy individuals.

Keywords : Memory, Amnestic Mild Cognitive Impairment, Old ages

Count: 85
Abstract ID: 667
subject: Cognition: Cognitive Aging
Presentation Type: Poster

An evaluation of the effectiveness of mindfulness-based cognitive therapy on psychological well-being and mental health of the elderly

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Background and Aim : Aging accompanied by many problems such as economic, social and health that need for a comprehensive review. Due to the importance of psychological and mental health and cognitive beliefs in elderly peoples, it is good to be considered the study in this group. The aim of this study is the effectiveness of mindfulness-based cognitive therapy on psychological well-being and mental health of the elderly.

Methods : The research method was experimental with pre-test and post-test with a control group. The population consists of all elderly who lived in Babol city. To collect data from two questionnaires including: Ryf and Gvlbrg Psychological well-being and mental health (GHQ) and for data analysis and hypothesis testing of two descriptive and inferential statistics (ANCOVA) was used.

Results : There was a significant difference between two groups for psychological well-being and mental health factors after MBCT intervention

Conclusion : The result of this study showed that mindfulness-based cognitive therapy was effective in psychological well-being and mental health in elderly.

Keywords : Mindfulness, Cognitive therapy, Elderly, Well-being

Count: 86
Abstract ID: 100
subject: Cognition: Cognitive Aging
Presentation Type: Poster

Cognitive Reserve Proxy Measures and Successful Aging.

Submission Author: Neda Mohammad

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Background and Aim : Cognitive reserve (CR) refers to individual differences in susceptibility to brain damage and can lead to maintaining memory performance and successful aging. This study was conducted to investigate the association between different measures of cognitive reserve including bilingualism, mental activities, type of education (continuous versus distributed) age, educational level and memory functions in a healthy aging sample.

Methods : 415 subjects aged between 50–85 years participated in this cross-sectional study and were assessed the Psychology Experimental Building Language (PEBL) Test battery measuring semantic and episodic memory. Socio-demographic characteristics were collected from a questioner designed by the research team.

Results : Distributed type of educational training throughout life, educational level, doing particular mental activities (e.g., reading, writing, playing crosswords and mind teasers) as well as educational level were positively associated with performance in different measures of memory (semantic and episodic) in older adults. We haven't found any significant relationship between bilingualism and memory functions.

Conclusion : The results were discussed in connection with successful aging and protection against memory decline with aging.

Keywords : Bilingualism; Mental activities; Cognitive reserve; Aging; Memory

Count: 87
Abstract ID: 545
subject: Cognition: Cognitive Aging
Presentation Type: Poster

Cognitive disorders and nutritional status and some associated social factors in elderly

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Background and Aim : Good nutritional status leads to reduce mortality and morbidity and treatment costs. Although the prevalence of cognitive disorders and malnutrition is high in the elderly, but not enough studies about cognitive disorders and nutrition is very limited in the elderly. The aim of this study was to assess cognitive disorders and nutritional status and some associated social factors in elderly.

Methods : In this cross-sectional study were selected, 260 elderly residents in the city of Semnan, with the inclusion criteria (age 60-80 years old and have at least an elementary education) by using of random cluster sampling, data collection tools were questionnaires a brief survey of demographic information and cognitive health Mini Mental State Examination (MMSE) and measures of nutritional status Mini Nutritional Assessment (MNA). Data analysis was performed by using the Mann-Whitney, Kruskal-Wallis, Spearman correlation coefficient and partial correlation coefficient tests, with significant level of $P<0.05$.

Results : Results indicated that from 260 elderly cases (men=43.46% and women=56.54%), 45.8% of them hadn't cognitive impairment. They had mild 18.1%, moderate 35% and severe 1.2% cognitive impairment. 5.8% were malnutrition, 53.1% are exposed to malnutrition and in 41.2% nutrition status were good. With omitted of age and education, there were significant positive correlation ($r = 0.332$ $P <0.001$) between the cognitive health and nutritional status. Improve cognitive health was associated with improved nutritional health.

Conclusion : Finding shown that the risk of malnutrition is common in the elderly. Nutritional status is associated with cognitive performance. Monitoring of nutritional status in elderly can prevent malnutrition and may help cognitive status.

Keywords : Elderly, Cognitive disorders, Nutrition status.

Count: 88
Abstract ID: 365
subject: Cognition: Cognitive Aging
Presentation Type: Poster

The Blood Laboratory Values Predict Cognitive Functions in Healthy Older Adults

Submission Author: Parnian Rafei

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Background and Aim : There are several pieces of evidence that suggesting the association between cognitive functions (including memory, attention, etc.) and the Blood Laboratory values (BLVs) in healthy older adults. BVLSs are biologically essential chemicals for the growth and development of the human organism, which are normally present in the Central Nervous System (CNS). Former studies showed that deficiencies or altered concentrations in BLVs such as metal trace elements like Iron, Calcium, Zinc, lead, Copper, as well as lipid profiles such as serum cholesterol, low-density lipoprotein, high-density lipoprotein, and triglycerides and other values, could possibly have influences on cognitive functioning. The purpose of this study was to examine the relationship between common BLVs and cognitive functioning among healthy older adults.

Methods : A total of 139 healthy older adults (93 females and 46 males, mean age = 61.8 ± 7.26) were recruited in the study. Cognitive functions were evaluated using Addenbrooke's Cognitive Examination. BLVs including FBS, Cholesterol, LDL, HDL, Triglyceride, Phosphorus, Magnesium, T3, T4, TSH, FSH, LH, Progesterone, Testosterone, Estradiol, D3, WBC, RBC, PLT, as well as blood pressure were analyzed in participant's fasting blood. Predictors of cognitive performance were examined by hierarchical regression analysis.

Results : After adjustment for age, sex, and educational level in a hierarchical regression analysis, we found significant positive correlations between cognitive functions and the level of high-density lipoprotein cholesterol (HDL) as well as triiodothyronine (T3) (?= 0.365,p=0.02; ?=0.285, p=0.02). Moreover, there were no significant associations observed between cognitive functions and sex hormones (luteinizing hormone, follicle-stimulating hormone, estrogens, and progesterone) in females and males, respectively.

Conclusion : A higher level of HDL and T3 were associated with better cognitive functions in healthy older adults. Longitudinal studies are needed to examine the relations between specific cognitive functions and BLVs in healthy population to investigate the possible protective blood factors for successful brain aging.

Keywords : Blood Laboratory Values , Cognitive Function , Aging , Triiodothyronine , High-density lipoprotein

Count: 89
Abstract ID: 231
subject: Cognition: Consciousness
Presentation Type: Poster

Effect of isoflurane 0.8% on memory among 20 to 50 years old subjects in postoperative phase in Azad University Hospitals

Submission Author: Golshad Kowsari

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3. Department of Anesthesiology, Medicine faculty of Islamic Azad University,Tehran Medical Branch

Background and Aim : This study was performed to determine the effect of isoflurane 0.8% use on the memory among 20 to 50 years old subjects in postoperative phase

Methods : In this interventional study that was performed as a randomized clinical trial, 118 consecutive 20 to 50 years old patients under surgery in Azad University hospitals in 2016 and 2017 were enrolled including isofulrane and placebo groups and the effect of isoflurane 0.8% on memory among them was determined questionnaire.

Results : The results revealed that 8 patients (13.6%) and 1 subject (1.7%) in isoflurane and placebo groups had memory loss that showed statistically significant difference (P=0.032).

Conclusion : Totally, according to the obtained results in this study, it may be concluded that isoflurane would affect the memory among 20 to 50 years old subjects in postoperative phase.

Keywords : : Isoflurane, Memory, Operation

Count: 90
Abstract ID: 386
subject: Cognition: Consciousness
Presentation Type: Poster

The predicting of psychological well-being on the base of cognitive emotion regulation considering the role of mediating perceived stress.

Submission Author: Hanieh Oliaei

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2. Graduate of clinical psychology,department of psychology,Islamic Azad university

Background and Aim : The aim of this study was survey of prediction model of psychological well-being on the base of negative and positive emotion regulation considering to the role of mediating perceived stress.

Methods : The study population was all of students of Azad University in Tehran (2017-2018). That 283 of them were selected by cluster sampling. In order to data gathering Ryyf psychological well-being (1989), the cognitive emotion regulation questionnaire (Garnefski; kraaij, & spin hoven, 2001) (CERQ) and the perceived stress scale (pss;Cohen,Kamarach, &Mermelstein,1983) Were used.

Results : For data analysis we used structural equation modeling method the results showed that model fit indicators is in a desirable situation.

Conclusion : Also, perceived stress has a mediating role in the relationship between positive emotional regulation and the psychological well-being ($P<0.05$). Negative emotion regulation has a direct significant effect on psychological well-being

Keywords : psychological well_being , emotion regulation , perceived stress

Count: 91
Abstract ID: 618
subject: Cognition: Attention
Presentation Type: Poster

The Effectiveness of Cognitive Rehabilitation on the Academic Achievement of Children with Attention Deficit - Hyperactivity Disorder

Submission Author: Fereshte Alidadi taeme

Fereshte Alidadi taeme[1], nemat sotodehasl[2]

1. -
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Background and Aim : Attention deficit - hyperactivity disorder (ADHD) is one of the most common neurobehavioral disorders in school children and affects many children in the world. The purpose of this study was to investigate the effectiveness of cognitive rehabilitation on the academic achievement of children with attention deficit - hyperactivity disorder

Methods : The research method was quasi experimental, pretest and post test with a control group. For this purpose, according to the Cochran sampling formula, a sample of 50 students was selected using available sampling method and randomly assigned to two groups of 25 controls and experiment. Data collection was done using student's academic achievement report. Data were analyzed using one way ANOVA analysis.

Results : The results showed that cognitive rehabilitation has a significant effect on improvement of academic achievement of students with attention deficit hyperactivity disorder, so that the students who underwent cognitive rehabilitation in the experimental group in all courses were significantly more significant than the knowledge the students of the control group had earned.

Conclusion : Therefore, it can be concluded that cognitive rehabilitation is one of the effective interventions in improving the academic achievement of children with attention deficit hyperactivity disorder.

Keywords : cognitive rehabilitation, academic achievement, children with attention deficit / hyperactivity disorder

Count: 92
Abstract ID: 572
subject: Cognition: Attention
Presentation Type: Oral

strategic differences in visual scanning between field dependent and field independent people with eye tracking measures

Submission Author: Marziyeh Hamzehzadeh

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Background and Aim : Cognitive styles have a critical role in learning processes and are of great importance in cognition and education. According to previous findings on field dependence/ independence cognitive styles (FDI), it seems that visual scanning approaches may play a role in cognitive styles. On the cognitive level, the field independent (FI) person is able to analyze and organize information, or more generally, to bring greater structure and differentiation to experience. The field dependent (FD) person is more likely to rely on external references in the processing of information, resulting in a more global or diffuse form of experiencing

Methods : The aim of this study was to compare field dependent (FD) and field independent (FI) groups in their visual scanning indicators during performance on a set of stimuli which is used to measure FDI. Participants were 68 undergraduate students at ShahidBeheshti Universitywhich were selected througha purposeful sampling. They were assigned into FD and FI groups according to the scores onGroup Embedded Figures Test (GEFT, Witkin et al, 1971). Participants' eye movements, including fixation details, were tracked by a binocular remote eye-tracking system (SMI-RED120Hz) during their performance on the GEFT

Results : Data analyzed using mixed MANOVA which demonstrated that FD and FI groups differ in some indicators of the eye movements. FI group fixated their eyes more on the stimuli with shorter time compared to FD group. Revisits were less in FI group and they had longer fixations. Moreover, there were some significant interactive effects between group and different areas of GEFT.

Conclusion : Based on the findings it seems that FI people use some practical strategies in their visual scanning which enables them to succeed in differentiating components of a whole picture. These strategies are related to time management and taking new perspectives from which they can probe the stimuli in a more effective way.

Keywords : cognitive style; visual scanning ; field dependent ; field independent

Count: 93
Abstract ID: 533
subject: Cognition: Attention
Presentation Type: Poster

Attentional performance predicts the accuracy of educational goal setting

Submission Author: Farzin Haqnazari

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Background and Aim : Educational goal setting plays a crucial role in academic success. In the present study, we aim to evaluate the effect of attentional capacity on the accuracy of goal setting.

Methods : For this aim, 24 high school students completed the d2 test of attention for assessment of attention, grade goal for goal setting assessment. Their final exams average considered as the performance of their goal. Also, we determined the accuracy of the goal setting by extraction of the final exams grades from the goal grades.

Results : Findings showed that there is a significant correlation (r=0.684, p=0.001) between commission error of the d2 task of attention with the accuracy of goal setting. The commission error cannot predict the goal grade but can predict the accuracy of goal setting.

Conclusion : It seems that attentional commission errors are related to goal state prediction. We can conclude that sustained attention is a predictor of successful goal setting.

Keywords : attention; goal setting; education

Count: 94
Abstract ID: 322
subject: Cognition: Attention
Presentation Type: Oral

Visual Feature Binding in the Prefrontal Cortex of Macaque Monkey

Submission Author: Mohsen Parto

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Background and Aim : The primate brain is able to ideally perceive distributed information as a unified entity. Previous researches reported this mechanism in several areas of the brain. In addition, several theories have been proposed to solve this problem. However, the underlying neural mechanism and the main involved areas to serve this mechanism much remain to be known.

Methods : To address these questions, we hypothesized the prefrontal cortex (PFC) as a more plausible high-level area and investigated the feature binding in it. Two macaque monkeys were trained to perform a visual delayed-match-to-sample task. We designed two binding conditions in the stimulus of the test period and assessed our question in this interval. Using a microelectrode array implanted in the lateral prefrontal cortex (lPFC) of each monkey, the local field potentials (LFPs) were recorded from 96 channels simultaneously.

Results : We found that PFC encodes the feature binding and revealed it in the delta-theta frequency band (4-12Hz) of LFP. Our data indicated that the single sites of PFC and also the between areas communication convey the information of feature binding.

Conclusion : These findings suggest the functional role of PFC as a high-level associated area for visual feature binding.

Keywords : Feature binding; Prefrontal cortex; Delta-theta; Local field potential

Count: 95
Abstract ID: 155
subject: Cognition: Attention
Presentation Type: Poster

Effectiveness of Cognitive Computer Games on Attention Span of Students with Intellectual Disability

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Background and Aim : The present study was designed to evaluate the effectiveness of cognitive computer games on attention of students with intellectual disability

Methods : For this purpose, a quasi-experimental research with pretest-posttest design with control group was conducted. The present study included 20 elementary students with intellectual disability. 10 students were randomly assigned in the experimental group and were trained for 20 sessions individually for a month. The control group received no intervention

Results : The Stroop Color-Word test (1935) was used to evaluate the attention span of students with intellectual disability. The obtained data was analyzed using Analysis of Covariance. The findings showed significant differences (p<0/5) between the experimental and the control group in attention span of students with intellectual disability.

Conclusion : At the end, the effects of using cognitive games for improving attention were discussed. Further discussions as well as suggestions for future research were presented.

Keywords : cognitive computer games, attention span, students with intellectual disability.

Count: 96
Abstract ID: 609
subject: Cognition: Attention
Presentation Type: Oral

Effects of congenital blindness and attention on the asymmetrical brain by randomized dichotic digits test

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Background and Aim : Blind people have to rely on non-visual (especially hearing) signs to interact effectively with the environment and overcome sensory deprivation. Behavioral randomized dichotic digits test can show the combination of cognitive ability of memory and attention. The aim of this study was to investigate ear asymmetry in blind and sighted people using randomized dichotic test.

Methods : In this non-interventional cross-sectional study, Persian randomized dichotic digits test in free and post-cued attentions was performed on 23 sighted individuals(11males and 12females) and 23 early blind(12 males and 11females) with normal hearing in the age range of 18-35 years. The average of the dominant and non-dominant ear scores and the ear advantage were compared between the sighted and blind groups using SPSS 21.0 software

Results : In both of the groups for free and post-cued attention conditions, the average score of the dominant ear was significantly higher than the mean score of the non-dominant ear ($P<0.001$). There was no statistically significant difference in mean score of dominant ear between two groups. However, in post-cued attention condition, mean of dominant ear score in blind group was significantly higher than that of sighted group ($P<0.001$). The average score of non-dominant ear was significantly higher in blind group than the sighted control subjects in both attention conditions ($P <0.001$). In addition, in both attention conditions, mean of dominant ear advantage of blind group was lower than sighted group significantly ($P<0.001$).

Conclusion : Reduced ear advantage in early blind people may indicate a reorganization of the hemisphere and corpus callosum for both the sensory and cognitive information processing in auditory modality. It also implies superior performance of auditory working memory of early blind people.

Keywords : Randomized dichotic digits test; ear advantage; auditory attention

Count: 97
Abstract ID: 658
subject: Cognition: Attention
Presentation Type: Poster

The relationship of Stroop color task with obsession-compulsive features, schizotypal personality characteristics, and anxiety

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Background and Aim : Since the original landmark paper by Stroop (1935), a huge amount of research has been done on clinical, subclinical, and non-clinical population, to reveal cognitive processes underlying psychological phenomena. The first main study utilizing the card version was published by Wapner and Krus in 1960. The task is widely employed as a measure of selective attention. However, it has been mainly used on single condition separately. We used the task to shed light on the involvement of attentional mechanisms in anxiety, obsession, and schizotypal personality characteristics.

Methods : For this purpose, we administered the three measure alongside a computerized Stroop color task on 30 individuals recruited through announcement. The Beck Anxiety Inventory (BAI), the Maudsley Obsession-Compulsive Inventury (M-OCI), and the Oxford-Liverpool Inventory of Feelings and Experiences (O-LIFE) , to measure Anxiety, Obsession-Compulsive Complaint behavior, and Schizotypal personality characteristics, respectively.

Results : The data from the three psychological tests and the computerized Stroop task was analyzed using multiple regression. The results showed a positive significant effect of Obsession-Compulsive scale (Beta=.677; p=.001), a negative significant effect of Schizotypal personality scale (Beta=-.468; p=.016), and no significant effect (Beta=-.102; p=.572) of anxiety on the interference/congruency measure in Stroop.

Conclusion : The findings of the current study revealed a predictive relationship between performance in Stroop color task and two important psychological disturbances, including obsession-compulsive features and schizotypal personality characteristics, but not anxiety. Here we focused on the overall congruency effect in Stroop (incongruent minus congruent) but will further discuss other details.

Keywords : Stroop; Congruency effect; Schizotypal personality; Obsession-compulsive features

Count: 98
Abstract ID: 302
subject: Cognition: Attention
Presentation Type: Poster

The effect of partial sleep deprivation on attention in Interns of Emergency Medicine, Department of Yazd University of Medical Sciences

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Background and Aim : : Sleep is an organized behavior that is repeated every day as a vital necessity based on the biological rhythm. In the field of sleep disorders, sleep deprivation is known as one of the major problems that can cause functional impairment in individuals. Therefore, it is expected that sleep deprivation in Interns causes problems in their performance. Accordingly, due to the cognitive effects of sleep deprivation and the importance of cognitive health in health care workers, we decided to study the effects of partial sleep deprivation on attention in Interns of Emergency Medicine Department of Yazd University of Medical Sciences.

Methods : The number of 50 Interns of Emergency Medicine participating in the study has been randomly selected and their demographic information was entered into the data collection form. The subjects were examined before and after the one month period of the night shift. The attentions' changes in participants were compared by doing of the attention tasks in two times. Finally, the collected data were analyzed by two way ANOVA.

Results : The results showed that, there was a significant statistical difference between the average of focused attention of participants before and after the one month period of the night shift (P-value <0.05), but there is no significant difference between the mean of the divided attention in this period.

Conclusion : According to the results of the study, it can be concluded that the partial sleep deprivation due to night shift in Interns of Emergency Medicine only reduces the concentrated attention of them. Therefore, this condition can result in performance deficits.

Keywords : partial sleep deprivation, attention

Count: 99
Abstract ID: 530
subject: Cognition: Attention
Presentation Type: Oral

Neural spikes are coupled to low frequency LFPs in macaque visual cortex

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Background and Aim : Neural synchrony has been the subject of many recent brain studies and has deeply influenced modern knowledge in systems neurosciences. It has further been shown to play a key role in various cognitive functions such as perceptual binding, information processing, spatial learning, decision making, working memory, selective attention, etc. Neural activity is either measured by spiking activity or local field potential (LFP). In previous studies, an interaction has been observed between single neuron spikes and LFP (the extremely dynamic stream of information throughout neural networks) in their low frequency oscillations (<15 Hz). However, any potential role of this locking in neural encoding of information in sensory area is not known.

Methods : To investigate if any coupling of spikes and LFPs depends on the sensory properties of the visual stimulus inside the receptive field, we measured the interconnection (locking) between spikes and the phase of low frequency oscillations of LFP as a function of the stimulus' motion direction using PLV method. In order to compute the coupling between spike-LFP for each trials using PLV method, it is important to equalize SR for all trials in each site. Since, PLV method for computing the SPC is strongly bias on the number of spikes. The important issue is choosing the appropriate threshold (Thr). That is, at what rate should the number of spikes, for all trials, be equalized? Therefore, our approach is to reach an "optimal" compromise between the number of spikes and the number of trials.

Results : We found that the phase-locking follows a tuning curve based on the presented stimulus' direction. This tuning curve is reversed to the tuning based on the neural spike rate, i.e., the minimum spike-LFP coupling occurred when presenting the preferred direction, while the strongest spike-LFP coupling is caused by the anti-preferred direction.

Conclusion : Indeed, SPC strength is significantly different between the preferred and anti-preferred direction in low frequencies for both animals. This finding suggests that the neural system harnesses spike-LFP coupling in the primate visual cortex to encode visual information.

Keywords : local field potential (LFP), Spike-LFP coupling (SPC), Optimal threshold

Count: 100
Abstract ID: 115
subject: Cognition: Neurolinguistics
Presentation Type: Poster

Cognitive Slowing: A real Challenge for Multiple Sclerosis Patients

Submission Author: Sara Yazdani

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Background and Aim : As one of the most challenging chronic diseases, Multiple sclerosis (MS) occurs when the immune system attacks the Central Nervous System (CNS) and leads to demyelination. In addition to physical, social and emotional difficulties, MS patients have to deal with the slowness of mental processing. Impairment in information processing speed, also known as cognitive slowing, is one of the symptoms that manifest at the onset of the MS. Due to the importance of this matter and its effect of patient's quality of life, the aim of this study was to assess the information processing speed via the visuospatial task of individuals with MS.

Methods : In this cross-sectional study, 46 female patients with clinically definite relapsing-remitting MS, according to McDonald criteria 2010, were randomly selected from the patients referred to a private neurology clinic in Mashhad, Iran. The patients aged from 23 to 60 years (M=41.23, SD=10.89), their years of education ranged from 12 to 18 (M=14.08, SD=2.02), and their total disease duration ranged from 1 to 18 years (M=6.69, SD=4.34). The patients were divided into two groups according to their Expanded Disability Status Scale (EDSS). The disability ratings of the first group of patients (N=23), fully ambulatory and less cognitively impaired, ranged from 0-4 (M=1.73, SD=1.00), while the EDSS scores of the second group (N=23) with more physical disabilities and higher cognitive dysfunction, ranged from 4.5-6.5 (M=5.10, SD= 0.72). Forty-six healthy individuals with matched demographics (age, years of education, handedness, and gender) were chosen from patients' relatives and family members. None of the participants had a history of neurological disorders other than MS, drug and/or alcohol abuse, brain surgery, psychiatric disorder, and uncorrected visual or auditory problems. The Benson Figure Test was used for evaluating the reaction time of participants' visuospatial performance. The Benson Figure Test is a simplified version of the Rey-Osterrieth figure and a well-known neuropsychological test for examining the visuospatial performance.

Results : The results of the ANOVA test showed that both MS groups compared to healthy controls were considerably impaired in all trials of the Benson Figure Test (p-value=0.000, $p < 0.05$), which demonstrated their overall slower reaction time. The results of the Tukey post hoc test indicated that in copy, immediate recall, and delayed recall trial, the reaction time of MS patients with EDSS <4 was significantly higher than MS patients with EDSS? 6 (p-value=0.000, $p < 0.05$); while both patient groups received significantly lower score compared to healthy controls (p-value=0.000, $p < 0.05$).

Conclusion : The findings of this study showed that multiple sclerosis can adversely affect the speed of visuospatial processing in patients. Nevertheless, the EDSS rating had an impact on this neuropsychological test results.

Keywords : processing speed; visuospatial skills; multiple sclerosis; relapsing-remitting; females

Count: 101
Abstract ID: 405
subject: Cognition: Neurolinguistics
Presentation Type: Poster

Sequencing Vocabulary Tasks based on their Cognitive Complexity: Insights from Cognitive Load and IRT Analysis

Submission Author: Reza Zabihi

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Background and Aim : It is believed that pedagogic tasks should be designed and sequenced based on their complexity levels. In view of this, the present study investigates the difficulty and cognitive load of second language vocabulary tasks. Moreover, it sheds light on the dimensions of the complexity and task difficulty for the English as a Foreign Language (EFL) learners.

Methods : To this purpose, 20 EFL students sat for a vocabulary test comprising different clusters of vocabularies including both abstract and concrete words. Subsequently, the complexity of the task was assessed based on the time of proceeding as well as EEG-based records along with item-difficulty index calculated by means of multidimensional IRT model. In the second phase of the study, the tasks were sequenced based on their index of cognitive complexity and difficulty and were then administered once again.

Results : The results demonstrated a) the changes that occurred in the validity and reliability of the test, b) the cognitive load of the tasks and its correspondents with item difficulty, c) interaction of attention, cognitive complexity and accuracy of performance.

Conclusion : Thus, it could be concluded that the task comlexity is a direct result of the task difficulty.

Keywords : Sequencing vocabulary tasks; cognitive complexity; Cognitive load analysis; IRT

Count: 102
Abstract ID: 531
subject: Cognition: Other
Presentation Type: Poster

The effect of different imobilization stress on REM and NREM sleeps in Rat

Submission Author: Fatemeh Erfani

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Background and Aim : Stress is a multidimensional phenomenon which consists of the stimulus, cognitional processes and physiological response of the organism. Sleep and stress are interacted with each other through multiple ways. Variety of stress types including acute and chronic, have significant effects on sleep architecture in rodents. In the present study we investigated the effects of special immobilization stress place on `Rapid Eye movement (REM) and Non Rapid Eye movement (NREM) sleeps

Methods : The male Wistar rats (n=14) were subjected to 2h of immobilization per day in narrow, uneven and stony place for 3 consecutive days. The electroencephalogram (EEG) were recorded with three Stainless stile screw electrodes placed over the skull and the electromyogram (EMG) were recorded from nuctual muscles by two wire electrodes. The sleep stages were recorded electrophysiologicaly during 2 hours before and 2 hours after immobilization stress

Results : The result showed a decrease in total REM sleep time instead of increase in NREM sleep ($p<0.05$).

Conclusion : As for the quality of the waking period, stress has been shown to alter the subsequent sleep pattern and duration, in length or episodes of REM and NREM periods.

Keywords : Sleep, REM, NREM, Stress, Immobilization

Count: 103
Abstract ID: 422
subject: Cognition: Other
Presentation Type: Poster

: Allergic rhinitis increases activity of delta oscillation in medical prefrontal cortex (mPFC) and ventral hippocampus (vHPC) and modulates anxiety behavior

Submission Author: Sepideh Ghazvineh

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Background and Aim : Allergic rhinitis (AR) is known as a chronic inflammatory disease of the upper respiratory tract and characterized by nasal symptoms, including itching, nasal blockage, sneezing, and rhinorrhea. Patient with AR frequently reports periods of anxiety. Previous studies well evidenced that the coherence and power of data in the mPFC and vHPC increase through anxiety. Hence, this study is aimed to investigate the activity of delta oscillation in mPFC and vHPC and anxiety-like behavior in a rat model of AR.

Methods : Ten male Wistar rats weighing 250-300 g were used. In AR group, the rats were sensitized with OVA and control group received saline. Stereotaxic surgery was performed according to the following direction: OB (AP: 8.5 mm, ML:-1 mm, DV: -1.5 mm), PFC (AP: 3mm, ML: -0.5 mm, DV: -3 mm) and ventral vHPC: (AP: 6 mm, ML: -5.5 mm, DV: -6.8 mm). Unipolar recording electrodes were made of varnish-insulated tungsten. Local field potentials (LFPs) were recorded in freely moving rat during immobility and exploration. All recordings were referenced to the intraparietal screw. LFPs were achieved by low-pass filtering (<500 Hz) and down-sampling to 1000 Hz. For evaluating anxiety-like behavior, Elevated Zero Maze test (EZMT) was performed and the rats placed into a close arms and allowed to explore and move freely for 5 minutes.

Results : OVA exposure significantly decreased the number of entries to the open sections ($p < 0.05$) in EZMT compared to control group, implicating increase anxiety-like behavior in AR group. Delta power in mPFC ($p<0.01$) and vHPC ($p<0.05$) through immobility as well as in vHPC ($p<0.05$) during exploration was increased in AR group compared to control group. Also, we found more coherence between vHPC-mPFC during immobility ($p<0.05$) as well as exploration ($p<0.05$) in AR group in comparison with control group.

Conclusion : The present study suggests that increase of delta oscillation may play an important role in AR induced anxiety-like behavior.

Keywords : Allergic rhinits; anxiety; olfactory bulb; medial prefrontal cortex; ventral hyppocampus; delta oscilation

Count: 104
Abstract ID: 406
subject: Cognition: Other
Presentation Type: Poster

Valproic acid prevents MC4R overexpression fallowing chronic stress

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Background and Aim : Mineralocorticoid receptor in nucleus accumbance (MC4R) are responsible for feeling of pleasure.Chronic stressors mar result in inability to experience this feeling, which is named anhedonia.As stress may affect acethylation level of genes and induce epigenetic changes, we explored the role of a histon deacethylase inhibitor, (valproic acid) on prevention of MC4R expression modulation fallowing chronic stress in rat nucleus accumbance to prevent anhedonia state, fallowing chronic stress.

Methods : Material and method: In this study 30 male wistar rats, were used .they were kept by the standards of animal house. The rats devided randomly to three groups (n=10), 1)stress (s) 2)stress (s) + VPA 3)intact The protocol of CUMS included 6 weeks of unpredicted stressors. From the second week of CUMS, in S+VPA group, we administrated VPA, 400 mg/kg/day for next four following weeks. Then the rats went for 1) sucrose consumption test (SCT) 2) novel object- recognition (NOR) Two days fallowing behavioral tests, rats were anesthetized, sacrified and sampking carried out to get both fresh and fixed amygdala to evaluate HDAC3 ,MC4R expression and cell count in amygdala.

Results : In sucrose consumption test, we found anhedonia in (S) group, compared with intact ($p<0.001$) and/or S+VPA groups. ($p<0.01$) NOR test was impaired in S group ($p<0.001$), but not in intact and/or S+VPA groups. In molecular exams, we found over-expression of both HDAC3 ($P<0.001$) and MC4R in stressed group. Valproic acid could decrease the expression level of both genes significantly ($p<0.001$)

Conclusion : In this study we found the protective effect of VPA, against chronic stress induced anhedonia. Therefore administration of VPA during overhelming stress situations, may prevent of least part of it's consequences, such as "anhedonia"

Keywords : MC4R, Valproic acid, chronic stress

Count: 105
Abstract ID: 410
subject: Cognition: Other
Presentation Type: Poster

Chronic stress increase HDAC3 expression in rat nucleus accumbance

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Background and Aim : HDAC3 is one of the most propsed genes for “feeling of pleasure” Any change in it’s expression may change pleasure feeling and lead to anhedonic state. Stressors are known to induce various mood abnormalities, ;ike anhedonia. Therefore in this study we investigated the role of chronic unpredictable mild stress on HDAC3 gene expression and possible anhedonic behavior.

Methods : 20 male wistar rats, living in standard condition of animal house, entered the exam. They were randomly devided into two groups (n=10). 1) Stressed 2) control In order to induce stress, rats went for chronic unpredictable mild stress (CUMS) for six continiouse weeks. Following that they first went for both sucrose consumption test (SCT) and new object recognition test (NOR) to evaluate anhedonia. Then, they were anesthetized, sacrificed and prepared for sampling. Both fresh and fixed brain samples collected to examine. HDAC3 gene expressionand nucleus accumbance

Results : In behavioral tests,SCT, revealed decreased tendency to sweetness, and in NOR, we found lowered level of curiosity, in S group compared with control ($p< 0.001$) which both indicated Anhedonia. In real time PCR, we found a significant increase in HDAC3 gene expression of stressed group compared with intact one. ($p<0.001$)

Conclusion : This study confirmed anhedonic behavior and molecular changes, fallowing chronic unpredictable mild strss and for the first time revealed the correlation of anhedonia and high HDAC3 gene expression in rat nucleus accumbance.

Keywords : HDAC3, Nucleus accumbance, CUMS

Count: 106
Abstract ID: 188
subject: Cognition: Other
Presentation Type: Poster

The Effect of Social dominance on oral morphine self-administration in Male Rats

Submission Author: Farhad Hagravan

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Background and Aim : Studies in human and non-human primates demonstrate that social status is an important determinant of addictive drug reinforcement. However, it is unclear whether social rank is associated with other traits that also predispose to addiction and whether social status similarly predicts abuse drug self-administration or intake. In the current study, we conducted a series of experiments to elucidate the role of social dominance on morphine voluntary consumption.

Methods : We used the well-known tube dominance test to determine social dominance in animals, and then morphine preference (50 mg/L) was evaluated in a two-bottle-choice paradigm for 3 weeks.

Results : Our primarily studies showed that after tube dominance test, morphine consumption and preference ratio were slightly greater in subordinate animals.

Conclusion : It seems that social hierarchy involvement in animals vulnerable to morphine preference and addiction.

Keywords : Social hierarchy; Addiction; Morphine preference

Count: 107
Abstract ID: 359
subject: Cognition: Other
Presentation Type: Oral

Neural Correlates of Phantom Auditory Perception in Primary Auditory Cortex of Anesthetized Mice: a Local Field Potentials Recording Study

Submission Author: Shahriar Hosseinjany

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Background and Aim : Phantom auditory perceptions include a wide range of malfunctions from a simple neurological disorder such as "tinnitus" to an acute psychiatric disease such as schizophrenia. Musical imagery and involuntary musical imagery are two of the most unknown forms of phantom auditory perceptions. Previous reports in humans have shown the involvement of the auditory cortex in musical imagery. Due to challenges in precise mechanistic experimental studies on human subjects, we used the animal model of phantom auditory perception combined with experimental paradigm used in human studies of musical imagery.

Methods : In this study Six mice were tested in both intact and trained groups. Water deprived mice were treated in conditioning protocols as trained group and they were subjected to behavioral experiments in addition to electrophysiological recordings. Conditioning protocol was a go no-go task by using Matlab generated music piece in mouse audiogeram range as a cue. Subjects could not drink water during music playback and their requests for water responded by electrical shock at these times, while they can drink water in silence intervals. Local Field Potentials (LFPs) of the brain's auditory cortex of both groups have been extracted from extra-cellular invasive recording data under anesthesia by frequency filtering. In electrophysiological experiments, two familiar and unfamiliar musical stimuli including silence periods have been used.

Results : During musical stimulus playing, the coincidence of peak occurrences in the analytical signal obtained from LFPs was considered as the trace of the stimulus in the signal. The peaks of the LFPs of the auditory cortex in

the trained group had similar patterns to the stimulus used in behavioral experiments at the silence intervals after stimulus playback while we did not see such this similarity between LFPs and stimuli in the control group.

Conclusion : According to our results of this study, we can be hopeful that some unknown mechanisms in the phenomenon of musical imagery could be discovered using animal models. Future researches in this area could also help to answer some questions in neuroscience about the neural mechanism of involuntary musical imagery.

Keywords : primary auditory cortex, phantom auditory perception, musical imagery, animal model, local field potential

Count: 108
Abstract ID: 266
subject: Cognition: Other
Presentation Type: Poster

How to Reduce Stress and It's Consequences on Future Lifes

Submission Author: Kimia Jazi

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Background and Aim : Stress in life is unavoidable, affecting everyone on a daily basis. Psychological stress in mammals triggers a rapidly organized response for survival, but it may also cause a variety of behavioral disorders and damage cognitive function. There are indications that stress influences body temperature in humans and follows a gradient-like pattern.

Methods : A systematic search from Medline, CINAHL, and Alt HealthWatch databases was conducted for all types of quantitative articles involving mindfulness-based stress reduction. A total of 17 articles met the inclusion criteria. Of the 17 studies, 16 demonstrated positive changes in psychological or physiological outcomes related to anxiety and/or stress.

Results : Stress is associated with biases in cognitive processing; some of the most enduring memories are formed by traumatic events. Our understanding of how cognition is shaped by stress is still relatively primitive; however, evidence is rapidly accumulating that the 'mature' brain has a great capacity for plasticity and that there are numerous ways through which pharmacological therapeutics could rescue cognitive function and regain cognitive balance. Meditation, a potential remedy to stress, is the subject of an increasing number of medical studies that often rely upon radiologic imaging scans to determine the physiological effects of meditation on brain activity. Mindfulness-based stress reduction offers an effective way of reducing stress by combining mindfulness meditation and yoga in an 8-week training program. The Mindfulness-Based Stress Reduction training seemed to be feasible for patients with lung cancer and their partners.

Conclusion : As the pace of life increases, stress is becoming endemic, and in the radiologic sciences, stress is keenly felt by technologists and patients. It even effects on other diseases such as lung cancer and wound healing and postpone the healings. A wide range of meditation techniques have beneficial effects on the mind, body, and emotions. Radiologic technologists might find that meditation improves their quality of life as well as their level of job satisfaction, allowing them to provide improved quality of care to their patients.

Keywords : stress, future_life, lung cancer, wound_healing

Count: 109
Abstract ID: 450
subject: Cognition: Other
Presentation Type: Oral

Methylphenidate (MPH) produces conditioned place preference (CPP) in marmoset monkeys and cannabidiol exposure during extinction do not inhibit the reinstatement of MPH-induced CPP

Submission Author: Adel Kashefi

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Background and Aim : Methylphenidate (MPH) is a central nervous system stimulant used as a pharmacotherapy to treat Attention-Deficit/Hyperactivity Disorder and narcolepsy. Little work has been made on the addictive potential of MPH in non-human primates (NHP).

Methods : Animals received intraperitoneal (i.p.) alternated injections of either MPH (5 mg/kg) or saline (SAL) to a daily 15 min conditioning trial in the CPP box during 10 consecutive days. After a place preference test the animals were submitted to daily CBD injection in a 15 min extinction trial, until extinction. Then, 24h after the last extinction trial, animals received a prime dose of MPH (1mg/kg) and were submitted to a 15min retest trial.

Results : We found that MPH induced strong and long-lasting reinforcing properties during the conditioning period even after extinction training and reinstatement test.

Conclusion : MPH induced a CPP response in a NHP model and that the CBD administration could not inhibit the reinstatement of the MPH-induced CPP response.

Keywords : Methylphenidate, conditioned place preference, Dopamine, non-human primates, Reinstatement, Extinction, Cannabidiol.

Count: 110
Abstract ID: 227
subject: Cognition: Other
Presentation Type: Poster

The role of posterior parietal cortex in holistic versus analytic spatial perception in mental rotation task in men and women: an eye-tracking and tDCs study

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Background and Aim : Studies have shown a large sex difference in mental rotation test (MRT) performance. Applying different types of strategies is a known explanation of this phenomenon. Men use holistic strategies whereas women prefer analytical strategies. Hemispheric lateralization of the brain during mental rotation also was observed as a function of sex. In a way that larger right parietal activity was observed in men and a larger left parietal activity in women. The role of right and left Posterior Parietal Cortex (PPC) in MRT has been identified in many brain imaging studies. But we are still have a long way to completely understand the function of the PPC in spatial perception. The aim of this study is to investigate the role of PPC in mental rotation test by applying Transcranial Direct-Current Stimulation (tDCS) and see if modulating cortical excitability of PPC influence the type of strategies participants apply to solve the MRT.

Methods : Anodal stimulation was applied to the right and left PPC as well as one session of sham condition. The types of strategies, holistic versus analytic, were determined by use of the eye tracking parameters.It is hypothesized that anodal stimulation on the right PPC will increase the holistic strategy in compare to sham condition. Whereas anodal stimulation on the left PPC will increase analytic strategy in compare to sham condition. In holistic strategy individuals will demonstrate fewer eye fixations, conduct shorter average fixation durations, and demonstrate shorter saccade latency, than sham condition. While the reverse applied in the analytic strategy. Thirty participants (15 men and 15 women) completed mental rotation task while metrics of eye movement were collected.

Results : Analysis of eye tracking data showed no statistically significant difference between stimulation sessions across men and women.

Conclusion : One possible explanation is the contribution of other brain regions in spatial perception circuits. Especially the role of pre frontal cortex which is essential in applying search strategies.

Keywords : Mental Rotation, Posterior Parietal Cortex, Holistic and Analytic Strategies, tDCS, Eye tracking

Count: 111
Abstract ID: 172
subject: Cognition: Other
Presentation Type: Poster

The Effectiveness of Computer Games on Emotion Regulation of Students with Intellectual Disability.

Submission Author: Marzieh Mohajeri

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Background and Aim : Students with Intellectual Disability have problems in emotion regulation. As a medium for rehabilitation/therapy of these students, a computer game (Emo Galaxy) was designed to help these children in practicing their emotion recognition and regulation.

Methods : The effectiveness of this intervention was evaluated by a quasi-experimental research with pretest-post-test evaluation, and a control group. 20 students participated in this study from which 10 students were randomly selected to receive the intervention while the rest, i.e. the control group, did not receive any intervention. To measure the emotion recognition, Sheilds & Cicchetti Emotion Regulation Checklist (1998) was used before and after intervention. The obtained data were analyzed using Analysis of the Covariance.

Results : The results showed significant differences ($p<0.05$) between the experimental and the control group in emotion regulation.

Conclusion : At the end, using emotion recognition and regulation games for improving emotion management was discussed. Further discussions as well as suggestions for future research are presented.

Keywords : social skills, cognitive computer games, children with intellectual disability.

Count: 112
Abstract ID: 247
subject: Cognition: Other
Presentation Type: Poster

Exposure to Blue Light Emitted from Smartphones in an Environment with Dim Light at Night Alters the Reaction Time of University Students

Submission Author: Seyed Alireza Mortazavi

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Background and Aim : Substantial evidence now indicates that exposure to visible light at night can be linked to a wide spectrum of disorders ranging from obesity to cancer. More specifically, it has been shown that exposure to short wavelengths in the blue region at night is associated with adverse health effects such as sleep problems.This study was aimed to investigate if exposure to blue light emitted from common smartphones in an environment with dim light at night alters the human reaction time.

Methods : The visual reaction time (VRT) of 267 male and female university students were recorded by using a simple blind computer-assisted VRT test, respectively. Volunteer university students who provided their informed consent were randomly divided into two groups of control (N=126 students) and intervention (N=141 students). All participants were asked to go to bed at 23:00. Participants in the intervention group were asked to use their smartphones from 23:00 to 24:00(watching a natural life documentary movie for 60 minutes), while the control group only stayed in the bed under low lighting condition; i.e. dim light. Before starting the experiment and after 60 min of smartphone use, reaction time was recorded in both groups.

Results : The mean reaction times in the intervention and the control groups before the experiment (23:00) did not show any statistically difference (P=0.449). The reaction time in intervention group significantly increased from 412.64±105.60 msec at 23:00 to 441.66±125.78 msec at 24:00 (P=0.0368)while in the control group there was no any statistically significant difference between the mean reaction times at 23:00 and 24:00.

Conclusion : To the best of our knowledge, this is the first study which shows that exposure to blue-rich visible light emitted from widely used smartphones increases the visual reaction time which would eventually result in a delay in human responses to different hazards. These findings indicate that people such as night shift or on call workers who need to react to stresses rapidly, should avoid using their smartphones in a dim light at night.

Keywords : Blue light; smartphones; digital screens; reaction time;

Count: 113
Abstract ID: 105
subject: Cognition: Other
Presentation Type: Poster

The effect of lysosomal and dopaminergic D2 inhibition in the hippocampal TFEB protein level in morphine dependent male rats

Submission Author: Raana Sirous azar

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Background and Aim : Morphine injection induces a rush of euphoria followed by alternating states of wakefulness and drowsiness. Side effects of morphine will vary based on how the drug was administered and the dose of the drug.

Methods : The aim of this study is to clarify the effects of sulpiride and chloroquine injection separately or together on morphine addicted and non-addicted rat's. For this purpose, a 21-day protocol has run in which rats took oral morphine that dissolved in their drinking water from the first to the last day. The injection of chloroquine (25.8 mg/ml) applied continuously in last 4 days of process; furthermore, animals received sulpiride (0.25 mg/ml).

Results : The levels of TFEB protein in hippocampus were evaluated by the means of western blotting technique. One-way analysis of variance (ANOVA) and post hoc analysis Tukey test was used to analyze the data. Ratio of TFEB expression to β-actin expression was increased in all groups except the one which was non-addicted and treated by sulpiride equally

Conclusion : According to the data of this research the applied doses of mentioned drugs do not have considerable effect on addicted rats in comparison to the group which only took oral morphine.

Keywords : Anxiety, morphine addiction, sulpiride, chloroquine, EPM test, Wistar rat

Count: 114
Abstract ID: 37
subject: Cognition: Other
Presentation Type: Poster

The Effectiveness of Cognitive-Behavioral Therapy (CBT) on Adolescents with Intermittent Explosive Disorder (IED)

Submission Author: Hasan Soleimani Rad

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Background and Aim : IED, as defined in DSM-5, is characterized by recurrent, problematic, impulsive aggressive behavior. Aggression in IED is impulsive, and/or anger-based (Coccaro et al., 2017). One-year prevalence data for IED in the US is about 2.7% (DSM-5). Various factors can contribute to the etiology of this disorder. However, in IED, hostile cognitive distortions lead to misinterpretations of nonthreatening social-emotional cues as threatening and an inappropriately aggressive response (Coccaro et al., 2017). Therefore, Behavioral and cognitive reconstruction in this disorder can act as an inhibitory factor. This is possible with CBT. CBT assumes that cognitive, emotional, and behavioral variables are functionally interrelated. Treatment is aimed at identifying and modifying the client's maladaptive thought processes and problematic behaviors through cognitive restructuring and behavioral techniques to achieve change (VandenBos, 2015). Therefore, the purpose of this study is The Effectiveness of CBT on Adolescents with IED.

Methods : The present study is a field experiment with pretest-posttest design. The number of 38 male students with IED were selected with targeted sampling through the screening questionnaire of IED and structured clinical interview based on DSM-5 criteria and They were randomly assigned to experimental and control groups. During the ten sessions, in group and individual modes, the experimental group came under the intervention of CBT every week. Therapeutic intervention included Introducing with IED and CBT, the interaction of cognition, emotion and behavior, restructuring cognitive distortions and destructive behaviors, anger management and meditation, and social skills and self-assertiveness.

Results : The mean (and standard deviation) of participants' age was 16 (0/07), in the age range of 15 to 17 years. The two groups at the beginning and the end of the study responded to the screening questionnaire of IED. the results of ANCOVA analysis showed that CBT was effective on reducing the symptoms of IED (P<0/05). On the other hand, during the structured clinical interview at the beginning and end of the study, Individuals in the experimental group relative to pre-intervention conditions, they reported more control over the symptoms of the disorder and they showed better recovery.

Conclusion : The purpose of this study was to investigate the effectiveness of CBT on adolescents with IED. The results showed that CBT generally caused a relative decrease in symptoms of the disorder and increased self-control. These results are in line with the findings of McCloskey et al. (2016), Barreto et al. (2009) and Osma et al. (2016). In explaining these findings, it can be said that the distorted thinking process can be involved in a variety of disorders and it can have different negative emotional and behavioral consequences, which can also be seen in IED (Coccaro et al., 2017). On the other hand, CBT is aimed at identifying and modifying the client's maladaptive thought processes and problematic behaviors through cognitive restructuring and behavioral techniques to achieve change (VandenBos, 2015). Therefore, using this therapy and generalizing it to different situations, it seems that the symptoms of IED can be improved, that act as an inhibitory capacity to prevent the symptoms of this disorder that occurring again.

Keywords : Intermittent Explosive Disorder; Cognitive Behavioral Therapy; Adolescents.

Count: 115
Abstract ID: 303
subject: Cognition: Other
Presentation Type: Oral

Evaluation of cortical connectivity by using Functional Near-Infrared Spectroscopy

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Background and Aim : Pain is an unpleasant sensory and emotional experience followed with anxiety, depression and frustration. Functional Near-Infrared Spectroscopy (fNIRS) as an optical technique identifies the brain functional networks by investigating connectivity between functionally linked of different anatomical regions in response to pain stimulation.

Methods : In this research, fNIRS was performed in order to study the difference in effective functional connectivity of the brain prefrontal cortex between the two modes of pain and rest based on the dynamic causal modeling (DCM) method. Effective functional connectivity changes in the prefrontal cortex between pain and rest states were calculated using DCM approach to investigate (1) areas known for pain sensation and (2) to analyze inter-network functional connectivity strength (FCS) by selecting several brain functional networks based on the analysis findings. All analyses were performed using toolboxs SPM-fNIRS and SPM8, Matlab software.

Results : Regional hemodynamics changes caused deoxyhemoglobin concentration to decrease in the prefrontal cortex of both hemispheres, particularly on the right side. We found a simultaneous increase in the concentration of oxyhemoglobin in the prefrontal cortex of the left hemisphere in comparison to the right hemisphere, that there was a trend toward reduction in oxyhemoglobin concentration. The results indicate that during the cold pain stimulation, the connectivities between prefrontal cortex regions were significantly changed. Specifically, a significantly consistent increase in the RPFC to MPFC connectivity was found while a significant consistent decrease was observed in the both MPFC to LPFC and LPFC to MPFC connectivities.

Conclusion : This study contributes to the pain research field to identify directionality and causality of neuronal connections in the prefrontal cortex by applying DCM to farmers' data. The results suggest that the proposed method infers directional interactions between hidden neuronal states in the brain under neuronal dynamic conditions based on optical density changes measurement.

Keywords : pain, prefrontal cortex, FNIRS

Count: 116
Abstract ID: 483
subject: Emotion, Motivation and Behavior: Neural Basis of Human Behavior
Presentation Type: Poster

Evaluation of Ethyl Mercury effects on behavior related to neurodevelopmental disorders in rats

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Background and Aim : Ethyl Mercury is an important preservative in many pharmaceutical and health products. There seems to be little and contradictory information about the effects of this substance on the growth and development of the embryo. This study was designed to investigate the effect of ethyl mercury at birth on the behavior of the affected autistic spectrum.

Methods : In this experimental study, 40 Wistar rats were randomly divided into four groups of ten, including: male control group 2, control group 3, experimental group 1 and 4, experimental group. Experimental groups 1 and 2 received intramuscular injection of ethyl mercury at a dose of 250 µg / kg on days 7, 9, 11, 15 after birth. Behavioral studies included Open Filed tests in the fourth week and the Social Interaction Test in the eighth day after birth.

Results : Male and female rats receiving Ethyl Mercury showed signs of an impairment in socialization, memory and social preference ($p < 0.001$). However, the duration of stereotyped and repeatable behaviors was significantly increased.

Conclusion : The results of this study suggest that exposure to ethyl mercury in medicinal products and hygiene products during the fetal period can lead to behavioral disorders and lead to neurodevelopmental disorders in the future.

Keywords : Ethyl mercury, Behavioral injuries, neurodevelopmental disorders

Count: 117
Abstract ID: 626
subject: Emotion, Motivation and Behavior: Neural Basis of Human Behavior
Presentation Type: Poster

A Review on the Impact of Education on Knowledge, Attitude and Practice of Mothers on the Prevention of Fever in Children

Submission Author: Somayeh Azimpour

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Background and Aim : : Febrile convulsion, the most common type of neurological disorder and the most common type of seizure in children under the age of 6 years. The best way to prevent this disease is to control the fever in children, and especially in lactating eaters. Parents' main concern about this disease is the inappropriate control of fever in children. Promoting awareness and changing attitudes will increase self-esteem and increase the speed of recovery. Given that mother as the first child care provider plays the most role in maintaining her health, it is therefore necessary for mothers to gain enough knowledge, awareness, and performance in this field to change their behavior and improve them through education to help Due to the importance of this issue, a child with febrile seizure seems to be in a position to review the effect of maternal education, attitude and practice on the prevention of febrile seizure in children.

Methods : : The present study is a review article based on the data collected from the systematic search of resources in the Google scholar, SID, Magiran, Medline, Irandoc web sites during the period 2017-2010, from related literature publications and library studies.

Results : : The findings showed that after the educational intervention, a significant increase in the mean score of knowledge, attitude and practice of mothers was created compared to the time before the educational intervention, and the educated mothers had better knowledge and attitude regarding the febrile seizure and their way They had to deal with it.

Conclusion : The results indicate that the education has a positive effect on knowledge, attitude and enhancement of mothers' performance in the prevention of febrile seizure in their children. Formation of face and face classes on the prevention of febrile seizures can greatly enhance the awareness and improve the attitude of mothers and their performance. Therefore, educating and informing about febrile seizure is also recommended for all parents and preferably by health care providers to prevent febrile seizures in children.

Keywords : Education, Knowledge, Attitude, Function, Fever-induced seizure, Mothers

Count: 118
Abstract ID: 636
subject: Emotion, Motivation and Behavior: Neural Basis of Human Behavior
Presentation Type: Poster

effects of "Ziziphus jujuba" fruit extract on morphine - induced hippocampal oxidative stress and spatial memory impairment in rats

Submission Author: Zahra Haratyan

Zahra Haratyan[1]

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Background and Aim : : The hippocampus is one of the main areas involved in the learning and memory process with opioid peptides and their receptors. Repeated administration of morphine may interfere with spatial memory. In this study, the effect of jujube extract on the destruction of learning processes and spatial memory of morphine was investigated

Methods : In this study, male rats were given oral juvenile extract (doses of 100 and 200 mg / kg) for 30 days before administration of morphine (0.05 mg / kg) for 31 days. Animals in the control group received saline only Learning characteristics and spatial memory were examined by EPM test on 15, 16, 30 and 31 days. The data were analyzed using ANOVA

Results : The results showed that administration of morphine destroys learning and spatial memory, which is improved by administration of jujube extract depending on the dose.

Conclusion : Administration of jujube extracts can improve the inhibitory effects of morphine on spatial learning and spatial memory in rats.

Keywords : Jujube fruit plant extract, Spatial memory, morphine, male rats

Count: 119
Abstract ID: 197
subject: Emotion, Motivation and Behavior: Neural Basis of Human Behavior
Presentation Type: Oral

The study of neural correlates and metabolic effects of value-based normal nutritional behaviors for brain-targeted behavioral interventions; a COGNITOMICS approach

Submission Author: ATA POURABBASI

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Background and Aim : Nutrition is a multi-dimensional health issue and nutritional behavior is the most important one. By considering the social aspects, nutritional behavior interventions could be one of the most effective interventions in community health. Among different normative patterns, attention is given to Value-based norms by different classes of society. Definitely, the policy makers can use these norms to improve nutritional behavior and social health accordingly. The main aim is to extract value-based behavioral norms in nutrition from holy books and also detecting their neural correlates and metabolic impacts and try to provide a practical model to design brain-targeted behavioral interventions.

Methods : As a first step, 'shoulds' and 'should'nts' nutritional behavior codes were extracted from holy books, including Qur'an, Gospel and Torah and divided into different categories. In the next step, all related brain structures and their metabolic indices were extracted from literatures published over the past ten years. In the last step, by detecting value-based normal behavioral tendencies, their neural correlates and metabolic impacts, the most effective behaviors were chosen and listed by their Priorities for designing community interventions.

Results : The extracted behavioral norms were categorized into 8 groups including food choice, drinking, set meals, eating together, calorie intake, inhibition and abstinence, mindful eating and food safety. The related metabolic indices were Amino acid and protein profile, Vital Signs, Anthropometric Indices, nutritional diseases diseases, lipid profile, the level of nutritional hormones, glycemic profile and related Metabolic intermediate. The most prevalent behavior studies for their neural correlates were food choice, appetite and inhibition. Behaviors related to food choice involve 4 regions of brain including medial prefrontal cortex, orbitofrontal cortex and insula. Three regions of the brain activate by appetite control, including frontal cortical control circuit, superior medial frontal cortices, and anterior cingulate and there was a Lower response by appetite control in obese subjects in dorsal caudate and middle

cingulate. Among the metabolic indices, the most prevalent researches were conducted to find out the relationship between anthropometric indices and protein profiles with food choices. According to the results of the research, some behavioral interventions were designed by the research team, and are at the initial stage of assessment.

Conclusion : Nutritional behaviors have the greatest impact on community health. Risky nutritional behaviors increase the risk of non-communicable diseases. Beside, promoting normal nutritional behaviors can improve community health. Hence, nutritional behavior interventions are a proper low cost strategy for policy makers in order to lower the burden of diseases. Among nutritional behaviors, the most neural and metabolic related ones are the top priority for intervention. Also, as much as targeted behaviors are closer to cultural and religious norms, intervention is more effective. The results of this study can help health policy makers in order to increase the effectiveness of their intervention models by selecting cultural and religious adopted and more neural-metabolic related nutritional behaviors.

Keywords : nutritional behavior, behavioral interventions, brain structure, cognitomics

Count: 120
Abstract ID: 549
subject: Emotion, Motivation and Behavior: Neural Basis of Human Behavior
Presentation Type: Poster

The assessment of the relation between Moral Intelligence and Intolerance of Uncertainty with Couple Burnout of married men

Submission Author: Amirreza Ramesh

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Background and Aim : The purpose of this study is to investigate the correlation between Moral Intelligence and Intolerance of Uncertainty with Couple Burnout of married men within married men of Urima. For this study, 120 men were selected via simple random sampling from the Urima city. To achieve this, they answered the Moral Intelligence questionnaire (Link & Keel, 2005), the Intolerance of Uncertainty scale (Fryston et al, 1994) and the Couple Burnout scale (Rosen, 1997).

Methods : Data was analyzed by both descriptive and inferential statistics including means, standard deviations, Pearson's correlation coefficient and regression analysis Results: Results showed significant positive relationship between Moral Intelligence and Couple Burnout (P<0/01). In addition, a significant positive relationship found between intolerance of uncertainty and Couple Burnout (P<0/01). According to the results of regression, analysis Moral Intelligence and Intolerance of Uncertainty determines 30% of Changes in Couple Burnout.

Results : Data was analyzed by both descriptive and inferential statistics including means, standard deviations, Pearson's correlation coefficient and regression analysis Results: Results showed significant positive relationship between Moral Intelligence and Couple Burnout (P<0/01). In addition, a significant positive relationship found between intolerance of uncertainty and Couple Burnout (P<0/01). According to the results of regression, analysis Moral Intelligence and Intolerance of Uncertainty determines 30% of Changes in Couple Burnout.

Conclusion : The results of this study show that Moral Intelligence and Intolerance of Uncertainty can be good factors for measuring and predicting Couple Burnout.

Keywords : Moral Intelligence, Intolerance of Uncertainty, Couple Burnout

Count: 121
Abstract ID: 586
subject: Emotion, Motivation and Behavior: Neural Basis of Human Behavior
Presentation Type: Poster

Effect of long-term alcohol consumption on sexual behavior and sperm parameters in adult male wistar rats.

Submission Author: Maryam Sadeghzadeh

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Background and Aim : Evidence suggests that the brain attempts to restore equilibrium after long term alcohol ingestion . Although short-term alcohol consumption may increase GABAA receptor function, prolonged drinking has the opposite effect . Alcohol abuse has been considered as one of the problems associated with sexual behavior and sperm quality. Both chronic and acute consumption of alcohol has been reported to cause fertility disturbances such as sexual behavior, motility sperm and non-motility. But few studies have been examined how alcohol consumption affects the general sperm quality aspects of the infertility in male rats.

Methods : Twenty male wistar rats (four months of age) divided into two groups (n=10/group):1- control and 2-alcohol treated group. similar to our previous study, rats in the treat group received alcohol with a dose of 4.5 g/kg body weight saluted in tap water (20% w/v) intragastrically by gavage once a day. After six weeks of treatment each male rat was tested for sexual behavior with intact adult female rat and after once day small piece of the cauda epididymis of each animal was dissected and into the culture then placed incubator.

Results : The result revealed that chronic alcohol consumption caused significant increases Intromission rates, mount and intromission frequencies post-ejaculatory and inter-intromission intervals in the alcohol treated group compared to those in the control group.Such as increases non-motility sperm in the alcohol group and decrease of motility sperm compared to those in the control group and no significant count sperm for both two groups.

Conclusion : Current study results provided a comprehensive exploration of the chronic effects of alcohol on male rat's sex behavior and sperm parameters. These two groups presented here was different in measure of parameters that it was previously reported. Further research is, however, required to elucidate the mechanisms by which alcohol produces these parameters deficits in order to develop practicable prevention or treatment strategies for alcohol induce adverse effects in reproductive system.

Keywords : Alcohol ; Sex behavior ; Sperm motility ;

Count: 122
Abstract ID: 22
subject: Emotion, Motivation and Behavior: Neural Basis of Human Behavior
Presentation Type: Oral

Valence effects on phonological processing in normal Persian speaking children: A study by ERP

Submission Author: Sousan Salehi

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Background and Aim : Emotional content and language processing has mutual relationship. But there is limited evidence in emotional production. Verbal emotion has two aspect including arousal and valence. The aim of the present study is investigation of effect of valence on phonological processing in Persian speaking children by ERP.

Methods : One hundred and twenty emotional words in three categories including positive (high valence or pleasant), negative (low valence or unpleasant) and neutral was given to 10 normal Persian speaking children to read aloud. Concurrently, Event Related Potentials were recorded by 64 electrodes. Phonological processing was supposed to be 100-400ms before articulation onset. Behavioral and electrophysiological results were analyzed in this time range.

Results : Positive words have more accuracy and smaller reaction time compare to negative words. These differences were statistically significant ($P < 0.05$). Positive words extracted larger amplitude in frontal, temporal and posterior regions. Neutral words have larger amplitude in central regions. Topography illustrated diffuse activity in emotional words. There were significant differences between negative, positive and neutral words in prefrontal and right posterior regions ($P < 0.05$).

Conclusion : Emotion increases brain activity in some regions. It leads in faster processing. Emotional content decreases amplitude and helps to phonological processing in limited regions.

Keywords : Emotion, Valence, Phonological Processing, ERP,Normal Persian Speaking Children

Count: 123
Abstract ID: 140
subject: Emotion, Motivation and Behavior: Biological Rhythm and Sleep
Presentation Type: Poster

Novel thiazolidinone derivatives with sedative and hypnotic effects

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Background and Aim : Insomnia has always been mentioned as a common disorder among people that normally affects the quality of patients' lives. Hypnotic medicines are most often used in patients who suffer from insomnia. Most hypnotic medicines have their own side effects. For instance, CNS suppression is reported with barbiturates consumption and muscle relaxation, dependency and impotency are more likely with benzodiazepines. In this study, we aimed evaluation of sedative and hypnotic effects of some novel thiazolidinone derivatives as benzodiazepine-like compounds with fewer unwanted effects.

Methods : Male NMRI mice (18 to 25 g of weight) were used in all the experiments. Mice were treated with novel thiazolidinone derivatives at different doses (i.p.) 30 minutes before administration of pentobarbital (45 mg/kg). Duration of pentobarbital-induced sleep was recorded. In addition, locomotor activity of mice was evaluated in the open field test. Diazepam (2 mg/kg) and flumazenil (10 mg/kg) were used as an agonist and antagonist of GABA-A receptor respectively.

Results : All the novel thiazolidinone derivatives (SM1, SM3, SM4, SM6, SM7) at different doses (20, 30 and 40 mg/kg) increased sleeping time comparing to the control group and showed hypnotic effect. This effect was significantly antagonized with flumazenil as an antagonist of benzodiazepine receptors. Moreover, these compounds decreased the locomotor activity of mice and which indicates sedative effects.

Conclusion : The present data demonstrated the sedative-hypnotic effect of these novel thiazolidinone derivatives and interaction of GABA-A receptors as the feasible mechanism of action. We recommend further studies to determine the exact mechanism of action and toxicity of these novel compounds.

Keywords : Thiazolidinone, Righting reflex, Open field, Mice, GABA-A

Count: 124
Abstract ID: 355
subject: Emotion, Motivation and Behavior: Biological Rhythm and Sleep
Presentation Type: Oral

Modulation of intrathalamic rhythmic burst activity in C57BL/6J mice by sake yeast compounds

Submission Author: Nasroallah Moradi kor

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Background and Aim : On the search for non-pharmacological compounds increasing the quality and duration of sleep, it was recently found that Japanese sake yeast supplementation selectively increased delta sleep which was accompanied by the subjective improvement of sleep quality. However the neuronal mechanisms underlying this effect are unknown. Therefore in this study we investigated the effects of different types of sake yeast suspensions on dampened rhythmic bursting in horizontal thalamic slices of C57BL/6J mice.

Methods : In this study we used 8 to 10 weeks old C57BL/6J mice. Animals were sacrificed under isoflurane anesthesia and brains were rapidly removed from the skull and placed in an ice-cold slicing solution. Horizontal thalamic slices (400 µm thickness) were obtained using a microtome and incubated in an oxygenated physiological solution (32°C) for at least 1 hour before recording. Intrathalamic rhythmic burst activity was induced through stimulation of the internal capsule (IC) using a pair of tungsten electrodes (with 50–100 MΩ resistance) and network activity (in form of local field potentials, LFPs) were measured and evaluated in the VB complex using a glass electrode with a resistance of 0.5–2 MΩ. Burst firing was defined by at least 3 high-frequency spikes with an intra-burst frequency interval of >100 Hz and an inter-burst interval of not less than 500 ms when multiple bursts were triggered. The activity was measured 50-100 ms after stimulation of the IC and analyzed up to 2-3 s following stimulus onset. In this study we perfused brain slices with suspensions of sake yeast powder (GSP6 powder, Lion Corporation, Japan; WLP705 liquid, White Labs, Belgium) or supernatant of yeast cultures to test their effects on rhythmic burst activity. The IC was stimulated by a single pulse once per minute. Baseline was recorded for 20 minutes followed by drug perfusion. Response to the drug was noticed within 20-30 min after starting perfusion. Total duration of recording per slice was 1hr.

Results : Preliminary results showed a significant and dose-dependent (suspensions of sake yeast powder with 40 and 80 µg mL–1) increase in the number of bursts, the number of spikes per burst and the duration of bursting in comparison to baseline in response to a single stimulus. Very similar effects were induced with liquid sake yeast (100 µL mL–1) and the supernatant of sake yeast cultures (100 µL mL–1). Notably the latter exerted the strongest effect on all analyzed parameters. Our findings indicated that sake yeast increased and prolonged slow rhythmic bursting in thalamic slices thereby pointing to a possible neuronal network correlate of increased delta sleep following food supplementation in clinical trials.

Conclusion : The present study for the first time points to the neuronal mechanisms involved in increased delta activity following sake yeast supplementation in that components of the thalamic burst firing machinery are positively modulated resulting in increased bursting. Future studies have to identify the active compounds and their signaling pathways.

Keywords : Sake yeast, thalamocortical activity, C57BL/6J mice, local field potential recordings, brain slices, burst activity

Count: 125
Abstract ID: 148
subject: Emotion, Motivation and Behavior: Biological Rhythm and Sleep
Presentation Type: Poster

Sedative-hypnotic effect of aqueous and alcoholic extracts of Salvia limbata

Submission Author: Newsha Toufan

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Background and Aim : Insomnia, which is twice as common in women as in men, affects 6% to 10% of adults. It's the most common sleep disorder. Sleep disorders and chronic sleep loss can put people at risk for heart disease, heart attack, heart failure, irregular heartbeat, high blood pressure, stroke, and diabetes. Since chemical medicines have their own side effects and cannot be tolerated by some patients; herbal compounds can be used and are more likely accepted by patients. The aim of this study is to evaluate the sedative-hypnotic effect of Salvia limbata extract, using animal models.

Methods : Male NMRI mice in the range of 18-25g weight were used to evaluate sedative and hypnotic effects of the aqueous and alcoholic extracts of Salvia limbata, using pentobarbital-induced loss of righting reflex test and open field test. Moreover, diazepam and flumazenil were used as an agonist and antagonist of GABA-A receptor respectively. Mice were treated with aqueous (100, 200 and 400 mg/kg) and alcoholic extract (25, 50 and 100 mg/kg) of Salvia limbata thirty minutes before injection of pentobarbital (40 mg/kg) and duration of losing righting reflex was considered as sleeping time.

Results : Aqueous extract at the dose of 400mg/kg and alcoholic extract at the dose of 50 and 100mg/kg increased the sleeping time and revealed significant hypnotic effect compared to the control group (normal saline) in the righting reflex test. Also, the sleeping time was decreased by injection of flumazenil as an antagonist of the GABA-A receptor. In the open field test, aqueous and alcoholic extract decreased the total distance moved which indicates the sedative effect of the Salvia limbata extracts.

Conclusion : Results of both righting reflex and open field tests indicate that extract of Salvia limbata could be used as a sedative and hypnotic component. We recommend further studies to determine the exact mechanism of action and toxicity of the extract.

Keywords : Salvia limbata; Mice; Open field test; Righting reflex test

Count: 126
Abstract ID: 677
subject: Emotion, Motivation and Behavior: Stress and the Brain (Stress-modulated Pathways, Stress and Cognition, Stress Related Disorders)
Presentation Type: Poster

Pre-gestational stress and risk for anxiety in rat offspring: sex-dependent maternal and paternal effects

Submission Author: Kimia Ahmadi

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Background and Aim : Prenatal stressful events have long-lasting consequences on physiology and behaviour of offspring. While effects of gestational, peri and postnatal stress on psychological alterations in offspring have been extensively studied, much less is known regarding the effects of parental pre-gestational life events on offspring behaviour. In the present study the effect of maternal and/or paternal pre-gestational stresses on anxiogenic responses in the rat offspring was investigated to address whether or not pre-gestational stress during spermatogenesis and oogenesis may increase vulnerability of the brain to develop neurobehavioral abnormalities.

Methods : The male and female adult rats were subjected to predatory stress (exposed to a cat) twice a day for 50 (male) and 15 (female) consecutive days. At the end of the stress procedure, control and stressed females and males rats were mated to create four types of breeding pairs as follows: both male and female control, female stressed/male control, female control/male stressed, and both male and female stressed. On postnatal days 30-31, female and male pups of each group were tested for elevated plus maze (EPM) task and blood samples collection for determining corticosterone (COS) level.

Results : In the most subgroups COS plasma levels and anxiety-like behaviors in puppies whose both or only one parent were exposed to chronic pre-gestational stress increased in comparison to their control counterparts. The pups whose only one parent were exposed to chronic pre-gestational stress showed a significant increase in COS plasma levels and anxiety-like behaviors, as measured by decreased time spent in the open arms and increased time spent in the closed arms, in comparison to control pups. Considerable increases were observed in female pups whose only fathers exposed to stress and in male pups whose only mothers exposed to stress. Unexpectedly, the effect of maternal in combination with paternal stress (in both parents stressed group) on anxiety response and COS levels were not additive based on our data which suggests that the combined effects of these pre-gestational manipulations do not produce greater effects than either maternal or paternal stress by itself.

Conclusion : These data suggest that individual behaviors can be influenced by former life stress experiences of each parent. However, different sex-dependent pattern revealed in anxiogenic responses between female and male pups. Incorporation of genetic and epigenetic aspects in development of neurobehavioural abnormalities and reprogramming the hypothalamic-pituitary-adrenal (HPA) axis responses to stress may contribute to this phenomenon.

Keywords : These data suggest that individual behaviors can be influenced by former life stress experiences of each parent. However, different sex-dependent pattern revealed in anxiogenic responses between female

Count: 127
Abstract ID: 331
subject: Emotion, Motivation and Behavior: Stress and the Brain (Stress-modulated Pathways, Stress and Cognition, Stress Related Disorders)
Presentation Type: Poster

The Types of Stress on Players Based on Video Game Styles: By brain wave changes

Submission Author: Hamed Aliyari

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Background and Aim : Video games are common cultural issues that are of high influence in all languages. Among the important cognitive effects of video games are the positive and negative variations of stress. The present research objective was to study different types of stress on players based on video game styles.

Methods : : A total of 80 players with an average age of 18 to 30 years played four video games namely the Piano Tiles, Mortal Kombat, Outlast, and 2048. In the beginning, the players filled in the form of personal information and general and specialized information on the games. Before starting each game, the saliva samples of the players were collected to measure the levels of cortisol and alpha-amylase. At the end of each game, the same samples were collected once again. The concentrations of cortisol and alpha-amylase were measured using a specialized kit and an ELISA device. In addition, the variations of brain waves were recorded by an Emotiv system. Finally, the data was analyzed in SPSS and MATLAB.

Results : The research findings revealed that the variations of the salivary alpha-amylase concentration increased significantly after playing Outlast, Piano Tiles, and Mortal Kombat and decreased significantly after playing 2048. Moreover, the concentration of salivary cortisol increased significantly after playing Piano Tiles, Mortal Kombat, and Outlast and decreased significantly after playing 2048. The brain wave analysis also revealed that the level of stress experienced by playing Outlast was higher than Mortal Kombat.

Conclusion : According to the research findings, video games can influence the stress system as well as the cognitive system of humans depending on the style. In addition, the type and level of stress triggered in the players depend on the game style.

Keywords : Stress; EEG; Cortisol; Alpha-Amylase; Video Games; Signal processing

Count: 128
Abstract ID: 446
subject: Emotion, Motivation and Behavior: Stress and the Brain (Stress-modulated Pathways, Stress and Cognition, Stress Related Disorders)
Presentation Type: Poster

Beneficial effects of Spirulina platensi against juvenile stress induced deficits in anxiety and depression like behaviors and morphological remodeling in the prefrontal cortex of adult female rats

Submission Author: Ilia Asadi

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Background and Aim : Chronic exposure to stress during pre-pubertal (juvenile) period has been demonstrated to impair mood related behaviors and the dendritic morphology of medial prefrontal cortex. The present study investigated the protective effects of Spirulina platensis (SP), a supplement made from blue-green algae with neuroprotective properties, against juvenile stress induced deficits in anxiety and depression like behaviors and morphological remolding in the prefrontal cortex in adult female rats (PND 60) induced by exposure to chronic restraint stress during adolescent (PND 30-40).

Methods : Rats were subjected to restraint stress (2 h/day for 10 days, PND 30-40). Then, the animals were subjected to treatment with SP (200 mg/kg/day, 15 days), followed by anxiety and depression testing and morphological assessments in the right medial prefrontal cortex.

Results : Results showed that plasma corticosterone levels increased at PND 40, and remained elevated at PND 55 and 70 in the stressed rats. Stressed rats demonstrated deficits in anxiety and depression behaviors and reduced dendritic length and branch points in the medial prefrontal cortex. Treatment with SP alleviated both behavioral and neuroanatomical deficits by juvenile stress, and even exerted the positive effects on neuroanatomical remodeling in the medial prefrontal cortex.

Conclusion : Our findings provide important evidences that treatment with SP during pre-pubertal period can protect against juvenile stress induced behavioral and neuroanatomical impairments in adulthood.

Keywords : Dendritic remodeling, Anxiety, Depression, Juvenile stress, Spirulina microalgae

Count: 129
Abstract ID: 235
subject: Emotion, Motivation and Behavior: Stress and the Brain (Stress-modulated Pathways, Stress and Cognition, Stress Related Disorders)
Presentation Type: Oral

Evaluation the effects of the new Nano-drug (EPO-loaded Gemini micelles) on PTSD: Behavioral and histological approaches

Submission Author: Masoud Bagherpour zarchi

Masoud Bagherpour zarchi[1], Kataneh Abrari[2], Adeleh Divsalar[3], Pouneh Sadat Purhosseini[4]

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Background and Aim : Erythropoietin (EPO) was first recognized as a hematopoietic growth factor. Further studies showed that EPO, as a neuroprotective agent can prevent neuronal death in brain damage. But Because of its large size, it is some limitation for crossing of EPO across the Blood Brain Barrier, so high doses with extensive side effects have been needed to treat brain damage. Posttraumatic stress disorder (PTSD) is a severe anxiety disorder caused by exposure to traumatic events. One of the main results following these stressful events is apoptosis in hippocampus. The aim of this study was evaluation of the effects of Nano-drug (EPO-loaded Gemini micelles) on some behavioral responses in PTSD. Also, may these effects be related to hippocampal cells.

Methods : Male wistar rats were divided into 5 groups. For PTSD induction in four of groups, they exposed to Single Prolonged Stress protocol (SPS). In brief SPS has three steps; 2 hour staying in restrainer, 20 min force swimming and anesthesia with ether. Immediately after SPS, animals in control group received saline, and rats in EPO1000. EPO2500, EPO5000 groups received Nano-Erythropoietin with 1000, 2500 and 5000 u/kg dosage, respectively. A week later, anxiety behavior and sensitized fear response were tested by Elevated plus maze and Open field, respectively. Experimental procedure in naïve group was the same as other groups except that they did not experience SPS. Hippocampal sections were prepared at the end of the tests and hematoxylin Eosin staining was done.

Results : We found out that SPS in control group, decreased the time spend in and number of entry to open arms of elevated plus maze, in control group as compared with naïve. The effect that have been corrected by 2500 and 5000 u/kg of Nano-EPO. Number of center crossing of open field test, significantly decreased in control in comparison with naive. 2500 and 5000 u/kg of Nano-EPO increased the crossing as compared with control. SPS also decreased the cell count in hippocampus in control group as compared to naïve. The effect that have been corrected by drug treatment

Conclusion : In conclusion, the obtained results proposed that EPO-loaded Gemini micelles can decrease the anxiety and sensitized fear responses induced by PTSD, may be by affecting apoptosis in hippocampus.

Keywords : Erythropoietin, Posttraumatic stress disorder, Elevated plus maze, Open field

Count: 130
Abstract ID: 183
subject: Emotion, Motivation and Behavior: Stress and the Brain (Stress-modulated Pathways, Stress and Cognition, Stress Related Disorders)
Presentation Type: Poster

The assesment of the monoamine-oxidase activity in the hoarding behavior of gonadectomized male mice.

Submission Author: Elham Bakhtiyari

Elham Bakhtiyari[1], Namdar Yousofvand[2], Reza Khodarahmi[3], Isaac Karimi[4]

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Background and Aim : Hoarding is defined as the storage and hides something for use in future and has the various aspects of adaptive behavior in the wildlife, economic hoarding of Humane Society and the mental part of it is that a subgroup of obsessive-compulsive disorder. Dopaminergic system plays a role in hoarding behavior. Gonadectomy surgery reduces testosterone secretion and induction of aging and depression. The monoamine oxidase enzyme by Catecholamine catabolism plays an important role in controlling behavior. The purpose of this study is to find the relationship between mono-amine oxidase and aging with physiological behavior. In this study, we investigated monoamine oxidase enzyme activity and effect of gonadectomy in hoarding behavior of animals.

Methods : In this study were used 80 male mice. Animals were isolated by using the hoarding apparatus and finally, 32 mice were grouped into 4 groups: normal hoarder, gonadectomized hoarder, normal non-hoarder and gonadectomized non-hoarder. Hoarding test were repeated in all groups after 66 days. Behavioral test include Light/dark transition were taken. Finally, animals dissected and brain tissue, abdominal fat and interscapular brown fat to enzyme measure were isolated. Enzyme activity and protein concentration was measured using spectrophotometer and ELISA reader.

Results : The results showed that the hoarding behavior increases after gonadectomy. in light/dark transition test the gonadectomized non-hoarder group had more anxiety. MAO-A activity in gonadectomized hoarder's brain tissue, MAO-B activity in abdominal fat tissue of gonadectomized hoarder were higher than other groups.

Conclusion : The incidence of anxiety behaviors in groups were different and this will probably perform due to reduced testosterone-induced Gonadectomy and aging and in the other hand is due to the increase activity of MAO that leading to increased dopamine catabolism and thus reduce the level of anxiety behavior.

Keywords : Hoarding, Mono-amine oxidase, Gonadectomy, Anxiety

Count: 131
Abstract ID: 182
subject: Emotion, Motivation and Behavior: Stress and the Brain (Stress-modulated Pathways, Stress and Cognition, Stress Related Disorders)
Presentation Type: Poster

The measurment of MAO-A activity in hoarding behavior of gonadectomized and non-gonadectomized male mice.

Submission Author: Elham Bakhtiyari

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Background and Aim : Hoarding is defined as the storage and hides something for use in future and has the various aspects of adaptive behavior in the wildlife, economic hoarding of Humane Society and the mental part of it is that a subgroup of obsessive-compulsive disorder. Dopaminergic system plays a role in hoarding behavior. Gonadectomy surgery reduces testosterone secretion and induction of aging and depression. The monoamine oxidase enzyme by Catecholamine catabolism plays an important role in controlling behavior. The purpose of this study is to find the relationship between mono-amine oxidase and aging with physiological behavior. In this study, we investigated monoamine oxidase enzyme activity and effect of gonadectomy in hoarding behavior of animals.

Methods : In this study were used 80 male mice. Animals were isolated by using the hoarding apparatus and finally, 32 mice were grouped into 4 groups: normal hoarder, gonadectomized hoarder, normal non-hoarder and gonadectomized non-hoarder. Hoarding test were repeated in all groups after 66 days. Finally, animals dissected and brain tissue to enzyme measure were isolated. Enzyme activity and protein concentration was measured using spectrophotometer and ELISA reader.

Results : The results showed that the hoarding behavior increases after gonadectomy. MAO-A activity in gonadectomized hoarder's brain tissue, were higher than other groups.

Conclusion : The incidence of anxiety behaviors in groups were different and this will probably perform due to reduced testosterone-induced Gonadectomy and aging and in the other hand is due to the increase activity of MAO that leading to increased dopamine catabolism and thus reduce the level of anxiety behavior.

Keywords : Hoarding, Mono-amine oxidase, Gonadectomy

Count: 132
Abstract ID: 669
Presentation Type: Oral

Study of Brain Signals Involved with Persian Sentence comprehention

Reza Bandali

Introduction: This study aimed to achieve a deeper understanding of how the brain works to process and comprehend Persian sentences in a text to identify neuronal processes that involve language processing. In this study, the researcher used an event-related potential to record and analyze brain reactions to Persian sentences, which resulted in changed ERP properties.

Methodology: The participants included 13 right-handed and monolingual (Persian) individuals, aged 18-40-year old, without a history of neurological disorders and consumption of neuropsychiatric drugs. In this study, 80 sentences including 40 primary sentences and 40 filler sentences were considered. According to Table 1, the primary sentences were formulated in two experimental modes (grammatically correct sentences versus sentences with replaced subject-object positions). For normalization (i.e. determining whether the sentences are accurately placed in each group), they were distributed in form of a Liker scale-based questionnaire between the statistical population, including 60 individuals. Then, the results were analyzed in SPSS. Each experimental sentence was presented word-by-word under a standard condition. At the same time, the brain waves were recorded. To analyze data, the mean value of ERP properties in a variety of different word configurations was obtained through EEGlab. Next, SPSS was used to determine the significance level of data. Consistent with the literature results in some other studies, the N400 and P600 components were not observed.

Results: The N400 and P600 components are not specifically sensitive to language. For example, P600 greatly depends on the test and sentence design properties, and N400 is influenced by the semantic grade. The specific characteristics of Persian language also play a role in this regard. Among these characteristics is the flexibility of Persian sentences to the replacement of its component positions, without changing the meaning, as well as strong tendency of Persian speakers' brain towards metaphorization, exemplification, and giving fictitious meaning to objects and creatures to set conceptual and functional goals.

Count: 132
Abstract ID: 669
subject: Emotion, Motivation and Behavior: Stress and the Brain (Stress-modulated Pathways, Stress and Cognition, Stress Related Disorders)
Presentation Type: Poster

Acute exercise is beneficial in ameliorating stress induced depression behavior, via reducing activation p38.

Submission Author: Sara Hoseinchi

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Background and Aim : Exercise even for a few sessions, which has been known in some sources as acute exercise, can significantly improve mood in depressed patients, and this is an immediate effect of exercise compared to common drugs that it takes a few weeks to work. Research continues on the physiological mechanism and molecular pathways involved in this effect of acute exercise on depression disorder. If the mechanisms involved in the anti-depressant effects of acute exercise can be identified, effective steps can be taken to develop new therapies inspired by the physiological traits of exercise, with less complications and quicker effects. In this study, and for the first time, the role of the mitogen-activated protein kinase (MAPK); p38, in the effects of acute exercise on depressive behavior in rats has been investigated.

Methods : Following 7 weeks of chronic unpredictable stress (CUS) protocol, Wistar male rats were exercised under moderate intensity for 60 min per session for five days. After exercise training, forced swimming tests were used to assess depression behaviors. After this test, the duration of immobility time for every rat was measured using the video of tests by two observers who were blinded to grouping of rats. In addition, hippocampal p38 protein level was examined using western blot technique.

Results : Chronic unpredictable stress increased immobility time of stress group and acute exercise decreased this time significantly. Chronic unpredictable stress also induced phosphorylation and hence activation of p38 and acute

exercise was found to reduce p38 activation in the hippocampal formation of stress exercised rats, when compared to the stress group.

Conclusion : These findings revealed that acute exercise may be beneficial in ameliorating stress-induced depression behavior, via reducing phosphorylation and activation p38 signaling pathway.

Keywords : Exercise, Stress, Depression

Count: 133
Abstract ID: 107
subject: Emotion, Motivation and Behavior: Stress and the Brain (Stress-modulated Pathways, Stress and Cognition, Stress Related Disorders)
Presentation Type: Poster

Hormonal signs of post-traumatic stress disorder (PTSD) induced by electric shock in rat decreased by the extract of Humulus lupulus

Submission Author: Mahnaz Jafari

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Background and Aim : Humulus lupulus is a medicinal plant which has been has various used in traditional medicine. Traditionally, this medicinal plant has been used to cure different diseases such as insomnia, appetizer, sedative and anti-stress. The post-traumatic stress disorder (PTSD) is among the most important mental disorders of our century which causes great stress and several complications for the afflicted person. Nowadays, the definition of PTSD comprises not only those affected by the accident, but also those who have witnessed it. Therefore, in the current study, we aimed to investigate the effects of Humulus lupulus extract on hormonal signs of PTSD caused by electric foot shock.

Methods : Male Wistar rats (250-300 g weight) were used in this study. The animals randomly received electric foot shock (0.1 mA) for 100 seconds over a period of 10 days. After returned to cages to repose for 21 days, the animals were put back into the stress box but received no stress. The animals received different doses of Humulus lupulus extract (1, 3, 9 mg/kg) intraperitoneally 10 min before placing into the stress box (n = 7-9 rats/group). Control group received saline (1 mg/kg). Plasma corticosterone levels were assessed in control and treated animals.

Results : One-way ANOVA showed that stress elevated plasma corticosterone level (124 nmol/L) concentration in the control animals. Intraperitoneal administration of the Humulus lupulus extract reduced plasma corticosterone level (73 nmol/L).

Conclusion : These findings indicate that Humulus lupulus extract can reduce hormonal signs of PTSD and can use as an agency for moderation of PTSD signs.

Keywords : Humulus lupulus; Post-traumatic stress disorder; corticosterone

Count: 134
Abstract ID: 438
subject: Emotion, Motivation and Behavior: Stress and the Brain (Stress-modulated Pathways, Stress and Cognition, Stress Related Disorders)
Presentation Type: Poster

Anxiety Disorders in Elementary Students: Explaining the Differences Between Kurdish, Turkish and Armenian in 2018

Submission Author: Iraj Mirkhan

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Background and Aim : Anxiety disorders are one of the most common disorders in students, especially in elementary school. Therefore, the purpose of this study was to investigate the anxiety disorders among elementary students: explaining the Differences Between Kurdish, Turkish and Armenian language differences

Methods : The present study is descriptive-analytic. The statistical population of the study consisted of all elementary students of Urmia in 2018. 120 students (50 Kurdish, 50 Turkish and 20 Armenians) were selected from the level of schools in District 1 and 2 of Urmia and completed the Spence Anxiety Disorders Questionnaire.

Results : The results of multivariate analysis of variance showed that there was a significant difference between Agoraphobia, separation anxiety ($P < 0.01$) and general anxiety disorder and fear of physical harm ($P < 0.05$) in Kurdish, Azeri and Armenian children

Conclusion : the results of the study indicated that there was a difference between Kurdish, Turkish and Armenian children in anxiety disorders, which according to the results can be performed to reduce the anxiety disorder in students.

Keywords : Anxiety Disorders, Language Differences

Count: 135
Abstract ID: 25
subject: Emotion, Motivation and Behavior: Stress and the Brain (Stress-modulated Pathways, Stress and Cognition, Stress Related Disorders)
Presentation Type: Poster

The Effect Of Constant Stress On Spatial Memory, Learning, Anxiety Behaviors And Depression In Male Mice

Submission Author: Amirhossein Niksiyar

Amirhossein Niksiyar[1]

1. Islamic Azad University - Tehran North Branch

Background and Aim : Stress Has Many Effects On The Brain. It Is A Form Of Threatened Homeostasis In Which Varieties Of Adaptive Processes Are Activated, And It Causes Behavioural And Physiological Changes. [1] The Activation Of The Adrenal Pituitary Hypothalamus (Hpa), The Renin-Angiotensin System, And The Autonomic Nerve System Plays An Important Role In The Development Of Stress Responses. Glucocorticoids (Cortisol-Corticosterone) Participate In Controlling The Organism's Homeostasis And Have An Important Regulatory Role In The Stress Response. [2, 3] It Should Be Noted That Stress And Corticosteroids Dynamically Regulate The Expression Of Synaptic Plasticity In The Brain's Glutamatergic Synapses. Glutamate Nmda (N-Methyl-D-Aspartate) Receptors Have A Role In The Hippocampal Synaptic Plasticity, Which Is Likely Associated With Memory Storage In The Brain.The Hippocampus, Which Is A Part Of The Limbic System In The Temporal Lobe Of Mammalian Brains, Plays A Prominent Role In The Formation Of New Memories. [5, 6] Moreover, It Is The Main Structure In Spatial Learning And Memory Consolidation, And Is Highly Susceptible To Stress. [7] The Hippocampus Has The Most Glucocorticoid Receptors Compared To Other Parts Of The Brain. Increases In The Plasma Levels Of Glucocorticoids Can Enhance Learning And Memory. However, Increases In The Levels Of Glucocorticoids Over A Prolonged Period Lead To Atrophy, Degenerative Changes In Hippocampal Neurons, And A Decrease In Learning And Memory, As Reported In Human And Animal Studies. On The Other Hand, Stress That Is Caused By Stress Hormones May Facilitate Or Suppress The Synaptic Plasticity In Rodents.BDNF Is An Indicator Of Neurogenesis In The Hippocampus. It Is Important For Neurite Outgrowth, Differentiation, Maintenance Of Function, And Regulating Survival In Different Neuronal Populations. [13] It Has Been Shown That The Modulation Of BDNF Expression In Response To An Acute Stress Was Changed, Which Reveals A Functional Damage In BDNF Regulation. Some Types Of Stress-Like Maternal Deprivation For Only One Day Have A Constant Long-Term Effect On BDNF Expression And Regulation. For Instance, Fuchikami Et Al.Revealed That Immobilization Stress Treatments Decrease BDNF MRNA Throughout The Hippocampus.Studies Have Shown That Chronic Stress Immobility Or Different Stress Situations Impaired Memory In Rats In The Radial Maze, The Morris Water Maze, The Barnes Maze, And The Y-Maze.

Methods : Animals Groups, Stress Procedure, Barnes Maze, Elevated Plus Maze, Serum Cortisol Level Determination,Brain BDNF Level Determination, Data Analysis

Results : The Animals In The Stress Group Received Continuous Immobilization Stress For 360 Minutes. After 24 Hours, Both The Stress Group And The Control Group Were Placed In The Barnes Maze In Order To Measure Learning And Memory. The Data From All The Animals Is Included For Analysis,Mice In The Stress Group Spent A High And Significantly ($P < 0.01$) Greater Amount Of Time In The Open Arms Than The Control Group Did ,Stress Did Not Show Any Significant Effect On The Time Spent Struggling As Compared To The Control Group,The Results Showed That The Level Of Brain BDNF In The Stress Group (11.347±0.683 Nmol/Lit) Increased Significantly ($P<0.01$) Compared To That In The Control Group (9.979±0.177 Nmol/Lit)

Conclusion : The Plasma Cortisol Concentration Increased, Facilitating Anxiety-Like Behaviour And Depression,

Keywords : Anxiety-Like Behavior; Barnes Maze; BDNF; Depression; Spatial Learning And Memory; Stress

Count: 136
Abstract ID: 613
subject: Emotion, Motivation and Behavior: Stress and the Brain (Stress-modulated Pathways, Stress and Cognition, Stress Related Disorders)
Presentation Type: Oral

Juvenile stress and cognitive functions

Submission Author: Ali RashidyPour

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Background and Aim : Unfortunately, in the world including Iran children are progressively exposed to various kinds of stress. Recent findings demonstrated that these experiences can negatively impact adult health, often resulting in psychopathology. In this review, we discuss about the negative effects of chronic stress during juvenile period on brain functions and structures and present new data demonstrating that appropriate pharmacological and non-pharmacological interventions can prevent the detrimental effects of chronic juvenile stress on the brain.

Methods : -

Results : -

Conclusion : -

Keywords : Stress, Cognitive functions

Count: 137
Abstract ID: 612
subject: Emotion, Motivation and Behavior: Stress and the Brain (Stress-modulated Pathways, Stress and Cognition, Stress Related Disorders)
Presentation Type: Oral

Vitamin-D3 regulation of stress induced-increase in serum corticosterone and reduce in hippocampus BDNF in male rat

Submission Author: Katayoun Sedaghat

Katayoun Sedaghat[1], Sara Choobdar[2], Ali Rashidy pour[3], Ahmad Reza Bandegi[4], Abbas Ali Vafaei[5]

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Background and Aim : Chronic stress producessignificant changes in HPA-axis that leads to morphological changes in brain structures, particularly hippocampus. BDNF as a member of neurotrophin family has an important role in the survival and plasticity of the hippocampus cells, and therefore, cognitive functions, like, learning and memory. Chronic stress is associated with reduction in BDNF expression and function in the hippocampus and cognitive impairment. 1,25(OH)2vitaminD3, vitamin-D, has an important impact on brain development and function and increase in the expression of various neurotrophic factors. Considering the negative effect of chronic stress on BDNF protein levels and neuro-protective effect of vitamin-D, this brief study was conducted to understand the possible regulatory effect of vitamin-D on the serum corticosterone and hippocampus BDNF protein levels following a period of restraint stress in rats.

Methods : Rats underwent the restraint stress for 28 days with receiving vitamin-D (5 and 10ug/kg) or its vehicle. Then,the serum corticosterone and BDNF protein levels in the hippocampus were measured.

Results : Restraint stress significantly increased the serum CORT levels, while vitamin-D (10ug/kg) markedly reduced that ($P<0.05$). Also, restraint stress reduced the BDNF protein level in the hippocampus ($P<0.01$), whereas, vitamin-D (10ug/kg) rescued that.

Conclusion : This study suggests that vitamin-D may protect the hippocampus from negative effects of chronic stress by regulatory effect on HPA axis and BDNF expression in the hippocampus. Thus, it likely has protective effect on cognition and learning activities.

Keywords : Restraint stress, Vitamin-D, Hippocampus, BDNF, Corticosterone, Rat

Count: 138
Abstract ID: 493
subject: Emotion, Motivation and Behavior: Reward and the Brain
Presentation Type: Oral

Neuro-inflammation underlie changes in the gene expression of mitogen-activated protein kinases and induction of morphine tolerance in rats

Submission Author: Shamseddin Ahmadi

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Background and Aim : It is well known that anti-nociceptive tolerance to opioids severely limits their clinical efficacy for the treatment of chronic pain syndromes. It has been reported that morphine-evoked neuro-inflammation is important in induction of morphine tolerance. According to the results of recent researches, the mitogen-activated protein (MAP) kinases are involved in the inflammation that is induced after repeated use of morphine. In this study, we aim to examine changes in the gene expression of the Erk1 and P38 MAP kinases in the prefrontal cortex (PFC) in morphine-tolerant rats.

Methods : Male Wistar rats were used in the current study. Two groups of animals received saline (1 ml/kg) or morphine (10 mg/kg) twice daily for 8 consecutive days. A hotplate test of analgesia was used to assess the induction of morphine tolerance on day 8 of the schedule. Two hours after the last injection on day 8, each rat was anesthetized, decapitated and the PFC was dissected on an ice-chilled surface. The gene expression of the Erk1 and P38 MAP kinase were examined using a real-time quantitative polymerase chain reaction (qPCR) method.

Results : According to the results of the hotplate test, morphine treatment for 8 consecutive days induced anti-nociceptive tolerance to the opioid. The results of the real-time qPCR method for the gene expression of the Erk1MAP kinase in the PFC of the morphine-tolerant group showed a tendency to increase compared to the saline-treated control group but no significant change was observed. However, the results for the gene expression of the P38 MAP kinase in the morphine-tolerant group showed significant increase compared to the saline-treated control group ($P<0.01$).

Conclusion : It can be concluded that morphine tolerance may induce neuro-inflammation, which may underlie, at least partly, the decreases in morphine-induced analgesia after repeated use of the opioid. It can be suggested that control of inflammation with specific drugs targeting MAP kinases may prevent induction of morphine tolerance.

Keywords : Morphine tolerance, Inflammation, Analgesia, Prefrontal cortex, Erk1, P38, MAP kinase

Count: 139
Abstract ID: 53
subject: Emotion, Motivation and Behavior: Reward and the Brain
Presentation Type: Poster

Spirituality in the human brain

Submission Author: Shayan Hosseinzadeh

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Background and Aim : Spirituality is a lost human being in the domain of the universe, which does not know the time and place. Spirituality refers to the ultimate or immaterial truth. An inner way that enables a person to discover the essence of life or the deepest meanings and meanings of people's lives; spiritual exercises, including meditation and praying, aim at personal inner life. Such exercises lead to experience or communication with superior truth; that is, their better understanding of others or with the human community, with nature or the world, or with the spiritual realm. The human brain is a set of complexities that react to any given data. A very sensitive sensory system recognizes and senses various human emotions.human brain can analyze datas coming from spiritual exprieces.

Methods : this research is a review of the history of neurotheology researches. Finally, a comparative study between the results of various studies leads to the final findings of this research.

Results : Increasing the frequency of alpha, theta and beta in the frontal, parietal and temporal lobes and reducing the alpha and beta in occipital lobes can be seen as signs of the experience of spirituality in human's brain.

Conclusion : The purpose of this study is to investigate the human neuro system's reactions to the spiritual experience. The results indicate that the human brain shows an certain reaction when human experiencing spirituality.

Keywords : Recognition sciences, spirituality, human brain,spiritual exprience, neuroscience

Count: 140
Abstract ID: 190
subject: Emotion, Motivation and Behavior: Reward and the Brain
Presentation Type: Oral

Rimonabant Prevents Reinstatement of Methamphetamine-Seeking Behavior in the Sleep-Deprived Rats

Submission Author: Mehdi Khodamoradi

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Background and Aim : The cannabinoid system may mediate the rewarding effects of methamphetamine (METH) and other psychostimulants. It has also been shown that sleep deprivation (SD) facilitates METH-induced CPP. Nonetheless, it remains to be clarified whether the cannabinoid receptors may also play a role in the effects of SD on METH reward memory. This study set out to examine the effects of the cannabinoid CB1 receptor antagonist rimonabant on METH-induced CPP in the sleep deprived rats.

Methods : Adult male Wistar rats were conditioned in the conditioned place preference (CPP) to receive METH in one chamber. Afterwards, METH reward memory was extinguished in a period of extinction and then reinstated. A period of 24 h SD was induced using the multiple platforms method before the METH reinstatement. Finally, the cannabinoid CB1 receptor antagonist rimonabant (3 mg/kg, ip) was injected before the SD induction or 60 min before CPP expression.

Results : A period of 24-h SD episode before the CPP expression reinstated METH reward memory. Rimonabant administration before SD induction, but not before METH reinstatement, suppressed the METH-induced CPP significantly.

Conclusion : The results would seem to suggest that the cannabinoid CB1 receptors can be targeted to prevent relapse to the METH seeking/taking, particularly in people who suffer from sleep problems.

Keywords : Methamphetamine; Cannabinoids; Rimonabant; Sleep deprivation; Conditioned place preference.

Count: 141
Abstract ID: 504
subject: Emotion, Motivation and Behavior: Reward and the Brain
Presentation Type: Poster

Role of the NMDA receptor and the JNK3 MAP-Kinase in the prefrontal cortex in the induction of morphine tolerance in rats

Submission Author: Kaivan Masoudi

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Background and Aim : It is well known that chronic administrations of morphine results in the development of tolerance to its analgesic effects. Pharmacological data has shown not only changes in the mu-opioid receptors but also in the N-methyl-D-Aspartate (NMDA) receptors play an important role in the induction of morphine-induced analgesic tolerance. The MAP-Kinases are a specific class of serine/threonine kinases that respond to many extracellular signals. Recent studies show that MAP-kinases are involved in signaling pathways originating from the NMDA receptors. In this study, we aim to examine changes in the gene expression of the GluN1, as the main subunit of NMDA receptors and c-Jun N-terminal kinase (JNK3), as a member of MAP-kinases in the PFC in morphine-tolerant rats.

Methods : Two groups of male Wistar rats received saline (1 ml/kg) or morphine (10 mg/kg) twice daily for 8 days. Induction of morphine tolerance was assessed using the hotplate test of analgesia on day 8. Two hours after the last injections on day 8, each rat was anesthetized, decapitated and the PFC was dissected on an ice-chilled surface. The gene expression of the GluN1 and Jnk3 MAP-kinase was done using a real-time PCR method.

Results : The results of the hotplate test of analgesia revealed that morphine treatment for 8 days induced analgesic tolerance. The results of the real-time PCR showed that the gene expression the GluN1 subunit of the NMDA receptor was significantly increased after morphine tolerance ($P<0.01$). In addition, according to the results of the real-time PCR, the gene expression of the Jnk3 MAP-kinase, similar to the GluN1, was significantly increased in the PFC.

Conclusion : It can be concluded that morphine tolerance affects the gene expression of the NMDA receptor and the JNK3 MAP-kinase in the PFC, which may underlie at least partly, the molecular mechanism in the PFC that involved in the induction of morphine tolerance.

Keywords : Morphine tolerance, NMDA receptor, MAP-kinase, Gene expression, rat

Count: 142
Abstract ID: 500
subject: Emotion, Motivation and Behavior: Reward and the Brain
Presentation Type: Oral

Role of Mir124, Mir219 and Mir339 in the regulation of the mu-opioid receptor gene expression in the prefrontal cortex in morphine-tolerant rats

Submission Author: Shiva Mohammadi talvar

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Background and Aim : Morphine tolerance is induced by repeated exposure to the opioid. The prefrontal cortex (PFC) is a target of the mesocorticolimbic pathway, which is involved in the action of morphine on the brain. Molecular studies have shown that during morphine tolerance, the expression of the mu-opioid receptors is affected, which may partly underlie in the induction of morphine tolerance. Some recent researches have proposed some roles for microRNAs in controlling gene expression, and it has been shown that among many studied miRNAs, the Mir124, Mir219 and Mir339 are involved in the regulation of the morphine tolerance in some areas of the brain. The aim of this study was to examine changes in mu-opioid receptors and its association with Mir124, Mir219 and Mir339 in the PFC after induction of morphine tolerance in rats.

Methods : Male Wistar rats were used in which morphine tolerance was induced with eight days injections of morphine 10 mg/kg (i.p.) twice per day. Two groups of rats received saline (1 ml/kg) or morphine (10 mg/kg) twice daily for 8 days. On day 8, morphine-induced analgesic tolerance was assessed using a hotplate test of analgesia. For gene expression study, the PFC was extracted in the separate saline or morphine-treated groups on day 8 of the schedule to examine changes in gene expression of the mu-opioid or the miRNAs using a quantitative RT-PCR method.

Results : The results showed that morphine treatment for 8 days induced analgesic tolerance. The results of the qRT-PCR showed that the mu-opioid receptor gene expression was significantly decreased ($P<0.05$) but no significant change was observed for Mir124, Mir219 and Mir339 expression in the PFC of the morphine-tolerant group compared to the saline-treated group.

Conclusion : It can be concluded that changes in the gene expression of mu-opioid receptor in the PFC after repeated injections of morphine may underlie induction of morphine analgesic tolerance. However, Mir124, Mir219 and Mir339 have no effects on the mu-opioid receptor expression and therefore they have no association with the induction of morphine tolerance and the change in the gene expression of mu-opioid receptors, at least partly, in the PFC.

Keywords : Morphine tolerance, Mu-opioid receptor, Gene expression, microRNA

Count: 143
Abstract ID: 511
subject: Emotion, Motivation and Behavior: Reward and the Brain
Presentation Type: Poster

Change in calcium/calmodulin-dependent protein kinase IIα but not protein kinase C in the prefrontal cortex is associated with morphine-induced analgesic tolerance

Submission Author: Mohammad Zobeiri

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Background and Aim : Morphine is a potent analgesic that is used to treat chronic pain but its utility is limited by the development of morphine tolerance. Several kinds of research have shown that calcium/calmodulin-dependent protein kinase IIα (CamKIIα) and protein kinase Cγ (PKCγ) have some roles in morphine tolerance. On the other hand, the prefrontal cortex (PFC) is the main site in processing morphine effects on the brain. Therefore, the aim of this study was to examine changes in gene expression of CamKIIα and PKCγ in the PFC after induction of morphine analgesic tolerance in rats.

Methods : : We used two groups of male Wistar rats, which one group of them received saline (1 ml/kg) and the other group received morphine (10 mg/kg) twice daily for eight days. On day 8, morphine-induced analgesic tolerance was assessed using a hotplate test of analgesia. Then, the rats were decapitated and the PFC was dissected in each rat on an ice-chilled surface. Changes in the gene expression of CamKIIα and PKCγ were examined using a quantitative RT-PCR method

Results : The results showed that repeated use of morphine for 8 days induced analgesic tolerance. The results of the gene expression examination showed that the CamKIIα gene expression was significantly increased in the PFC. However, no significant change was observed for the PKCγ gene expression in the PFC.

Conclusion : It can be concluded the CamKIIα but not PKCγ via association with NMDA receptors in the PFC may be involved in the induction of morphine analgesic tolerance.

Keywords : Morphine tolerance, The Prefrontal Cortex, Gene expression, CamKIIα, PKCγ

Count: 144
Abstract ID: 225
subject: Emotion, Motivation and Behavior: Behavioral Pharmacology
Presentation Type: Poster

Implementation of a Stimulus Software for a mouse and Analysis of the Animal's Movement in a shuttle box

Submission Author: Farima Azizi

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Background and Aim : learning and memory are 2 serious affairs which has been studied in nerves science. Here upon too many probations has been accomplished over mouse. One of the experiments was accomplished on shattle box . Tracking the motion of mouse and registering some parameters like time, distance and velocity is very important for the user. We planned a software and disembarked it on hardware which can register parameters automatically without the necessity of the presence of user.

Methods : there by the calibration part which includes the mask of area, had performed out of the box. In tracking the movement of the mouse we used the threshold of gray level in order to eliminate the disturbance of the soul of box, which is for the sake of the electrical shocks and exerted them as shafts.

Results : Tracking the motion of mouse and registering some parameters like time, distance and velocity is very important for the user. We planned a software and disembarked it on hardware which can register parameters automatically without the necessity of the presence of user.

Conclusion : registering the information of tracking the movement of mouse and extracting data like distance and velocity of mouse is the result of this project.

Keywords : shuttle box,design,software,mouse,analyze

Count: 145
Abstract ID: 209
subject: Emotion, Motivation and Behavior: Behavioral Pharmacology
Presentation Type: Poster

Evaluation of Protective Role of Royal Jelly Against Some Harmful Effects of Silver-Nanoparticle on Tissue Change and Function of Hippocampus in Male Rat

Submission Author: Mahsa Dalfradi

Mahsa Dalfradi[1]

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Background and Aim : Silver nanoparticles have attracted considerable attention due to their important properties, including the antimicrobial properties. In addition, silver nanoparticle can induce oxidative stress. Therefore, it has harmful effects on the body. In this study, the protective role of royal jelly against some harmful effects of silver nanoparticles on the performance and tissue changes of hippocampus was investigated in Wistar male rats.

Methods : This experimental study was performed on 40 male Wistar rats. Mice were classified into 4 groups (10 mice per each group), which included: 1- Control group that did not receive anything 2- The group that received royal jelly 3- The group that received silver nanoparticle associated with royal jelly 4- The group that recived silver nanoparticles. The drugs were administered via gavage for 28 days. Dosage of silver nanoparticles and Royal jelly was 30 and 100 mg/kg, respectively. The performance of hippocampus was evaluated through Morris memory function tests for 5 consecutive days after the completion of material gavage. Transient receptor Potential cation channel subfamily V member1 (TRPV1) gene expression was evaluated using Real-Time PCR method, and the hippocampus tissue was collected for histological studies

Results : according to the results of behavioral, molecular and histological analysis, it was found that royal jelly generally increased, TRPV1 gene expression and improved, the learning of mice treated with royal jelly compared to the control, royal jelly plus silver nanoparticles and silver nanoparticles groups. However, this increase and improvement performance was not significant.

Conclusion : Based on the findings of this study, it can be concluded that Royal jelly can be effective against the harmful effects of silver nanoparticles on the function and structure of hippocampus

Keywords : Silver nanoparticles, Hippocampus,memory,Royal jelly

Count: 146
Abstract ID: 577
subject: Emotion, Motivation and Behavior: Behavioral Pharmacology
Presentation Type: Poster

Therapeutic effects of different doses of Melatonin against learning and memory deficit in Alzheimer's model of rats

Submission Author: Zoleikha Golipoor

Zoleikha Golipoor[1]

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Background and Aim : Alzheimer's disease (AD) is an age-related neurodegenerative disorder with a progressive impairment of cognitive function. Aβ accumulation is an integral part of this disease. The pineal gland hormone melatonin (MEL) has been known to protect against AD. The effect of melatonin in various doses are inconsistent.Objectives: The aim of this study is evaluation two doses of MEL in the learning and behavior in the Aβ-induced AD in rat.

Methods : Forty male Wistar rats were divided into control, sham, vehicle, AD, AD + MEL10 and AD + MEL20 groups. The AD group received Aβ 1–42 via intrahippocampal injection for two weeks.Also, MEL-treated groups received intraperitoneal injection of MEL for four succeeding weeks. Learning and spatial memory were assessed by passive avoidance learning (PAL) and Morris water maze (MWM).

Results : The AD + MEL10 and AD + MEL20 animals showed a significant rise in the step-through latency and a significant fall in the time spending in the dark compartment ($P < 0.05$). There were no significant changes in two groups received the melatonin. The animals spent less time in the target quadrant of the MWM probe trial in groups which were treated with melatonin ($p < 0.05$ vs. AD group).

Conclusion : our findings in the present study declared that different doses of melatonin have similar results in decreasing learning and memory deficit in AD model. Therefore, it seems that dose index may not be an essential criterion to account protective roles on memory and learning deficit.

Keywords : Melatonin, Memory deficit, Alzheimer's disease (AD), Learning

Count: 147
Abstract ID: 184
subject: Emotion, Motivation and Behavior: Behavioral Pharmacology
Presentation Type: Oral

The effect of hydroalcoholic extract of cinnamon on short term memory in morphine-dependent male rats after naloxone injection

Submission Author: Kazem Hatami

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Background and Aim : There are reports that morphine has different effects on memory. On the other hand, cinnamon has moderating effects on morphine-induced behaviors. The purpose of this study was to investigate the effect of cinnamon extract and morphine effect on short-term memory.

Methods : In this study, 28 male mice were used in 4 groups. The groups included: 1. control 2. morphine-dependent 3. extractor; and 4. morphine-dependent + extractor at each time of injection of morphine, to test the short-term memory, a new object detection test was used.

Results : The morphine-dependent + extractor group had better memory than other groups, and the morphine receptor group also showed less memory than other groups.

Conclusion : The effects of memory recovery and enhancement of the cinnamon extract caused by the chemical compounds present in the extract that directly involve the hippocampus, as well as have anti-deprivation effects of morphine.

Keywords : Morphine, Hydroalcoholic Extract, Cinnamon, Short Term Memory

Count: 148
Abstract ID: 600
subject: Emotion, Motivation and Behavior: Behavioral Pharmacology
Presentation Type: Poster

Sedative-hypnotic effect of a novel ethyl 2-((4-fluorobenzyl)thio)-4-methyl-6-(3,4,5-trimethoxyphenyl)pyrimidine-5-carboxylate using experimental animal model

Submission Author: Mobina Heidari

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Background and Aim : Sufficient sleep is one of the most important factor to stay healthy. The regulation of sleep is processed by homeostatic physiology of the circadian rhythm, which has an important role in normal life. Sleep cycle consists of 2 major stages: NREM (Non Rapid Eye Movement) and REM. The best time to sleep for human is between 8PM till 12 AM. Insomnia (lack of enough sleep) which is a graving concern in many societies, causes complications such as obesity, attention deficit problems, increase the risk of cardiovascular diseases, early aging and many other problems. This made researchers and pharmaceutical companies getting attracted in manufacturing and proffering sedative-hypnotic drugs. A novel compound, ethyl 2-((4-fluorobenzyl)thio)-4-methyl-6-(3,4,5-trimethoxyphenyl)pyrimidine-5-carboxylate, was designed and synthesized and the sedative-hypnotic effect of the novel compound was evaluated in mice using experimental tests.

Methods : Before the experiment, we handled male NMRI mice with weight of 20-25 grams for 5-7 days, between 8AM and 3PM. After handling period, mice were placed in the test room with 20-25°C temperature. Then we injected the novel compound at doses of 10, 20, 40 mg/kg via IP injection, to the groups of 8 mice to study the effect of the novel compound on locomotors activity and sedative-hypnotic effect. 30 minutes after injection (the time which is needed for having effect), we put the mice in open field and evaluate the amount of its ambulation by using Ethovision software. To perform sleeping test, 30 minutes after injection of the compound, we inject pentobarbital sodium (40mg/kg). Following the IP injection of pentobarbital, the mice were placed on a warm bed (37°C), in a quiet dark place and observed for measurement of sleep duration. The sleep latency was recorded from the sleep onset until recovery of the righting reflex.

Results : The results of this study showed that, the novel compound at dose of 40 mg/kg significantly ($p<0.001$) increased the sleeping time induced by pentobarbital compared to the control group. The compound at doses of 10,

20 and 40 mg/kg significantly ($p<0.01$, $p<0.001$ respectively) decreased the total distance movement in open field test compared to the control group

Conclusion : We conclude that the novel compound, ethyl 2-((4-fluorobenzyl)thio)-4-methyl-6-(3,4,5-trimethoxyphenyl)pyrimidine-5-carboxylate may have sedative-hypnotic activates. However, further studies are necessary to find the other activates of the novel compound and its mechanism of action.

Keywords : Pentobarbital induced sleep test; sedative; hypnotic; mice

Count: 149
Abstract ID: 206
subject: Emotion, Motivation and Behavior: Behavioral Pharmacology
Presentation Type: Poster

The effect of opioidergic agents on memory process in cholestasis mice

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Background and Aim : Bile duct ligation (BDL) is a well-known model of liver disease (also termed ‘‘cholestatic liver disease”). An increase in the endogenous opioid peptide, met-enkephalin, has been reported during cholestatic liver disease and may be a predictor of reduced survival in patients with cholestasis. Naloxone-induced withdrawal syndrome has also been observed to occur in cholestatic mice as well as morphine-dependent mice. The effect of opioidergic agents (morphine and naloxone) on memory process in cholestasis mice was studied.

Methods : There were four experimental groups: control, addicted, sham-operated and bile duct ligation (BDL) mice. Laparotomy was performed under general anesthesia induced by an intraperitoneal (i.p.) injection of ketamine hydrochloride (50 mg/kg) plus xylazine (5 mg/kg). The sham-operation consisted of a laparotomy and bile duct identification and manipulation without ligation or resection. In the BDL group, the main bile duct was first ligated using two ligatures approximately 0.5 cm apart and then transected at the midpoint between the two ligatures. In order to induction of addiction, the mice were treated with subcutaneous injections of morphine sulphate (25 mg/kg). These injections were given twice per day at 12 h intervals (06:00 and 18:00 h). Moreover, one-trial step-down was used to assess memory retention in adult male mice.

Results : Subcutaneous (s.c.) injection of different doses of morphine impaired memory [$P < 0.05$] but s.c. injection of naloxone improved memory [$P < 0.05$] in cholestasis mice.

Conclusion : The results indicate that opioidergic system plays a role in modulation of memory in cholestasis mice.

Keywords : cholestasis, memory, morphine, naloxone, mice

Count: 150
Abstract ID: 167
subject: Emotion, Motivation and Behavior: Behavioral Pharmacology
Presentation Type: Poster

Evaluation of the effects of hydroalcoholic extract of Lavandula angustifolia on vincristine-induced neuropathy in animal model

Submission Author: Mahsima Khakpash

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Background and Aim : Chemotherapy-induced peripheral neuropathy (CIPN) is a kind of neuropathic pain, which is a major undesirable effect of cancer chemotherapy, and one of the most frequent neurologic complications experienced by patients receiving antineoplastic drugs. Vincristine is one of the most effective medicines successfully employed as first-line treatment for common cancers. However, it may cause severe peripheral neurotoxicity and neuropathic pain. Although there is no treatment or preventive therapy of CIPN, various medicinal plants have been reported that are effective for the management of neuropathic pain. Lavender (Lavandula angustifolia) is used in aromatherapy as a holistic relaxant and is said to have anticolic properties. Its sedative nature, on inhalation, has been shown both in animals and human. The present study was designed to investigate the effects of hydroalcoholic extract of Lavandula angustifolia for neuropathic pain.

Methods : Experimental studies were performed on 32 Adult male Wistar rats (200–250 g) divided into four groups (n=8 in all group). The individual groups received normal saline (control), vincristine sulfate, the extract of Lavandula angustifolia (100 mg/kg) + vincristine sulfate, the extract of Lavandula angustifolia (400 mg/kg) + vincristine sulfate. Vincristine sulfate administration by intraperitoneal injection (i.p.), and the extract of Lavandula angustifolia administered orally at doses of 100-400 mg/kg once per day. Following 10 days of treatment, we stated experimental studies by using Von Frey and Hot plate tests. In Von Frey test mechanical nociceptive thresholds were analyzed, and in hot plate test the withdrawal latency were measured.

Results : The results showed that, In Von Frey test, intensity of mechanical thresholds were significantly increased in the Lavandula angustifolia (400 mg/kg) + vincristine sulfate group compared to vincristine sulfate group

($p<0.001$). In hot plate test, the withdrawal latency were significantly increased in the Lavandula angustifolia (400 mg/kg) + vincristine sulfate group compared to vincristine sulfate group ($p<0.05$).

Conclusion : We conclude that Lavandula angustifolia may be useful in the prevention and treatment of chemotherapy-induced painful peripheral neuropathy. However, further studies are necessary to find the active components responsible for these effects of the Lavandula angustifolia extract.

Keywords : Lavandula angustifolia; Peripheral neuropathy; Von Frey; Hot plate; Rat.

Count: 151
Abstract ID: 158
subject: Emotion, Motivation and Behavior: Behavioral Pharmacology
Presentation Type: Poster

Evaluation of sedative-hypnotic effect of a novel 4-(2-(benzyloxy)phenyl)-6-(4-nitrophenyl)pyrimidin-2-ol in experimental animal model

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Background and Aim : Benzodiazepines (BDZs) are the most usual class of psychoactive drugs in current medicine and have been introduced to medical practice since 1960. The pharmacological effects of BZDs make them the most important GABA-A receptor modulating drugs, which are currently used in clinic. They act by potentiating GABA induced Cl- currents. GABA-A receptors are the major inhibitory transmitter receptors in the brain. BDZs are the safest psychoactive drugs available today, although they have some adverse effects, including amnesia, cognitive impairment and ataxia. New BZD receptor ligands with more selective effects such as anti-anxiety, anti-seizure and fewer adverse drug reactions were synthesized in the last two decades. According to structure-activity relationship of BZDs agonists, a novel 4,6-diphenylpyrimidin-2-ol derivative, 4-(2-(benzyloxy)phenyl)-6-(4-nitrophenyl)pyrimidin-2-ol was designed and synthesized. In this study the sedative-hypnotic effect of the novel compound was evaluated in mice using experimental tests.

Methods : Experimental studies were performed on 40 male NMRI mouse (n=8 in all group). Evaluation of sedative-hypnotic effects are using pentobarbital induced sleeping test. After pre-treatment of different doses of the novel compound (5, 10, 20, 40 mg/kg), animals will receive i.p. injection of sodium pentobarbital at a dose of 40 mg/kg. Following pentobarbital injection, each mouse will be observed for onset of sleep (loss of righting reflex). The time between loss (sleep onset) and recovery of the righting reflex should be measured.

Results : The results showed that, the novel compound at doses of 10, 20 and 40 mg/kg significantly ($p<0.05$, $p<0.001$ and $p<0.001$ respectively) increased the sleeping time induced by pentobarbital compared to the control group.

Conclusion : We conclude that the novel compound, 4-(2-(benzyloxy)phenyl)-6-(4-nitrophenyl)pyrimidin-2-ol may have sedative-hypnotic activates. However, further studies are necessary to find other activates of the novel compounds and its mechanism of action.

Keywords : Novel 4,6-diphenylpyrimidin-2-ol derivatives; Pentobarbital induced sleep test; sedative; hypnotic; mice

Count: 152
Abstract ID: 143
subject: Emotion, Motivation and Behavior: Behavioral Pharmacology
Presentation Type: Poster

Evaluation of sedative-hypnotic effect of Marrubium astracanium

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Background and Aim : Sleep disorders are important psychological problems in many people living all over the world. Although there are several effective medications to treat or control these psychiatric disorders, but most of these medications have limited efficacy and unwanted side effects. Researchers are always looking for new drugs, especially those of natural origin, and they hope that the investigation for newer medications, especially natural products, could be helpful to solve these problems. The genus Marrubium (lamiacea) contains about 40 species which mainly found in areas along the Mediterranean Sea and in temperate zone of the Eurasian Continent. In Asia these species were found in Iran, Iraq, Uzbekistan, Pakistan and India. There are some reports about the use of Marrubium astracanium in traditional medicine. The present study was designed to investigate the sedative-hypnotic effect of Marrubium astracanium.

Methods : In this study we investigated the sedative-hypnotic and the locomotors activity effects of Marrubium astracanium aqueous extract, using experimental model; pentobarbital induced sleep and open field tests respectively. Experimental tests were performed on NMRI mice with a body weight of 20–25 g (n=8 in all groups). The Marrubium astracanium extract was prepared and then administered Intra-peritoneally to mice at different doses (100-200-400 mg/kg). The sedative hypnotic effects of different doses of Marrubium astracanium extract were compared to the control group.

Results : The aqueous extract of the aerial part of Marrubium astracanium at dose of 400 mg/kg significantly ($p<0.001$) increased the sleeping time induced by pentobarbital compared to the control group, and at doses of 100, 200 and 400 mg/kg significantly ($p<0.001$) decreased the total distance movement in open field test compared to the control group.

Conclusion : The increase in the sleeping time in pentobarbital induced sleeping test and decrease in the total distance movement in open field test, following administration of Marrubium astracanium extract in different doses,

indicate that the extract have sedative-hypnotic activities. Further studies should be done to evaluate the mechanism of action and the toxicity of the extract.

Keywords : Marrubium astracanium; pentobarbital induced sleep test; sedative; hypnotic; mice

Count: 153
Abstract ID: 620
subject: Emotion, Motivation and Behavior: Behavioral Pharmacology
Presentation Type: Poster

Anxiety-like behaviors in multiple sclerosis attenuated with metformin

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Background and Aim : Multiple sclerosis (MS) leads to motor and sensory disturbances as well as cognitive impairments. In particular, anxiety may be more common in MS than in other chronic neurological conditions. Metformin (Met), an anti-diabetic drug, plays an important role in improving behavior in neurodegenerative diseases through various pathways. In the current study, we aimed to investigate the probable effects of metformin on depression in rats with MS.

Methods : Rats were divided into seven groups; Sham, MS, Met, met+MS. Metformin was pretreated for 2 weeks. Anxiety-like behavior (ALB) was evaluated with elevated plus maze and open field test after MS.

Results : Based on our results, pretreatment of rats by metformin improved ALB and locomotion in MS rats. Open arm entry (OAE) and time spent in open arm (TOA) decreased in MS rats compared to the sham group ($P < 0.001$). Level of OAE and TOA indices increased in metformin pretreated rats compared to the MS group ($P < 0.01$). Pretreatment of rats with metformin increased total moving distance ($P < 0.05$), rearing ($P < 0.01$), center occupancy ($P < 0.01$), grooming ($P < 0.001$) and decreased corner occupancy ($P < 0.001$) compared to the MS group in open field test.

Conclusion : These data indicated that the beneficial role of metformin in ALB in MS patients. Our results suggested that metformin treatment could improve mental disorders following MS.

Keywords : Multiple sclerosis, Metformin, Anxiety-like behaviors

Count: 154
Abstract ID: 106
subject: Emotion, Motivation and Behavior: Behavioral Pharmacology
Presentation Type: Poster

Antidepressant-like effects of low dose scopolamine and L-Arginine joint administration in mice

Submission Author: Mohammad hussain Mohammadi mehdiabadi hassani

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Background and Aim : Clinical studies have shown that the muscarinic receptor antagonist scopolamine induces an antidepressant response and it may also be a possible treatment for anxiety disorders. However, potential undesirable effects, including memory impairment, partially limit the use of scopolamine in psychiatry. In order to overcome these limitations and enhance the therapeutic effects of scopolamine, we conducted a preclinical study in mice to assess whether joint administration of low doses of scopolamine and nitric oxide precursor, L-Arginine, that alone are ineffective has antidepressant- and anxiolytic-like effects

Methods : To this aim, mice were acutely treated with scopolamine, L-Arginine or scopolamine/L-Arginine co-treatment and animal behavior was assessed in the forced swimming test (FST), tail suspension test (TST) and Hole-board apparatus

Results : We observed that higher doses of scopolamine (0.05 mg/kg) and L-Arginine (50 mg/kg) reduced immobility time in the FST, suggesting an antidepressant-like effect. The similar response was not obtained in TST. However, the higher dose of L-Arginine, but not scopolamine, induced an increased head-dip counts in the hole-board, indicating an anxiolytic-like behavior. Furthermore, joint administration of sub-effective doses of scopolamine (0.01 mg/kg) and L-Arginine (25 mg/kg) induced significant antidepressant-like effects, while it had no effect on anxiety-like response compared to control mice. It should be noted that mice received the L-Arginine, at 50 mg/kg, decreased locomotor activity.

Conclusion : We found that the combined administration of low doses of the antimuscarinic drug scopolamine and the nitric oxide precursor L-Arginine induced an antidepressant-like effect. Therefore, this drug combination might be a new and effective strategy in the therapy of depression.

Keywords : Antidepressant-like, muscarinic receptor,scopolamine,

Count: 155
Abstract ID: 598
subject: Emotion, Motivation and Behavior: Behavioral Pharmacology
Presentation Type: Oral

Evaluation of sedative-hypnotic effect of novel ethyl 2-((2-chlorobenzyl) thio)-4-methyl-6-(3, 4, 5-trimethoxyphenyl) pyrimidine-5-carboxylate

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Background and Aim : The importance of sufficient sleep has been shown in several clinical studies. Many effects of sleep deprivation, such as mood disorders, increasing the stress and anxiety level, feeling grumpy, are well known. Although there are several effective medications to treat or control sleep disorders, but most of these medications have limited efficacy and unwanted side effects. Researchers are always looking for new drugs with better toxicity profile and high efficacy. According to the structure-activity relationship of the hypnotic medicine, a novel compound, ethyl 2-((2-chlorobenzyl) thio)-4-methyl-6-(3,4,5-trimethoxyphenyl) pyrimidine-5-carboxylate, was designed and synthesized. In this study the sedative-hypnotic effect of the novel compound was evaluated in mice using experimental tests.

Methods : Experimental studies were performed on 32 male NMRI mice with a body weight of 20–25 g (n=8 in all group). Evaluation of sedative-hypnotic effect of the compound was evaluated by using pentobarbital induced sleeping test. After pre-treatment of different doses of the novel compound (10, 20, 40 mg/kg), animals will receive i.p. injection of sodium pentobarbital at a dose of 40 mg/kg. Following pentobarbital injection, each mouse was observed for duration of sleep (loss of righting reflex). The effect of the novel compound on locomotors activity was evaluated by open field test.

Results : The results of this study showed that, the novel compound at doses of 20 and 40 mg/kg significantly ($p<0.01$ and $p<0.001$ respectively) increased the sleeping time induced by pentobarbital compared to the control group. The compound at doses of 10, 20 and 40 mg/kg significantly ($p<0.05$, $p<0.001$ and $p<0.001$ respectively) decreased the total distance movement in open field test compared to the control group.

Conclusion : We conclude that the novel compound, ethyl 2-((2-chlorobenzyl)thio)-4-methyl-6-(3,4,5-trimethoxyphenyl)pyrimidine-5-carboxylate may have sedative-hypnotic activates. However, further studies are necessary to find the toxicity of the novel compound and its mechanism of action.

Keywords : Pentobarbital induced sleep test; sedative; hypnotic;

Count: 156
Abstract ID: 94
subject: Emotion, Motivation and Behavior: Behavioral Pharmacology
Presentation Type: Poster

Clofibrate exerts antidepressant-like properties in forced swimming test in rats

Submission Author: Vahid Nikoui

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Background and Aim : Clofibrate is a lipid-lowering agent, which exerts some other beneficial therapeutic effects. In this study, the potential effect of this drug as a peroxisome proliferator-activated receptor alpha (PPAR-α) agonist receptor, on behavioral despair associated with acute exposure to forced swim was studied in male rats.

Methods : There were two swim sessions in forced swimming test (FST). The first was 15 min pre-test swim and 24 h later a second 5 min swim test. The 5 min swim test was used for scoring the passive behavior, immobility, and three active behaviors: swimming, climbing, and diving. Following FST, locomotor activity was also evaluated using open field test (OFT). The drugs were administered three times at 2, 19, and 24 h subsequent to the initial 15 min pre-test swim, prior to the 5 min swim test. One group received clofibrate orally (300 mg/kg, p.o.), one group desipramine (DMI), a selective serotonin-norepinephrine reuptake inhibitors (SNRI) (10 mg/kg) intraperitoneally (i.p.), one group fluoxetine (FLX), a selective serotonin reuptake inhibitor (SSRI) (10 mg/kg, i.p.), and control groups received either saline (i.p.) or olive oil (p.o.) as vehicles.

Results : Subchronic clofibrate administration (300 mg/kg, p.o.) attenuated behavioral despair determined by decrease in the immobility and increase in the active behavior swimming in the FST comparable with FLX (10 mg/kg, i.p.). Clofibrate also markedly reduced the number of rearing and the number of rearing to the wall. That are mentioned as depression like behaviors in the OFT. However, it did not affect the number of crossings.

Conclusion : Clofibrate as a PPAR-α receptor agonist may possess antidepressant-like effect probably through increase in serotonin level and this central effect cannot be attributed to generalized increase in locomotor activity of the animals.

Keywords : Behavioral despair; clofibrate; PPAR-α receptors; forced swimming test; open field test; rats.

Count: 157
Abstract ID: 103
subject: Emotion, Motivation and Behavior: Behavioral Pharmacology
Presentation Type: Oral

Pharmacological evidence for involvement of nitric oxide in additive antidepressant-like effect of agmatine and lithium in mice

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Background and Aim : Lithium generally used for treatment of mood disorders such as depression. Similarly, agmatine exerts some protective effects against depression. The aim of the present study was to examine the possible additive antidepressant-like effect of agmatine and lithium in mice forced swimming test (FST) as well as exploration of the probable involvement of nitric oxide (NO) pathway in this response.

Methods : Male mice divided into different groups and were subjected to forced swimming test and open-field test.

Results : Results showed that pretreatment with a subeffective dose of agmatine (0.01 mg/kg) augmented the antidepressant-like effect of lithium subeffective dose (3 mg/kg) ($P<0.001$). L-NG-nitroarginine methyl ester (L-NAME, nonspecific nitric oxide synthase [NOS] inhibitor) at doses of 10 and 30 mg/kg, and 7-nitroindazole (7-NI, neuronal NOS inhibitor) at doses of 15 and 30 mg/kg potentiated the antidepressant-like effect of the subeffective combination of lithium (3 mg/kg) and agmatine (0.001 mg/kg) ($P<0.001$, $P<0.01$, respectively). However, various doses of aminoguanidine (25 and 50 mg/kg, inducible NOS inhibitor) failed to alter the immobility time of the same combination ($P>0.05$). Moreover, pretreatment with subeffective doses of L-arginine (substrate for NOS, 300 and 750 mg/kg) reversed the augmenting antidepressant-like effect of agmatine (0.01 mg/kg) on lithium (3 mg/kg) ($P<0.001$).

Conclusion : Our results revealed that agmatine enhances the antidepressant-like effects of lithium and the NO pathway might mediate this phenomenon. In addition, constitutive NOS plays a dramatic role in this response.

Keywords : Lithium, Agmatine, Nitric oxide synthase, L-arginine/nitric oxide, Forced swim test, Mice

Count: 158
Abstract ID: 202
subject: Emotion, Motivation and Behavior: Behavioral Pharmacology
Presentation Type: Poster

Suggesting a possible role of opioid system on anxiety behavior in experimental obstructive cholestasis mice

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Background and Aim : A higher prevalence of mood disorders, such as anxiety, major depression, and bipolar disorder, has been clinically demonstrated among substance abusers. On the other hand, bile duct ligation (BDL) could change anxiety behavior in intact and addicted animals. The effect of opioid system on anxiety behavior was investigated in experimental obstructive cholestasis mice.

Methods : There were four experimental groups: control, addicted, sham-operated and bile duct ligation (BDL) mice. Laparotomy was performed under general anesthesia, induced by intraperitoneal (i.p.) injection of ketamine hydrochloride (50 mg/kg) plus xylazine (5 mg/kg). Sham group consisted of laparotomy and bile duct identification and manipulation without ligation or resection (with the aim of measuring possible stress induced by surgery). In the bile duct ligation groups, the main bile duct was first ligated using two ligatures approximately 0.5 cm apart and then transected at the midpoint between the two ligatures. In the immediate postoperative period, each animal was placed in a cage by itself to prevent wound dehiscence and was moved to its original cage 4 h after the surgery. In order to induction of addiction, the mice were treated with subcutaneous injections of morphine sulphate (25 mg/kg). These injections were given twice per day at 12 h intervals (06:00 and 18:00 h). Furthermore, the elevated plus-maze (EPM) was used to measure anxiety bahavior in adult male mice.

Results : Induction of experimental obstructive cholestasis and addiction changed anxiety behavior in mice. So, morphine induced anxiolytic-like behavior [$P < 0.05$] while naloxone reversed the response induced by morphine [$P < 0.05$].

Conclusion : The results show that opioid mechanism plays a role in modulation of anxiety behavior in experimental obstructive cholestasis mice.

Keywords : cholestasis, morphine, naloxone, anxiety, mice

Count: 159
Abstract ID: 661
subject: Emotion, Motivation and Behavior: Motivation and Emotion
Presentation Type: Poster

An inquiry into the conceptual model of mind-body dynamics from the perspective of Persian Medicine: How does the heart behave in response to the emotions flow?

Submission Author: Majid Anushiravani

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Background and Aim : According to the Persian Medicine literature, the mind and the body affect each other interactively in a circular causality. our thoughts and emotions produce physical effects on our spirits, humors, and organs; and the physical states of organs, humors and spirits can change our mental and emotional states. For example, Anger can make the body temperamental state hotter and drier than its previous state. Moreover, a person in a hot and dry temperamental state can be influenced by anger stimuli more easily than his/her other temperamental states.

Methods : In this review, the reliable manuscripts of Persian Medicine searched for the words and statements related to mental-emotional events and their interactions with the heart. Then the textual findings analyzed, categorized, compared and interpreted.

Results : “Mental-Emotional states” are one of the “Six Essential Causes” representing a model of exposome-mind-body interactions. Sage physicians categorized the etiologic causes of health and disease phenomena into two major types: firstly, the five environmental-Physical causes including ambient air, nutrition, movement/rest, sleep/wakefulness, retention/evacuation; and secondly the mental-emotional causes. All of these causes can alter our bio-psychological dynamics, but the mental-emotional causes have a unique impact among them. They can alter the biologic dynamics much faster and stronger than any physical cause. The main types of mental-emotional causes are happiness, sadness, worry, anger, fear, and shyness. This model leads to at least two main clinical achievements: 1. The qualitative effects of mental-emotional causes on the heart temperamental states: The emotional states have direct effects firstly on the heart temperamental state that secondarily generalizes to the whole body: moderate happiness makes the heart temperamental state warmer while sadness makes it colder which both can alter heart dynamics. 2. Understanding the pattern of spirits motions: normally the heart generates, expands and emits the vital spirit to the sub-systemic organs in accordance with their structural/functional condition in an emergent coherent

pattern. The dynamics of heart/vital spirit in response to mental-emotional events has some patterns including: - The pattern of heart expansion/spirit emission outwardly: it may be slow, moderate, or fast. -The pattern of heart attraction/spirit motion backwardly: slow, moderate, or fast. In the severe happiness and anger, the heart emits the vital spirit outwardly in a very fast and sudden dynamics while in the severe sadness and fear, the vital spirit attracted to the heart in a very fast and sudden dynamics.

Conclusion : To attain the goal of promoting the bio-psychological resilience and multi-stability, one should organize his/her emotional-mental states, because they can change the dynamics of heart behavior, which interacts with the temperamental states, the quality of humors, the emission/motion patterns of spirits, and finally the human living system functions. The sage physicians have proposed special bio-psychological ways to motivate the self-organizing innate power of the living body to achieve that goal. These concepts can extend our perspective especially in psychosomatic medicine and health psychology towards the salutogenic model of health.

Keywords : Mind-body dynamics, Conceptual model, Persian Medicine, Emotion, Heart temperamental state, vital spirit

Count: 160
Abstract ID: 294
subject: Emotion, Motivation and Behavior: Motivation and Emotion
Presentation Type: Poster

Prediction of Alexithymia based on self-regulate and self-compassion

Submission Author: Nasrin Eshghi

Nasrin Eshghi[1], sadegh khodamoradi[2], parasto[3]

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Background and Aim : This research aimed to predict alexithymia based on self-regulate and self-compassion.

Methods : For this purpose, 278 clients, who attended psychotherapy clinics in Tehran, were selected using convenient sampling. The instruments used in this study consisted of The Self-Regulation Questionnaire (SRQ), self-compassion (SCS) and Toronto Alexithymia scale.

Results : The results showed that self-regulate and self-compassion can predict alexithymia.

Conclusion : Self-regulate is the ability to deal with problems which makes it possible to experience anxiety. Self-compassion is the ability to control the behavior and environment optimally that is triggered in reaction to anxiety.

Keywords : Alexithymia , self-regulate , self-compassion

Count: 161
Abstract ID: 340
subject: Emotion, Motivation and Behavior: Motivation and Emotion
Presentation Type: Oral

The Effects of Computer Games on Emotion Regulation of Children with Autism

Submission Author: Leila Kashani Vahid

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Background and Aim : Children with autism have problems in emotion recognition and regulation. A computer game (Emo Galaxy) was designed to help these children in practicing their emotion recognition and regulation.

Methods : Effectiveness of this intervention was evaluated by a semi- experimental with pretest-posttest and control group. 10 students in the experimental group participated in this program, and the control group did not receive any treatment. Sheilds & Cicchetti Emotion Regulation Checklist (1998) was used to measure emotion regulation.

Results : The obtained data were analyzed using Analysis of the Covariance. The findings showed significant differences ($p<0.5$) between the experimental and the control group in emotion regulation.

Conclusion : At the end, using emotion recognition and regulation games for improving emotion management was discussed. Further discussions as well as suggestions for future research are presented.

Keywords : Emotion regulation, computer games, Autism

Count: 162
Abstract ID: 558
subject: Emotion, Motivation and Behavior: Motivation and Emotion
Presentation Type: Poster

The relationship between symptom prevalence, body image, and quality of life in Iranian gynecologic cancer patients

Submission Author: Zahra Majdi

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Background and Aim : Gynecologic cancer is associated with long-term effects that can be both physical and emotional. We examined symptom prevalence and body image disturbance in patients with gynecologic cancer and their association with quality of life. Predictors of clinically-relevant body image disturbance were examined.

Methods : A sample of patients in Tehran (n = 104) was assessed for symptom prevalence, quality of life, and body image dissatisfaction. Clinical factors were extracted from medical records.

Results : The most frequently reported symptoms were fatigue, abdominal bloatedness, weight gain, constipation, hot flashes, and pelvic pain. Approximately one quarter patients reported feeling less physically attractive and dissatisfied with their body. Ordinary least squares regression indicated that symptom prevalence alone predicted physical well-being, $b = -1.09$, $P < .001$, 95% CI, −1.45 to −0.73, and functional well-being, $b = -0.88$, $P < .001$, 95% CI, −1.32 to −0.45. Body image dissatisfaction alone significantly predicted emotional well-being, $b = -0.21$, $P < .01$, 95% CI, −0.35 to −0.06. Younger age was a significant risk factor for clinically-relevant score of body image distress, OR = 0.95 per year older, 95% CI, 0.92 to 0.99, $P = .02$.

Conclusion : Symptom prevalence and body image dissatisfaction were associated with different domains of quality of life. Emotional well-being of patients was better explained by body image, rather than extent of symptoms experienced. Patients who are younger appear particularly susceptible to body image disturbance.

Keywords : body image, gynecologic cancer, symptom prevalence

Count: 163
Abstract ID: 664
subject: Emotion, Motivation and Behavior: Motivation and Emotion
Presentation Type: Poster

The Survey of Elderly Quality of Life Dimensions: Explaining the Role of Gender

Submission Author: Elahe Oroujzadeh

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4. bachelor Student in Psychology

Background and Aim : Elderly people experience poor status because have a limitations and physical, psychological and emotional problems in different aspects of quality of life. Accordingly, the main aim of the present study is to the survey of elderly quality of life dimensions: explaining the role of gender.

Methods : This is a descriptive cross-sectional study. A sample of 240 (140 male, 100 female) elderly people living in Urmia was selected by sampling method and completed the World Health Organization Quality of Life questionnaire. The results were analyzed using T test with spss 21.

Results : The results showed that elderly had moderate status in all 4 dimensions including physical health, mental health, social relationships and environmental health. Also, the results of T-test showed that there was a significant difference between elderly men and women in dimensions of mental health ($P < 0.05$), social relationships ($P < 0.05$) and environmental health ($P < 0.01$). The scores of elderly women was better.

Conclusion : According to the results, elderly people have a moderate experience in in most aspects of quality of life, also elderly women have a more favorable situation.

Keywords : Quality of life Dimensions, Elderly, Gender

Count: 164
Abstract ID: 519
subject: Emotion, Motivation and Behavior: Motivation and Emotion
Presentation Type: Poster

The Relationship of Effective Emotion Regulation andSubjective Sleep Quality

Submission Author: Najme Rastikerdar

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Background and Aim : Cognitive Reappraisal (CR) and Expressive Suppression (ES) strategies are assumed to play crucial roles in emotion regulation. Considering the importance of emotion regulation in social and emotional adaptation, identifying the CR and ES's correlates has been the focus of recent research.The aim of this research was to investigate if the sleep quality would have an impact on the application of the CR and ES

Methods : Seventy females (35 to 75 years) were recruited from a local community class. The CR and ES strategies were assessed via the Emotion Regulation Questionnaire(Gross and John, 2003). Participants also completed Pittsburgh Sleep Quality Index (PSQI) which evaluates sevensleep components,.i.e.,perceived sleep quality, sleep latency, sleep duration, sleep efficacy, sleep disturbances, use of sleeping medication, daytime functioning.

Results : Based on the regression analysisresults,ES strategy was predicted by age and sleep latency(Length of time from awakeness to sleep)However, no significant effect of these predictors on CR strategies was found.Both ES and CR strategies was predicted by theuse of sleeping medication Furthermore, a Pearson correlation analysis indicated that there is a direct significant relationship between three components of sleep, (i.e, latency, duration and perceived quality),and the ES score. In addition, a negative significant correlation between the daytime dysfunction and the CR score was detected.

Conclusion : In general, our analyses suggest that the poor sleep quality negatively impacts individuals' emotion regulation abilities. Sleep latency and age are general components contributing in explaining emotion regulation difficulties.

Keywords : Emotion regulation, Cognitive Reappraisal (CR), Expressive Suppression (ES), Subjective sleep quality

Count: 165
Abstract ID: 313
subject: Emotion, Motivation and Behavior: Motivation and Emotion
Presentation Type: Poster

Study the effect of hydroalcoholic extract of Rosa damacena on anxiety in male rats that received high cholesterol diet with using behavioral models

Submission Author: Arezoo Rezvani Kamran

Arezoo Rezvani Kamran[1]

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Background and Aim : Todays, dietary is involved high in fat and refined sugar in most communities. This diet causes memory impairment and anxiety by oxidative stress and inflammation. Rosa damascena also have potent antioxidant properties and similar to vit E and vit C can eliminate free radicals.

Methods : Forty male Wistar rats (200-250 gr) were used. They were randomly assigned into 4 groups: control, extract, high cholesterol diet, high cholesterol diet+ extract. Extract (1000 mg/kg) was gavaged for 1 month. High cholesterol diet was sereved freely accesss for 3 months. In the study, elevated plus maze for anxiety measurement was used.

Results : In elevated plus maze test, number of entries into the open arms and time spent in the open arms in high cholesterol group was decreased compared to control group and these items in extract group was increased compared to control group. Also, number of entries into the open arms and time spent in the open arms in high cholesterol +extract group significantly increased compared to high cholesterol group.

Conclusion : Results showed that high cholesterol diet causes anxiety and extract decreased it that these effects of extract probably are result from high antioxidant properties and scavenging free radicals.

Keywords : anxiety,elevated plus maze,Rosa damascena, rat.

Count: 166
Abstract ID: 622
subject: Emotion, Motivation and Behavior: Motivation and Emotion
Presentation Type: Poster

Alexithymia and Humor Styles in students: the role of Gender and Age

Submission Author: Neda Samadi

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Background and Aim : students have a major emotional problems during the study, that can make them difficult to express their emotions and Having personality traits and humor styles positive can be effective, Also the aim of this study was to investigate Alexithymia and humor styles in students: the role of gender and age.

Methods : This is a descriptive cross-sectional study. 200 students from the Payame Noor University of Urmia (100 girls and 100 boys) were selected by available sampling method and completed the humor styles of Martin and Alexithymia Toronto wit style styles questionnaires. The results were analyzed by T-test and Spearman correlation.

Results : The results of this study showed that there was no significant difference between Alexithymia and humor styles including Affiliative, self-enhancing, Aggressive and Self-Defeating in both groups ($p < 0.05$). Also, there was a negative relationship between Alexithymia and age ($p < 0.05$). There was no relationship between age and humor styles ($p < 0.05$).

Conclusion : According to the results, it can be said that alexithymia and humor styles are not influenced by gender, but age increasing can lead to decreased alexithymia and ultimately increased emotional experiences of students.

Keywords : Alexithymia, Humor Styles, Gender, Age

Count: 167
Abstract ID: 193
subject: Emotion, Motivation and Behavior: Motivation and Emotion
Presentation Type: Poster

The study of the relationship between cerebral brain dominance and academic achievement of secondary school students in Mashhad

Submission Author: Azadeh Sharifinia

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Background and Aim : The purpose of this study was to investigate the relationship between cerebral brain dominance and academic achievement of second grade high school students in Mashhad during the academic year of 2017-8. The present study was a descriptive study and a correlation study. The population of the study consisted of all secondary school students in the theoretical fields of Mashhad in the academic year of 2016-2017, whose total number was 2,970. The statistical sample of this study was 340 (sample size was calculated based on Cochran formula) from male and female students of secondary schools of 6th district of education in Mashhad city in the academic year of 1966-97. Using multistage random cluster sampling They were chosen.

Methods : The instrument used in this study was HBDI (Nehmerman, 1980), a questionnaire for measuring cerebral hemodialysis (four quadrilaterals) for assessing cerebrospinal fluid dominance and students' mean score for measuring academic achievement. After submitting the questionnaires and collecting data in statistical analysis, multivariate regression, analysis of variance (ANOVA) and Pearson correlation coefficient, which are the most appropriate methods for inferential statistics for this purpose, were used in SPSS-25 software Became

Results : The results of the study showed that there is a meaningful relationship between the domains of cerebral quadrants and the academic achievement of students, in that there is a direct and meaningful relationship between the domination of the cerebral columns A, B, D and academic achievement.

Conclusion : Because of the flexibility and ability to change in the brain, the experiences from the lessons and teaching methods can make changes in the brain and lead to different parts of the brain. Considering the importance of students' academic achievement as well as the effects of learning on their cognitive performance at the behavioral and brain level, it is necessary to provide more education in the appropriate learning styles of each student for teachers and trainers.

Keywords : Mastery of cerebral quadrants, students, academic achievement

Count: 168
Abstract ID: 616
subject: Neuropsychiatry and Psychology: Evidence-Based Psychology
Presentation Type: Poster

Evaluation of the effects of fennel (Foeniculum vulgare) extract on serum lipid profile and leptin receptor expression

Submission Author: Fereshteh Golab

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Background and Aim : Introduction: Obesity is among the most challenging public health issues of the 21st century. It is a condition where excess body fat results in a person being overweight and prone to health issues. Natural ingredients and herbal extracts have been evaluated as effective agents in a number of studies concerning obesity management. This study was conducted to assess the effectiveness of Foeniculum vulgar (fennel) extracts on body weight, lipid profile, serum leptin concentration, and leptin mRNA expression in BALB/c mice.

Methods : Adult male BALB/c mice were categorized into the five groups of control, sham, fennel 50 mg/kg, fennel 100 mg/kg, and fennel 200 mg/kg. The mice were injected intraperitoneally with fennel extracts on a daily basis for two weeks. Their body weight was measured both at the beginning and the end of the two weeks.

Results : The immunohistochemistry method results indicated that the leptin receptor protein expression had increased in all groups. However, the serum leptin level had not changed significantly in any of the groups. Moreover, there had been a significant decrease in the cholesterol TG and LDL had a significant reduction in the some group. The results of HDL measurements showed that there was a significant increase in the amount of it in the experimental group with an injected dose of 100 mg / kg.

Conclusion : It was concluded that fennel administration had positively affected the lipid profile and the leptin receptor expression.

Keywords : fennel , Foeniculum vulgare, lipid profile, leptin, Hypothalamus, Obesity

Count: 169
Abstract ID: 675
subject: Neuropsychiatry and Psychology: Schizophrenia
Presentation Type: Poster

Expression alteration of Disrupted in Schizophrenia 1 (DISC1) and interactome genes in Schizophrenia and Paranoid Personality Disorder

Submission Author: MARYAM GHORBANZADEH

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Background and Aim : Schizophrenia (SCZ) is a major psychiatric disorder with unclear etiology or biological diagnosis. Paranoid Personality Disorder (PPD) is a type A personality disorder characterized by paranoia and generalized mistrust. Disrupted in schizophrenia 1 (DISC1) is a gene located on human chromosome 1 that is involved in neurodevelopment of brain. Variations and translocations in this gene were found associated with schizophrenia and other psychiatric disorders. Present study aimed to evaluate the expression alteration of DISC1 gene in peripheral blood of SCZ and PPD patients and its correlation with clinical features.

Methods : Study was included 70 SCZ, 70 PPD and 70 non-psychiatric individuals. Total blood was collected and expression level of DISC1, NDE1 and NDEL1 evaluated by using quantitative Real time PCR SYBR green. Lymphocyte DISC1 protein levels in all subjects were examined. Also, to assess psychiatric symptoms severity, Positive and Negative Syndrome Scale (PANSS) was obtained from SCZ and PPD patients.

Results : Findings showed significant DISC1 and NDE1 down expression in SCZ and PPD patients vs. non-psychiatrics. Also in SCZ patients, general and negative symptoms score were associated with down regulation of DISC1 mRNA level.

Conclusion : Results presented DISC1 as potential peripheral marker for schizophrenia as well as paranoid personality disorder. Correlation between DISC1 mRNA level reduction and severity of general and negative symptoms in one side and executive functions abnormalities in the other side may support the neurodevelopment hypothesis about pathophysiology of schizophrenia and related personality disorder especially paranoid personality disorder.

Keywords : Schizophrenia; Paranoid personality disorder; DISC1

Count: 170
Abstract ID: 351
subject: Neuropsychiatry and Psychology: Schizophrenia
Presentation Type: Poster

The Antidopaminergic Effects of Ascorbic Acid in Central Nervous System: A Basic and Clinical Study

Submission Author: Hassan Khani Iurigh

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Background and Aim : Ascorbic acid an antioxidant vitamin is found throughout the mammalian central nervous system (CNS). There is evidence that it may modulate neuronal activity, release of neurotransmitters and dopamine receptors activities. The purpose of the present study was to determine (1) The Effect of Ascorbic Acid on Apomorphine-Induced Licking Behavior in Rat, and (2) Beneficial Antipsychotic Effects of Ascorbic Acid Add-On Therapy Compared to Haloperidol Alone in Schizophrenia, A Randomized, Double-Blind, Placebo-Controlled Clinical Trial.

Methods : In the basic study, For the induction of licking, the dose of 0.5 mg/kg, s.c. of apomorphine was used and the number of licking was recorded over a 75 min period. In the clinical study, a randomized, double-blind, placebo-controlled clinical trial 40 patients with schizophrenia were assigned to haloperidol plus ascorbic acid or haloperidol plus placebo. After a washout period, 20 patients received 20 mg/day of haloperidol plus placebo and 20 received haloperidol plus 1500 mg/day of ascorbic acid for 6 weeks.

Results : Ascorbic acid (200-350 mg/kg, s.c.) dose-dependently reduced the licking behavior. Subcutaneous injection of ascorbic acid (250 mg/kg, ED61) potentates the inhibitory effect of dopamine D1 receptor antagonist, SCH 23390 (0.5 and 1 mg/kg, i.p.) but did not alter the inhibitory effect of dopamine D2 receptor antagonist, sulpiride (25 and 50 mg/kg, s.c.). In the clinical study, Over 6 weeks, the ascorbic acid group showed significantly greater improvement in scores on total Brief Psychiatric Rating Scale and on positive, negative and general symptoms subscales.

Conclusion : These results suggest that the inhibitory effect of ascorbic acid on apomorphine-induced licking behavior is mediated by dopamine D2 receptor mechanisms. And also, oral supplementation of vitamin C with conventional antipsychotic drugs can be used in the treatment of schizophrenia.

Keywords : Ascorbic acid, Licking, Apomorphine, Rat, Schizophrenia, Brief Psychiatric Rating Scale (BPRS).

Count: 171
Abstract ID: 236
subject: Neuropsychiatry and Psychology: Schizophrenia
Presentation Type: Poster

Ameliorating effects of berberine on MK-801-induced cognitive and motor impairments in a neonatal rat model of schizophrenia

Submission Author: Mahdieh Parvan

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Background and Aim : Neonatal administration of MK-801, a noncompetitive NMDA receptor antagonist, results schizophrenia-like behaviors in adult rodents. Berberine chloride hydrate (BBR) is a herbal alkaloid, which shows many neuroprotective properties in animal models of neurodegenerative diseases. The present study was designed to clarify whether systemic administration of BBR improve motor and cognitive disturbances induced by postnatal MK-801 treatment.

Methods : Male Wistar rat pups were randomly treated with intraperitoneal administration of saline (1 ml/kg) as a control group, MK-801 (1 mg/kg), BBR (20 mg/kg) and BBR (20 mg/kg) plus MK- 801 (1 mg/kg). Treatments were administered on postnatal day (P) 6-10 for once daily. To assess motor learning , coordination as well as spatial learning and memory, behavioral testing using the rotarod, open field, and Morris water maze paradigm was performed at P55–60.

Results : Postnatal MK-801 injection led to motor perturbations in both the open field and accelerating rotarod tests, which restored by BBR. In addition, BBR improved spatial learning impairments induced by postnatal MK-801 treatment in the Morris water maze task, although it had not any significant outcome on the Probe test.

Conclusion : Taken together, it can be concluded that BBR produces a neuroprotective effect in rats with MK-801-associated behavioral deficits. Given that the postnatal MK-801 exposure demonstrates an animal model of schizophrenia, we suggest that timely BBR administration may act as a potential treatment in the schizophrenic patients.

Keywords : Berberine , MK-801, Morris water maze, Rotarod, Open field test

Count: 172
Abstract ID: 659
subject: Neuropsychiatry and Psychology: Schizophrenia
Presentation Type: Poster

Auditory spatial processing in schizophrenia- behavioral evidence of abnormal hemispheric laterality

Submission Author: Sara Sardari

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Background and Aim : Auditory spatial processing deficit is possibly the reason of many daily life problems of schizophrenia (SCZ) patients. In this study we aimed to examine the behavioral correlates of the auditory spatial processing in SCZ by speech and none-speech tasks.

Methods : A group of 25 SCZ patients and 25 healthy individuals were compared on a dichotic speech task and a localization task. In the dichotic speech task, participants reproduced syllable pairs which played from speakers on right and left side. On localization task, they guessed the subjective direction of the noise stimuli, presented from multiple speakers. Percent of correct responses were analyzed.

Results : On the dichotic speech task, patients had significantly lower hit rates for the right ear compared with controls ($p= 0.01$). On localization task, although both groups followed a left- side bias, this bias was much more prominent for the patients (all $p< 0.05$).

Conclusion : SCZ could potentially alter the brain laterality, causing a drastic disruption of hemispheric dominance for spatial awareness.

Keywords : Auditory, Dichotic, Speech, Localization, Schizophrenia

Count: 173
Abstract ID: 12
subject: Neuropsychiatry and Psychology: Disorders of Neurobehavior
Presentation Type: Oral

New approaches in the investigation of addiction mechanism and its treatment

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Background and Aim : Drug dependence is a condition where in reliance on the administration of a particular drug becomes extremely important to the well-being of an individual. Drug dependence is usually characterized as psychological and or physical.Deprivation of these drugs leads to a physical withdrawal syndrome that is very unpleasant, characterized by measurable changes in many bodily functions, and that may cause serious medical consequences.

Methods : Virtually all dependence-producing drugs so far tested. Including opioids, nicotine, amphetamine , ethanol, and cocaine activate the reward pathway – the mesolimbic dopaminergic pasthway , which runs via the medial forbrain bundle, from the ventral tegmental area of the midbrain(A 10 cell group) to the nucleus accumbens and limbic region .

Results : Suggesting that the dopaminergic pathway is responsible for the evidence the other mediator particularly 5-HT , glutamate and GABA, influence the mesolimbic dopamine pathway , and possibly other reward pathway

Conclusion : Receptor Plasticity and Tolerance Drugs that are NT (Neurotransmitter) agonists can cause receptor downregulation. Drugs that are NT antagonists can cause receptor upregulation. Pharmacodynamic drug tolerance can also affect “normal” synaptic transmission. Serious side-effect of drug use.CREB and related proteins were described originally as transcription factors that mediate effects of the cAMP second messenger pathway on gene expression This occurs via the phosphorylation of CREB on a single serine residue, Ser133, by protein kinase A.Interestingly, upregulation of the cAMP pathway and activation of CREB occurs in many of these other regions as originally established for the locus coeruleus.

Keywords : addiction, tolerance,down regulation, neuronal plasticity, CREB, cAMP,Reward,Nucleus accumbence

Count: 174
Abstract ID: 274
subject: Neuropsychiatry and Psychology: Disorders of Neurobehavior
Presentation Type: Poster

Effect of sumac extract and its nano phytosome on repetitive behaviors in animal model of autism.

Submission Author: Batul Ghalehnovi

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3. Faculty of Life Sciences and Biotechnology, Shahid Beheshti University

Background and Aim : Autism spectrum disorder (ASD) is characterized by social impairments and repetitive behaviors, and affects 1 in 68 US children. ASD result from the combination of both genetic and environmental factors. Sumac is the common name for a genus Rhus and species of flowering plants in the family Anacardiaceae. Rhus has been reported demonstrate significant pharmacological activities (.sumac 5). The fruits were antimicrobial, antioxidative, anthelmintic, anti-proliferative, and anti-inflammatory.22. Purpose: Therefore, our purpose in this study is investigate effect of sumac extract and its nano phytosome on the self-grooming behaviors in animal model of autism.

Methods : All pregnant rats accept control and positive control group received a single intraperitoneal injection of 600 mg/kg valproic acid (VPA). Pups were weaned on postnatal day 21 (P21) and housed in groups of seven animals per cage. The pups were divided into seven groups as follows (1) Control group (2) positive Control group, group treated with 20 mg sumac, (3) disease group, (4) group treated with 20 mg sumac (5) group treated with 20 mg sumac nano phytosome, (6) group treated with 40 mg sumac and(7) group treated with 40 mg sumac nano phytosome. Then, 24 h after last treatment, self-grooming test was used to determination of repetitive behaviors'.

Results : In the self-grooming analysis in the autism group was significantly increased frequencies of all grooming subtypes (upper panel and head wash, body grooming, leg licking and tail/genital grooming) wile grooming index was significantly decreased in sumac and its nano phytosome groups

Conclusion : AS a whole, the obtained results indicated that the administration of sumac, improve repetitive behaviors in animal model of

Keywords : Autism, repetitive behaviors, sumac, nano phytosome

Count: 175
Abstract ID: 179
subject: Neuropsychiatry and Psychology: Disorders of Neurobehavior
Presentation Type: Poster

Regional EEG delta power and behavioral symptoms in Autism Spectrum Disorder

Submission Author: Najva Mousavi

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Background and Aim : Autism spectrum disorders (ASD) is a complex neurodevelopmental disorder, which described by impairments in social interactions, inefficiencies in verbal and nonverbal communication and stereotyped, repetitive behaviors and interests.

Methods : While distinct patterns of resting brain quantitative electroencephalographic (QEEG) are supposed to discriminate individuals with autism spectrum disorders (ASD) from their unimpaired peers, researchers have newly begun to link patterns of brain activity to ASD behaviors. Also there are few studies that investigated the delta band (0.5–3.5 Hz) during different cognitive processes. The aim of the present study was investigating regional eyes-open QEEG delta power at rest& in relation to concentration and inhibition of response (by Go/No Go task) in 10 boys diagnosed with high function ASD and a matched comparison group of 10 unimpaired children.

Results : The results obtained in this study demonstrated that delta activity increases in frontal lobe of resting brain in ASD children. During the inhibition of response and concentration, delta activity increases in the frontal regions of both groups, but in the ASD group inhibition to response was significantly lower than control group .No concentration difficulties were found in ASD group.

Conclusion : This finding is in agreement with previous knowledge that delta band in the frontal regions are particularly important in concentration and inhibition of responses. But lower inhibition in ASD group maybe due to damaged relationship between alpha and delta activity, which may reflect an inhibitory control over motivational and emotional drives that is implemented by the prefrontal cortex.

Keywords : QEEG, ASD, delta band, Go No Go, inhibition

Count: 176
Abstract ID: 180
subject: Neuropsychiatry and Psychology: Disorders of Neurobehavior
Presentation Type: Oral

Regional EEG delta power and behavioral symptoms in Autism Spectrum Disorder

Submission Author: Najva Mousavi

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Keywords : QEEG, ASD, delta band, Go No Go, inhibition

Count: 177
Abstract ID: 144
subject: Neuropsychiatry and Psychology: Disorders of Neurobehavior
Presentation Type: Poster

Effect of Internal Versus External Focus of Attention on Written Spelling to Dictation in Children with Dysgraphia

Submission Author: Zahra Namvarpour

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Background and Aim : children with dysgraphia , have difficulty in writing compositions and dictation. It is unknown whether these children can write more effectively with an external focus of attention (stimulated by verbal recommendation involves displacement of visual field) or an internal focus of attention (focusing on one's pen movements and pressure exerted on hands) during dictation writing.This paper aims to determine how focus of attention influences the dictation grades and number of spelling errors caused by attention deficit in dysgraphic children.

Methods : 72 male and female dysgraphic children,aged8–10, were randomly divided into experimental(n=36) & control groups(n=36) and assigned to receive verbal guidance instructions that focused attention externally or internally while completing Dictation Assessment Tests for Primary Schools.these tests include spelling errors common in primary-school students and were used in two stages as pre-test and post-test.

Results : The results showed that for the children with dysgraphia, there was significant difference between internal and external focus of attention on dictation grades and number of the spelling errors caused by attention deficit in post-test .

Conclusion : This study in fact suggests that if attention of the child is directed from his/her own motions (such as movements of pen and wrist, ways of holding the pen, degree of exerting pressure on paper, and …) to desirable effects of motion on environment, that is, on the effect of pen on paper, the child's progress will be better. these finding maybe due to dys-executive syndrome (frontal lobe syndrome) in dysgraphic children.

Keywords : Internal Focus of Attention - External Focus of Attention-dysgraphia

Count: 178
Abstract ID: 74
subject: Neuropsychiatry and Psychology: Disorders of Neurobehavior
Presentation Type: Poster

Assessment of Nerve Growth Factor in Suicide Attempters in Kurdish Ethnicity

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Background and Aim : Suicide behavior is a complex multi-factorial phenomenon and a major health problem in societies. Biological factors might be considered as predictive markers in diagnosis and treatment process. This study aimed to examine the fluctuation of nerve growth factor (NGF) in the serum samples of suicide attempters in order to find a high quality predictive biomarker in suicide risk.

Methods : Subjects were evaluated for major depression with BDI-II and the ones without major depression were included in the experiment. Level of NGF was measured quantitatively using enzyme linked immunosorbent assay, in serum from 43 suicide attempters and 43 normal controls, aged 18-35 years, which were drug free at least 8 weeks before the experiment.

Results : We observed no significant change in the serum level of NGF when we compared the controls and suicide attempter's serum sample.

Conclusion : Given the role of NGF in the regulation of growth, maintenance, proliferation, and survival of neurons, our findings suggest that this factor can not be considered as a first-rate predictive biomarker in suicide attempters, contrary to the other findings.

Keywords : Nerve growth factor, suicide risk, neuroprotection

Count: 179
Abstract ID: 191
subject: Neuropsychiatry and Psychology: Disorders of Neurobehavior
Presentation Type: Oral

Identification of Imaging and Clinical Markers Predicting Chronic Sleep Disturbance after Traumatic Brain Injury in Adults

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Background and Aim : Post-traumatic sleep-wake disorders (PTSWDs) commonly emerge in patients with a traumatic brain injury (TBI) and negatively influence the general health aspects. Hence, identification of PTSWDs appearance predictors seems to be required to select an early proper therapeutic approach to prevent the persistence of this disorder. Furthermore, it remains to be well elucidated whether the cognitive and executive dysfunctions following acute TBI may predict the development of chronic PTSWDs. Herein, the objective is the determination of prognostic imaging and clinical markers of chronic PTSWDs with an especial focus on the acute cognitive and executive dysfunctions after TBI.

Methods : In a longitudinal assay, 165 qualified patients with first closed TBI aged between 18 to 65 years who admitted in neurosurgery ward of Poursina hospital were consecutively entered in this project contently written. All patients represented an intracranial abnormality on neuroimaging scans during the initial hospitalization. Demographic, imaging and clinical characteristics were recorded on an individual questionnaire. The presence of acute post-traumatic cognitive deficits and the severity of anxiety, depression and headache were measured by standard scales and executive function was scored by the verbal fluency task during discharge. Several subjective questionnaires including Pittsburgh Sleep Quality Index (PSQI), Insomnia Severity Index (ISI) and Epworth Sleepiness Scale (ESS) were applied to screen the chronic PTSWDs at 6 months after the onset of TBI. All variables were compared between patients or those with and without PTSWDs using appropriate statistical tests. Multiple logistic regression was utilized to determine the predictors of chronic PTSWDs.

Results : Of 146 patients remaining in the follow-up study 35% manifested PTSWDs, with insomnia and Excessive Daytime Sleepiness (EDS) being the most common types. A poor executive function was observed in all PTSWDs patients as compared to those without PTSWDs. However, insomnia and hypersomnia but not EDS patients demonstrated the acute depression. Hypersomnia was also significantly related to bilateral brain contusion. Insomnia mainly co-occurred with fatigue and was associated with mild injury, cortical lesions in the frontal lobe and acute

severe headache. However, the patients who experienced the brain stem and diffusion lesions of right hemisphere with a more severity were prone to EDS that was mainly accompanied by aggression.

Conclusion : In this study, we found some markers that predispose chronic PTSWDs. Moreover, the predictive role of acute executive dysfunction has been clarified in this context. It is suggested the possibility that early neurorehabilitation interventions targeting the impaired neural circuits of executive function and mood processing accelerate and facilitate the optimal neuro-functional recovery leading to minimizing the persistent sleep disturbances.

Keywords : Sleep-wake cycle disorders, executive dysfunction, traumatic brain injury severity, intracranial lesions, post-traumatic psychiatric disorders

Count: 180
Abstract ID: 220
subject: Neuropsychiatry and Psychology: Disorders of Neurobehavior
Presentation Type: Poster

Investigating the effects of therapeutic Reflex Zone Therapy on the anxiety and insomnia of women

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Background and Aim : The purpose of this study was to investing the effects of therapeutic reflection on the level of anxiety and insomnia of women working in the monitoring and evaluation department of Tehran's Broadcasting and Information Service in 1396. The statistical population of this study is all employed women which formed the sample of women working in the monitoring and evaluation department of Tehran's TV and TV station.

Methods : The sampling method was voluntary and available. 30 individuals were selected nonrandom targeted and nonrandom divided into two equal groups (15 people) and control (15). Sample subjects compelend zing Anxiety Scale and Pentecostal sleep Quality Questionnaire. Therapeutic reflexion therapy was performed on the experimental group for 12 sessions of minutes individually.

Results : The results showed that the sleep quality of the experimental group decreased significantly in the post-test, while the decrease in the control group was not observed. Also, the anxiety of the experimental group in the post test was significantly decreased, while this decrease was not observe in the control group

Conclusion : The results showed that the sleep quality of the experimental group decreased significantly in the post-test, while the decrease in the control group was not observed. Also, the anxiety of the experimental group in the post test was significantly decreased, while this decrease was not observe in the control group

Keywords : Therapeutic reflection, anxiety, insomnia

Count: 181
Abstract ID: 19
subject: Neuropsychiatry and Psychology: Disorders of Executive Functions
Presentation Type: Poster

The effect of cognitive rehabilitation on sustained attention among elementary school students with specific learning disorder

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Background and Aim : Sustained attention (SA) failure is one of the main cores of specific learning disorder (SLD). Recent studies reported a positive effect of cognitive rehabilitation (CR) on SA in SLD. So we have enough evidences about CR effectiveness. This preliminary study was aimed to evaluate the effects of CR on SA among elementary school students with SLD using a randomized controlled clinical trial (RCT).

Methods : In this preliminary RCT, thirty- five eligible students with a DSM-5 SLD diagnosis, aged 7–10, were randomly allocated in CR (n = 18), and control group (n = 17). All the participants were evaluated for SA using the continuous performance test (CPT), groups at the time of inclusion to the study and one month after. The intervention groups participated in 20 sessions of CR. the control group were evaluated without any intervention

Results : Thirty students in the two groups (n= 15 per group) completed the study. The mean and standard deviation of participants' age were (8.66 ± 1.48) years, and (8.53 ± 1.63) years in CR, and control groups, respectively. The results showed a significant difference for the groups in omissions errors, commission errors and response time scores, respectively ($p<0.05$).

Conclusion : This study provides evidence that CR is effective on SA improvement among students with SLD. However, more RCTs with large sample sizes, more sessions of intervention, longer time of follow-up and different protocols are recommended

Keywords : Cognitive rehabilitation, Sustained attention, Specific learning disorder

Count: 182
Abstract ID: 672
subject: Neuropsychiatry and Psychology: Disorders of Executive Functions
Presentation Type: Poster

Neuregulin1 types mRNA level changes in autism spectrumdisorder, and is associated with deficit in executive functions

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Background and Aim : Autism spectrum disorder (ASD) is a pediatric heterogeneous psychiatric and neurodevelopmental disorder with social and communication deficits, language impairment and ritualistic or repetitive behaviors. ASD has significant genetic bases but candidate genes and molecular mechanisms of disorder are not clarified. Neuregulin1 (NRG1) gene, located in 8p12 is involved in development of central nervous system and was indicated as candidate gene in schizophrenia.

Methods : mRNA level of types I, II and III of NRG1 gene were studied in peripheral blood of 1540 ASD patients (1020 male,520 female) and 1490 control children(970 male, 520 female) by quantitative Real Time PCR. Also three domains of executive functions (working memory, response inhibition and vigilance) were examined in all subjects.

Results : All three types were significantly down regulated in ASD patients. Significant deficiencies in executive functions (EF) were found in ASD patients. EF deficiencies mostly were associated with down expression of mRNA level of types I and III. Also correlations were found between NRG1 expression with gender and severity of ASD symptoms.

Conclusion : Findings primarily have been suggested involvement of NRG1 in etiology of ASD. Also correlation of NRG1 mRNA level with EF deficiencies could shed lights on EF mechanisms and may suggest targeted treatments to improve particular executive functions. Also significant down expression of type III in boys in compare with girls may strength the evidence about association of GABAergic signaling abnormalities and repetitive behaviors (which are most sever in boys) in ASD patients.

Keywords : Autism spectrum disorder, NRG1, gene expression, executive functions

Count: 183
Abstract ID: 601
subject: Neuropsychiatry and Psychology: Disorders of Executive Functions
Presentation Type: Poster

The Effectiveness of Cognitive-Behavioral Therapy on Improving Selective Attention and Working Memory in Chronic PTSD Patients

Submission Author: Tayebeh Shahsavandbaghdadi

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1. -
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3. Psychologist from Alzahra university

Background and Aim : Purpose: The purpose of this study was to investigate the effect of cognitive-behavioral therapy on improving executive function, including selective attention and work memory. Study community: Subjects included all individuals with chronic ptsd who were referred to Tehran Clinics in 2017. 17 subjects of them were selected who were between 19-45 years old and they had research criteria.

Methods : The current study was an experimental research, single group with pre- and post-test research designs without control group. At first, several clinics in Tehran were selected and 17 subjects were selected. Before the cognitive- behavioral treatment in order to assess working memory Daneman and Carpenter's capacity for working memory, Stroop test for selective attention and the PCL-M as an accepted diagnostic tool for measuring PTSD were performed. Then they went 6 sessions under CBT treatment. After treatment all 3 Tests were performed again and they were repeated. In order to follow up, all 3 Tests 3 months were performed. Collected data through SPSS software were analyzed. Covariance was used to show wether CBT have had positive effect on improving Working memory and selective attention or not.

Results : The finding showed that working memory and selective attention through Cbt were improved. The remarkable point was that improving work memory was more meaningful than selective attention. Also,this improvement was more noticeable in those who had less ptsd symptoms after treatment. In other word, those who have had better executive functions improvement showed less PTSD symptoms after treatment.

Conclusion : The results of this study revealed that Cbt as one of the most important treatment for PTSD patients is able to significantly improve working memory and selective attention. Furthermore, improving executive functions such as working memory and selective attention should be in PTSD considered . Also, to prevent PTSD, attention to executive functions can be effective.

Keywords : Cognitive-Behavioral Therapy; Selective Attention; Working memory

Count: 184
Abstract ID: 68
subject: Neuropsychiatry and Psychology: Disorders of Executive Functions
Presentation Type: Poster

The effectiveness of mindfulness training on improving executive functions, motor skills and behavioral problems Attention Deficit Disorder (ADD): A single subject design

Submission Author: Masoud Shekarro

Masoud Shekarro[1]

1. University of Tehran

Background and Aim : Neurodegenerative disorders are one of the most persistent and enduring disorders of the child that persists with multiple impairments in the life span continues. However, the best treatment methods include interventions with the least side effects and early occurrence. In this regard, with increasing attention to non-pharmacological treatments in persistent childhood disorders, mindfulness-based interventions was especially important. This study was designed to evaluate the effectiveness of this type of treatment for some of the important impairments of Attention Deficit Disorder (ADD), which is one of the most persistent childhood disabilities.

Methods : The present study is a single-subject design and the research sample was a child aged 11.5 years with ADD. The interventions included eight 90-minute sessions of mindfulness training, as well as at the end of each session, a work-out exercise was provided for work at home. The subject is evaluated at the three stages of the base line (A), intervention (B), and follow-up (two months after "B" phase) in the Executive Functions tests; including as the Tower of London, Wisconsin Cards, Corsi Blocks, GoNoGo, Coolidge executive function tests and numerical memory Subtest WISC-R test; Child Behavior Checklist (CBCL) and Lincoln – Oseretsky motor development scale. The collected data also were analyzed using visual analysis.

Results : The findings showed that mindfulness training resulted Externalize & Internalize behavioral problems. As well as improvements found in some executive functions (such as short-term verbal memory and some size of organization, decision making and inhibition) as a result of mindfulness training. Finally, no evidence of the effectiveness of mindfulness-based interventions motor functions not found.

Conclusion : The findings of the present study were aimed at reducing the severity of behavioral problems, both external and internal, in accordance with the literature of the research. The study was conducted to evaluate the effectiveness of interventions by addressing children directly in mindfulness interventions. In this research, it was also attempted to fully assess the interventions of executive Functions. In this regard, it was found that after the interventions, there were differences in the improvement trend in all of the variables, but significant differences were observed only in non-verbal memory Span tests and in all components of the Coolidge test; organization, decision

making, and inhibition; was seen. Also, after the mindfulness training, the changes in the total score of the Lincoln – Oseretsky test were achieved and the interventions led to an increase in the percentile rank of the subject. But these changes were negligible, and there was no evidence of the effectiveness of mindfulness training. However, the researcher acknowledges that the findings of this study are not definitive and can only be relied upon if the results are repeated in group research.

Keywords : Mindfulness Training; Executive Functions; Attention Deficit Disorder; motor functions; Behavioral Problems

Count: 185
Abstract ID: 319
subject: Neuropsychiatry and Psychology: Aggression and Defensive Behavior
Presentation Type: Oral

Exposure to Air pollution by Diesel exhausts particles: behavioral alteration, oxidative stress and Neuroinflammation on adult male mice

Submission Author: Mojtaba Ehsanifar

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Background and Aim : Exposure to nanoscale diesel engines exhausted particles (DEPs) is a well-recognized risk factor for respiratory and cardiovascular diseases. Rodents as commonly used models for urban air pollution in health effect studies demonstrate constant stimulation of inflammatory responses in the main areas of the brain. Nevertheless, the primary effect of diesel exhaust particulate matter on some of the brain regions and relation by behavioral alterations still remains untouched. We evaluated the brain regional inflammatory responses to a nanosized subfraction of diesel engines exhaust particulate matter in an adult male mice brain.

Methods : Adult male mice were exposed to DEPs for 3, 6, and 8 h per day, 12 weeks and five days per week. Degree of anxiety and the depression by elevated plus maze and Forced Swimming Test respectively (FST) did measurement. After behavior tests, the plasma and some of the brain regions such as olfactory bulb (OB) and hippocampus (HI) were analyzed for oxidative stress and inflammatory responses.

Results : Our findings indicate that, the inflammation and oxidative stress changes in OB and HI, markedly coincides with the results of behavioral alterations. These responses corresponded with rapid induction of MDA and nitrite oxide (NO) in brain regions and neuronal nitric oxide synthase (nNOS) mRNA followed by IL6, IL1α, and TNFα in OB and HI. The different times of DEPs exposure, leads to oxidative stress and inflammatory in plasma and brain regions.

Conclusion : We conclude that this cumulative transport of inhaled nanoscale DEPs into the brain and creating to inflammation responses of brain regions may cause problems of brain function and anxiety and depression.

Keywords : Air Pollution, Diesel exhaust particles, Oxidative stress, Neuroinflammation, Neurotoxicology, Anxiety, Depression

Count: 186
Abstract ID: 491
subject: Neuropsychiatry and Psychology: Aggression and Defensive Behavior
Presentation Type: Poster

Single-Nucleotide Polymorphisms in Interleukin 6 (IL-6) Gene Are Associated with Suicide Behavior in an Iranian Population

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Background and Aim : Previous association studies have demonstrated the association between immune regulatory genes and suicide behavior. Among these genes are those coding for cytokines.

Methods : In the present study, we genotyped two interleukin 6 (IL-6) variants (rs2069845 and rs1800795) in 320 suicide attempters, 236 suicide completers, and 341 individuals without any history of psychiatric disorders or suicide ideation.

Results : The rs2069845 was not associated with suicide behavior. The rs1800795 C allele was significantly more common among suicide completers compared with suicide attempters (OR (95% CI) = 1.33 (1.04–1.71)), adjusted P = 0.04). Besides, the rs1800795 was associated with the lethality of suicide attempt in recessive model (adjusted P value = 0.01).

Conclusion : Consequently, the present study supports the role of IL-6 in suicide behavior and warrants further researches to confirm its effect and explain the underlying mechanism.

Keywords : IL-6 . Suicide . Polymorphism

Count: 187
Abstract ID: 109
subject: Neuropsychiatry and Psychology: Aggression and Defensive Behavior
Presentation Type: Oral

Effectiveness of Parent-Child interaction therapy on cortisol level and aggression in pre-school children, a double-blind randomized controlled trial in an Iranian sample

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4. M.A Student in Psychology of Personality, Islamic Azad University of Science and Research, Tehran, Iran

Background and Aim : Improving interpersonal interactions between parents and the child can indirectly reduce the extrapolation problems, including aggression in children.

Methods : sixty four caregivers and an Iranian child were selected among parents who use Tetrahydrocannabinol (THC) and live in Tehran (Bijan Addiction Center) through a respondent-driven sampling method and were studied in the form of a double-blind randomized controlled trial (TCTR20180804001) with repeated measurements and a 6-month follow-up. Changes in the level of aggression and cortisol during 12 weeks of interactive treatment were repeatedly evaluated and analyzed by Monte Carlo test, correlation with repeated measurements and generalized estimation equation.

Results : The primary outcomes showed that twelve weeks of parent-child interactive therapy had a significant effect on the reduction in children's aggression and the level of salivary cortisol in children ($p<0.01$). However, the results were not stable until the follow-up stage ($p=0.067$). Secondary outcomes showed that there is a significant relationship between aggression index and cortisol level ($p<0.01$).

Conclusion : Since the core of the damage resulted from illicit drug abuse is reflected in interactive activities, improving social interactions can be considered as the key to the treatment of addiction.

Keywords : Parent-Child interaction therapy, Aggression, Tetrahydrocannabinol, Addiction

Count: 188
Abstract ID: 353
subject: Neuropsychiatry and Psychology: Aggression and Defensive Behavior
Presentation Type: Poster

Interleukin (IL)-8 polymorphisms contribute in suicide behavior

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Background and Aim : Previous studies have highlighted the role of immune dysregulation in suicide behavior. Interleukin (IL)-8 is a chemokine with neuroprotective effects whose lower serum concentrations have been detected in individuals committed suicide.

Methods : In the present study, we genotyped three single nucleotide polymorphisms (SNPs) within IL-8 gene (rs4073, rs2227306 and rs1126647) in 229 individuals who attempted suicide with soft suicide methods, 235 suicide victims and 290 individuals without any history of psychiatric disorders or suicide attempt.

Results : he T allele of rs4073 was significantly over-represented in suicide attempt group compared with both control and completed suicide groups (adjusted P values of 8.3E-7 and 9.8E-8 respectively). This SNP was associated with suicide attempt in both dominant and co-dominant models (P values of 6.2E-9 and 4.3 E-8 respectively). The genotype and allele frequencies of other SNPs were not significantly different among the three study groups. The T C A haplotype (rs4073, rs2227306 and rs1126647 respectively) were significantly less prevalent in completed suicide group compared with suicide attempt group (OR (95% CI) = 0.63 (0.46-0.86), adjusted P value = 0.03). Besides, the A T A haplotype has significant lower frequency in individuals who attempted soft suicide compared with controls (OR (95% CI) = 0.44 (0.26-0.75), adjusted P value = 0.02).

Conclusion : However, this haplotype was significantly more prevalent in individuals attempted hard methods compared with those attempted soft methods (OR (95% CI) = 2.21 (1.26-3.87), adjusted P value = 0.04). The present study provided further evidence for the role of IL-8 in suicide behavior.

Keywords : IL-8; Polymorphism; Suicide

Count: 189
Abstract ID: 557
subject: Neuropsychiatry and Psychology: Cognitive Disorders
Presentation Type: Poster

The roll of Chemotherapy in Cognitive Dysfunction

Submission Author: Amir Hossein Ashna

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Background and Aim : Decline in cognitive function, such as memory impairment, is one of the most commonly reported symptoms in cancer patients. Importantly, cognitive impairment is not restricted to patients treated for brain tumors, but also frequently present in patients treated for tumors outside the nervous system.

Methods : preclinical and translational studies

Results : preclinical and translational studies have defined various risk factors and mechanisms underlying such symptoms.

Conclusion : The translation of these findings into clinical practice will improve patient management by limiting the degree of neurotoxicity from current therapies, and by exploring novel mechanisms of brain repair.

Keywords : Cognitive function, chemotherapy, cancer

Count: 190
Abstract ID: 48
subject: Neuropsychiatry and Psychology: Cognitive Disorders
Presentation Type: Poster

Modifying Attentional Bias towards pain in Systemic Lupus Erythematosus patients: Can Mindfulness be a useful method?

Submission Author: Shirin Irani

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Background and Aim : Systemic Lupus Erythematosus (SLE) is a chronic autoimmune disease which can cause serous damages to many different organs of the body. Damage to the Central Nervous System (CNS) may result in different kinds of cognitive dysfunctions (such as diminutions in attentional domain); and these diminutions provide tendency to emerge attentional bias. Furthermore, frequent pain and difficulties with emotion regulation during pain may increase the possibility of attentional bias, especially towards pain in SLE patients. The aim of this study was to modify the attentional bias towards pain in SLE patients.

Methods : 16 SLE patients who had frequent pains were selected using available sampling method from hospitals and private clinics in Esfahan. In order to screen patients about having pain, Visual Analog Scale (VAS) was used . inorder to screen patients about having depression and anxiety, Hospital Anxiety and Depression Scale (HADS) was used. Patients having pains more than average without severe depression and anxiety were selected to participate in the study. After that, all patients were tested by Pictorial Dot-Probe Task in pre-test phase, which was held as computer software. Stimuli used in this task were pictures depicting painful faces and counter faces, happy faces. Then, the patients were assigned randomly into an experimental group and a control group. The experimental group received 8 sessions of Mindfulness-Based Stress Reduction weekly during 2 months in November and December 2017. The control group did not receive any treatments. After the treatment was done, all the patients were tested again by Pictorial Dot-probe Task in post-test phase.

Results : The results showed that all of the patients had a primary pattern of attentional bias towards painful faces before the treatment. The pattern was a kind of hypervigilliance – avoidance, but no pattern of attentional bias towards happy faces was recognized. Mindfulness-Based Stress Reduction could modify attentional bias towards pain in the experimental group by decreasing hypervigilance and avoidance towards painful faces. It seems that

Mindfulness techniques by de-automatization of attention, have decreased automatic avoidance and have increased valance of tolerating painful stimuli.

Conclusion : It can be concluded that amplification of awareness during mindfulness trainings could help them return their attention to painful stimuli again after it was diverted. Finally they can observe the painful stimuli without discomfort. Results of this study showed using Mindfulness-Based Stress Reduction can be a beneficial method to modify the attentional bias in SLE patients.

Keywords : Attentional bias, Dot-Probe task , Mindfulness-Based Stress Reduction, pain, Systemic Lupus Erythematosus

Count: 191
Abstract ID: 214
subject: Neuropsychiatry and Psychology: Cognitive Disorders
Presentation Type: Poster

Correlation of EEG with cognitive performance in Children with ADHD

Submission Author: Mohammad Rostami

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Background and Aim : Introduction: Attention-deficit/hyperactivity disorder (ADHD) is a highly prevalent developmental disorder that affects about 5 % of school-aged children and adolescents (American Psychiatric Association, 2013). These children typically exhibit pervasive behavioral symptoms of hyperactivity, inattention and impulsivity. The most prominent deficit seen in the ADHD is response inhibition, inattention (vigilance), working memory, planning and reaction time (RT), particularly RT variability (Castellanos, et al, 2005). Electroencephalographic (EEG) studies have shown that abnormal electrical activity in the brain in ADHD subjects may be associated with non-optimal functioning of different brain systems that are responsible for information processing and executive control (Loo & Makeig, 2012). Cognitive and behavioral deficits associated with ADHD involve different brain impairments, hence, these should be investigated in an interdisciplinary manner to perform adequate differentiation analyses and support children with ADHD. Special attention should be paid to the relationship between cognitive and neurophysiological studies of primary schoolchildren because most of their cognitive and behavioral difficulties are manifested at the beginning of Childhood.

Methods : Method: We investigated data of 61 boys (7-12 years-old, normal intelligence) with ADHD. Children were investigated regarding Integrated Visual and Auditory Test (IVA), and brain electrical activity during eyes closed resting state. The correlation of ADHD characteristics on IVA primary parameters (response control quotient, prudence quotient, consistency quotient, stamina quotient, attention quotient, vigilance quotient, focus quotient, speed quotient in both visual and auditory modalities) with EEG spectra power (as a core analysis Delta (1-4 Hz), Theta (4-8 Hz), Beta (8-12 Hz) and Beta (12-30 Hz) Absolute Power) and Theta/Beta ratio were tested at electrode Cz.

Results : Results: Attention scales (attention, speed and vigilance in both auditory and visual modalities) were highly positive correlated with Beta EEG activity, also, negative correlation was found between visual and auditory attention, auditory vigilance and visual speed with Theta/Beta ratio. Nevertheless, there was no correlation between EEG power spectrum and Theta/Beta ratio with response control scales.

Conclusion : Conclusion: Increased beta is usually related to a good attention level, as was found a positive correlation between attention scales and Beta activity (Snyder et al., 2015). In addition, decreased Beta power was correlated with behaviors such as vandalism, being moody and antisocial (Clarke et al., 2011). Overall, decreased Beta power was correlated with impairment of cognitive functions in the ADHD children (Hermens et al., 2005, Sumich et al., 2009). These findings have been interpreted as a maturational lag model in the central nervous system (CNS) and are closely related to a neuronal developmental delay (Markovska-Simoska and Pop-Jordanova, 2017).

Keywords : EEG,cognitive performance, ADHD

Count: 192
Abstract ID: 575
subject: Neuropsychiatry and Psychology: Mood Disorders
Presentation Type: Poster

Toward a New Generation of Mood Stabilizers and an Animal Model for Bipolar Disorder

Submission Author: Shokouh Arjmand

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Background and Aim : Bipolar disorder (BD) is among debilitating lifelong disorders of mood which is discerned from other neuropsychiatric illnesses with which it shares many common symptoms, by its unique oscillatory nature between two poles apart mood statuses called (hypo)mania and depression. Despite engaging many other pharmacological categories into play to ameliorate the acute affective symptoms and prevent episodic relapse, BD is sometimes inadequately treated. Since the introduction of lithium over 70 years ago, no specific agent has been particularly developed for BD and lithium still remains the gonfalonier of BD's treatment strategies. The ultimate quest in the development of a mood stabilizer is that it can be capable of exerting acute effects as an anti-maniac and antidepressant while presenting the long-term maintenance of mood stability. Above all, it should exhibit a prophylactic mode of action to prevent the future relapse of the illness. By selectively activating TrkB receptors (7, 8-DHF which can cross the blood brain barrier), several survival cellular pathways (PI3K/Akt/mTOR) are initiated leading to neuroprotective effects of such agents by inhibition of GSK3β, as well as an increase in neuroprotection, and inositol depletion in order to stabilize euthymic mood and ameliorate symptoms of both mania and depression. Moreover, many disrupted cellular mechanisms in the course of BD such as calcium homeostasis and neural hyperactivity due to the impaired glutamatergic transmission will be affected to bring back cell resilience. The final outcome is the same as what lithium is supposed to do which make us come to the conclusion that TrkB agonist can be considered as the next generation of mood stabilizers with possible side effects and profile of activity and extend our borders of knowledge on stabilization of mood. On the other hand, dearth of an animal model that can reproduce the spontaneous oscillatory nature of the disease is a major drawback to assess the inherent ability of current and future mood stabilizers. Here is an approach to provide an animal model to better evaluate the mood stabilizing effects of agents developed for this purpose which is curtail for further studies to choose the best mood stabilizers for the management of the disorder. Hinged upon the above hypothesis, we also postulate an animal model for BD expecting to be a presenter of both mania and depression in one exclusive model by selectively antagonizing TrkB (Cyclotraxin B), which has been previously shown to be down-regulated in the course of BD together with its activator factors including BDNF.

Methods : Succinctly, using animal models of depression and mania, behavioral tests followed with molecular studies (PCR, Western blotting, microarray) are carried out and compared before and after treatment to see if modulation of TrkB can result in mood stabilization and further seek the underlying molecular pathways.

Results : *

Conclusion : The results of this study could open a new theme of research for developing lithium mimetics with better profile of activity and possible less undesired adverse effects and more patient adherence and finally can translate these candidates into human clinical trials as a new generation of mood stabilizers.

Keywords : Bipolar disorder, Mood stabilizer, Animal model of bipolar disorder, TrkB, Lithium mimetics

Count: 193
Abstract ID: 39
subject: Neuropsychiatry and Psychology: Mood Disorders
Presentation Type: Oral

Does Neuronal Damage Exist in Suicide Attempters?

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Background and Aim : Suicide behavior is a multifactorial complex phenomenon. Some biological markers may play role in suicide risk, while the precise pathophysiological mechanisms are still to be elucidated. This study aimed to examine the presence of neuronal damage in the brain of suicide attempters and the biological biomarker in suicide behavior.

Methods : Level of neuron specific enolase (NSE) was quantitatively measured using enzyme linked immunosorbent assay, in serum from 43 suicide attempters and 43 normal control subjects, aged 18-35 years, which were drug free at least 8 weeks before the experiment.

Results : The mean serum level of NSE was significantly higher in suicide attempters compared with the normal control individuals (P = 0.02).

Conclusion : Given the role of NSE in neurodegeneration and neuroinflammation, our findings of increased level of NSE in serum level of suicide attempters suggest that this marker might play a pivotal role in the pathophysiology of suicide behavior, and may implicate the presence of neuronal damage in the brain of suicide attempters. Furthermore, NSE can be considered as a prognostic or therapeutic marker in high-risk suicide attempters.

Keywords : NSE, suicide risk, biomarker, neuronal damage,

Count: 194
Abstract ID: 339
subject: Neuropsychiatry and Psychology: Mood Disorders
Presentation Type: Poster

The association of Dietary Phytochemical Index and psychological disorders among women attending to health centers of Tehran: A cross-sectional study

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Background and Aim : Previous studies shows that unhealthy dietary pattern is one the most important modifiable factor in the development of mental disorders. There is no evidence for potential associations between dietary phytochemical index (DPI) with psychological disorders. Accordingly, we examined the association of DPI with depression, anxiety and psychological distress in Iranian women.

Methods : In this cross-sectional study, a total of 488 women aged 20-50 years old attending health centers in the south of Tehran in 2018 were participated. A validated and reliable food frequency questionnaire (FFQ) was used for dietary assessment. Depression, anxiety and psychological distress were assessed using a validated Depression, Anxiety, Stress Scales (DASS) questionnaires with 21-items. DPI was estimated using by this formula: (daily energy derived from phytochemical-rich foods (kcal)/total daily energy intake (kcal)) × 100.

Results : The mean age of the study subjects was 31.85±7.67 years. The prevalence of depression, anxiety and psychological distress were 34.6%, 40.6% and 42.4% of the study participants, respectively. After controlling for potential confounders, women in the highest tertile of PI had a lower incidence of depression (0.22; 95% CIs 0.12–0.38) and anxiety (OR 0.33; 95% CIs 0.20–0.55), as well as psychological distress (OR 0.30; 95% CIs 0.18–0.49) compared with those in the lowest tertile.

Conclusion : We found significant association between PI and psychological disorders. Prospective studies are needed to confirm these findings.

Keywords : Dietary phytochemical index, diet quality, depression, anxiety, psychological distress

Count: 195
Abstract ID: 61
subject: Neuropsychiatry and Psychology: Mood Disorders
Presentation Type: Oral

Altered D2 receptor and transcription factor EB expression in offspring of aggressive male rats, having depressive and anxiety-like behaviors

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Background and Aim : Dopaminergic system in the amygdala and prefrontal cortex (PFC) influences fear and anxiety through dopaminergic receptors (DR) especially DR-D1 and DR-D2. Transcription factor EB (TFEB) is an upstream protein of the autophagy-lysosome pathway.

Methods : Rats randomly divided into eight groups (the first four groups were offspring of normal males and females, and the second fourth groups were offspring of aggressive males and normal females). Six hours after injection, the behavioral tests were done. Later, DR-D2 and TFEB mRNA level in the amygdala and PFC were measured by qRT-PCR.

Results : Anxiety and depression-like behaviors increased in them and intra-ventricle injection of DR-D2 antagonist reversed it. DR-D2 gene expression has increased in the amygdala and PFC of aggressive male rats' offspring, while injection of Sulpiride decreased it significantly. TFEB gene expression decreased in the amygdala and PFC of aggressive male rats' offspring and blockade of DR-D2 had no effect on it.

Conclusion : The current data suggested the possible influence of dopaminergic receptors D2 and TFEB genes in the behavioral changes induced by having an aggressive father.

Keywords : Dopamine receptor D2; Anxiety; Aggression; Depression; Transcription factor EB; Amygdala; Prefrontal cortex

Count: 196
Abstract ID: 525
subject: Neuropsychiatry and Psychology: Mood Disorders
Presentation Type: Poster

Borderline or Bipolar? Differences in Time Perception.

Submission Author: Shima Talehy Moineddin

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Background and Aim : Every human experiences time in their own way. How we perceive time is altered by many intrinsic and extrinsic factors. For instance, time seems to “drag” when we are waiting for an event, like vacations to come around, but seems to “fly” when the event arrives. Several studies have been conducted to understand the phenomenology of time perception and to evaluate whether time perception is affected by psychological problem. Borderline personality disorder (BPD) and bipolar disorder (BD) are two psychiatric conditions that are often confused. Both disorders present symptoms of impulsiveness which could affect the time perception. Differentiating the two disorders has clinical implication for treatment. We hypothesized that the time estimation in patients with BPD and BD is different from each other and also from healthy control (HC).

Methods : We investigated time magnitude estimation in the three mentioned groups of participants using psychophysical judgment approach. Patients were diagnosed based on DSM IV criteria and structured clinical interviews (SCID-I and SCID-II). Each time interval was presented randomly 6 times in two separate blocks of visual or auditory stimulus. In the visual block, a yellow circle was presented on the computer screen while in the auditory block a pure tone was continuously played through the speaker. The participant was required to judge the duration of stimulus presentation at the end of the trial. To prevent counting as a timing strategy, a working memory task accompanied trials. A three-digit number was presented to the participant at the start of each trial and needed to be recalled at the end of the trial.

Results : We fitted a line to the perceptual time (tp) of subjects in each group as a function of the stimulus presentation time (ts) with tp=a*ts+b. In the BD group, the slope of the fit was 0.61 with an intercept of 6.46 while the slopes for BPD and HC groups were 1.00 and 0.85, respectively. In addition, we performed ANOVA to investigate the significant group differences for time intervals. The three groups were different at four intervals of 5s ($p=0.04$), 18s ($p<0.01$), 34s ($p=0.03$) and 65s ($p<0.01$).

Conclusion : In conclusion, the average estimated-time reported by BPD group was longer than that of the HC group while BP’s time estimation was on average shorter than both of BPD and HC. Therefore time perception

could provide additional diagnostic information for the psychiatrists to differentiate between the BPD and BD patients.

Keywords : time perception,Borderline personality disorder, bipolar disorder

Count: 197
Abstract ID: 423
subject: Neuropsychiatry and Psychology: Anxiety Disorders and PTSD
Presentation Type: Poster

The effects of PPAR-γ agonist pioglitazone on anxiety and depression-like behaviors in lipopolysaccharide injected rats

Submission Author: Farimah Beheshti

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Background and Aim : Peroxisome proliferator-activated receptor-γ (PPAR-γ) agonists have been suggested to have some effects of central nervous system. In present study the effects of PPAR-γ agonist pioglitazone (pio) on anxiety and depression-like behaviors was investigated in lipopolysaccharide (LPS) injected rats.

Methods : The animal groups were including (n=10 in each): (1) control, (2) LPS (1 mg/kg, 2 hours before behavioral tests), (3-5) LPS+Pio 10, LPS+ Pio 20 and LPS+Pio 30 groups which received 10, 20 and 30 mg/kg of pio respectively and 30 min later were injected by LPS.

Results : Pretreatment by pio improved the behaviors of the LPS injected rats in open field, elevated plus maze and forced swimming tests. Administration of pio also showed a protection against brain tissues oxidative damage and also induced a significant reduction in total WBC.

Conclusion : It was indicated that pio had anti- anxiety and anti- depressant effect in LPS injected rats.

Keywords : Lipopolysaccharide; PPAR-γ agonist; Pioglitazone; Anxiety, Depression

Count: 198
Abstract ID: 71
subject: Neuropsychiatry and Psychology: Anxiety Disorders and PTSD
Presentation Type: Poster

Efficacy of eye sensitization and re-processing on general anxiety disorder in male students of Kermanshah

Submission Author: Behzad Behrouz

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2. Assistant Professor, Department of Psychology, Payame Noor University, Tehran, Iran.

Background and Aim : The aim of this study was to investigate the effectiveness of eye sensitization and re-processing on general anxiety disorder in students.

Methods : The research is semi experimental with pretest-posttest design with control group. The statistical population of the study consisted of all male students studying in 2012 in Kermanshah at secondary school. A multi-stage random cluster sampling was used to select 24 individuals and randomly assigned to two groups of experimental and control groups. To collect data, a questionnaire of demographic variables and general anxiety disorder (Spitzer et al., 2006) was used. Data were analyzed using SPSS-22 and descriptive statistics and multivariate analysis of covariance (MANCOVA).

Results : The results of the study showed that there is a significant difference between the experimental and control groups in reducing the general anxiety disorder and its components ($P < 0.05$).

Conclusion : Findings of the research indicate that this treatment is effective on general anxiety disorder and its components. Therefore, this treatment method can be used more seriously in medical centers.

Keywords : eye drooping sensation and re-processing, general anxiety disorder, students.

Count: 199
Abstract ID: 566
subject: Neuropsychiatry and Psychology: Anxiety Disorders and PTSD
Presentation Type: Poster

Role of Neuro-stimulation Techniques in Anxiety Disorders

Submission Author: Nima Ganji

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3. Negar Karimi

Background and Aim : Neuro-stimulation (Brain Stimulation) techniques have gradually evolved over the decades and have emerged potential therapeutic modalities for the treatment of psychiatric disorders, especially treatment refractory cases.

Methods : The neuro-stimulation techniques involve modalities like electroconvulsive therapy (ECT), repetitive transcranial magnetic stimulation (rTMS), transcranial direct current stimulation (tDCS), Transcranial Alternating Current Stimulation (tACS), Transcranial Random Noise Stimulation (tRNS) and others.

Results : This review discusses the role of neuro-stimulation techniques in the treatment of anxiety disorders. The various modalities of neuro-stimulation techniques are briefly discussed. The evidence base relating to use of these techniques in the treatment of anxiety disorders is discussed further. The review then highlights the challenges in conducting research in relation to the use of neuro-stimulation techniques.

Conclusion : The review provides the future directions of research and aimed at expanding the evidence base of treatment of anxiety disorders and providing neuro-stimulation techniques as promising effective and acceptable alternative in select cases.

Keywords : Brain stimulation, Anxiety disorders, Therapeutic technique

Count: 200
Abstract ID: 630
subject: Neuropsychiatry and Psychology: Anxiety Disorders and PTSD
Presentation Type: Poster

The role of Executive Functions of Neurology in predicting separation anxiety among 5-6 years children

Submission Author: Arezoo GhasemiHabashi

Arezoo GhasemiHabashi[1]

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Background and Aim : Children of groups who exposed to mood and anxiety disorders that mental and neurological components can play in it. Accordingly, the aim of this study was to investigate the role of executive functions of Neurology in predicting children's separation anxiety disorder.

Methods : This is a descriptive-correlational study. The statistical population of the study is all children aged 5-6 years old in Urmia. a 70 children referring to kindergartens in the city of urmia were selected by available sampling. A questionnaire of Coolidge executive functions and Spence separation anxiety scale were provided to mothers of children. Data were analyzed by Pearson correlation coefficient and multiple regression with spss 21.

Results : The results of this study showed that there is a positive relationship between executive functions of organization and inhibition with separation anxiety ($p < 0.05$), between executive functions of decision making - planning with separation anxiety ($p < 0.01$). Meaningful. Also, the variables of the study predicted 0.41% of the childhood anxiety variance. The results of this study showed that there is a positive relationship between executive functions of organization and inhibition with separation anxiety ($p < 0.05$), between executive functions of decision making - planning with separation anxiety ($p < 0.01$). Meaningful. Also, the variables of the study predicted 0.41% of the childhood anxiety variance.

Conclusion : According to the results, the dysfunction in any of the executive functions of Neurology can play an important role in the anxiety of separation in children.

Keywords : Executive Functions of Neurology, Separation Anxiety Disorder

Count: 201
Abstract ID: 296
subject: Neuropsychiatry and Psychology: Anxiety Disorders and PTSD
Presentation Type: Poster

Altered cortical functional networks in Generalized Anxiety disorder: A resting-state electroencephalogram study

Submission Author: Ruhollah Hosseini

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Background and Aim : Electroencephalogram (EEG)-based brain network functional connectivity analysis is a useful biological correlate reflecting brain function. This method enables data extraction from complex brain networks and provides matrices that describe brain-network communications.

Methods : Resting state EEG was recorded in 52 GAD and 24 healthy controls. After pre-processing of the raw EEG, all network measures were calculated by means of graph analysis method.

Results : Regarding global network topology, we found no significant differences in the characteristic path length between GAD and healthy groups. the characteristic path length is an important index for network integration. On the other hand, the clustering coefficient that is the index for network segregation was significantly increased in GAD compared healthy control group.

Conclusion : Disturbances in EEG-based brain network indices might reflect altered cortical functional network in GAD. Those findings might provide useful biomarkers to understand cortical brain pathology in GAD.

Keywords : Brain cortical function, Electroencephalogram, Generalized anxiety disorder, Graph analysis.

Count: 202
Abstract ID: 348
subject: Neuropsychiatry and Psychology: Anxiety Disorders and PTSD
Presentation Type: Oral

Comparing the Efficacy of Ondansetron and Granisetron Augmentation in Treatment -Resistant Obsessive-Compulsive Disorder, A Randomized Clinical Trial

Submission Author: Mojtaba Sharafkhah

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Background and Aim : Previous small studies have shown beneficial effects of certain 5-HT3 receptor antagonists, such as ondansetron, for obsessive-compulsive disorder (OCD). The superiority of 5-HT3 antagonists toward each other in patients with different severity of OCD is still unclear. The aim of this study was to assess the efficacy and tolerability of ondansetron versus granisetron in patients with treatment-resistant OCD.

Methods : This study was a two-center, randomized, double-blind, placebo-controlled, parallel-group clinical trial. One hundred and thirty-five patients with a DSM-IV diagnosis of OCD, who were treatment-resistant and receiving stable treatment with selective serotonin reuptake inhibitors (SSRIs) and antipsychotic, received 14 weeks (phase I) of placebo (n = 45), ondansetron (n = 45, 4 mg), and granisetron (n = 45, 2 mg) daily augmentations. Patients were rated every two weeks using the Yale–Brown Obsessive Compulsive Scale (YBOCS). The clinical response was considered as primary outcomes [the mean YBOCS total, obsession, and compulsion scores and mean difference (MD) scores or changing point (%) from baseline] and secondary outcomes. Upon completion of the intervention course, patients were followed for four weeks (phase II).

Results : One hundred and twenty-four patients completed the study. At week 14, ondansetron, granisetron, and placebo groups reached a reduction in YBOCS total scores of 11.6-point (41.5%), 11.3-point (39.7%), and 4.3-point (15.2%), respectively (p = 0.001). In phase II, patients in the ondansetron and granisetron groups experienced a 1.5-point (9.2%) and 1.8-point (10.5%) increase, respectively (p = 0.12). Complete response, partial response, and remission rates in the ondansetron and granisetron groups were significantly more than placebo. Complete response in the ondansetron group was significantly higher than in the granisetron group ([p = 0.041], RR [95% CI] = 2.33 [1.18, 3.045]). Relapse occurred by three (7.31%) patients in the granisetron group, whereas it was not seen in the ondansetron group (p < 0.001, RR [95% CI] = 2.81 [1.016, 4.51]). There was no significant difference in the tolerability between the three regimens, and no clinically meaningful side effects were reported.

Conclusion : Ondansetron and granisetron display promise as a safety augmentation strategy for some patients with OCD resistant to SSRIs and antipsychotics. The effect of ondansetron was slightly greater and more stable than that of granisetron. However, its superiority was not remarkable.

Keywords : obsessive-compulsive disorder; serotonin 5-HT3 receptor antagonists; ondansetron; granisetron; randomized controlled trial. clinical trial registration number: IRCT20130726014170N2

Count: 203
Abstract ID: 349
subject: Neuropsychiatry and Psychology: Anxiety Disorders and PTSD
Presentation Type: Poster

Evaluation of hair cortisol level in patients with Generalized Anxiety Disorder

Submission Author: Hediye Yousefbeigi

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Background and Aim : Generalized Anxiety Disorder (GAD) is one of the most common anxiety disorders seen in community. Considering the prevalence of GAD and the vulnerability of those suffered from it, the existence of a method for diagnosing GAD and assessing it after treatment is necessary. One of these methods, which have been considered recently, is measuring hair cortisol in order to achieve the long-term cortisol secretion. Cortisol is a hormone secreted from the adrenal glands by the control of hypothalamus and a physiological response to anxiety. As HbA1C reflects the amount of glucose in the past 3 months, the level of cortisol in 3 cm of the hair can be indicative of cortisol levels in the past 3 months and can be used in patients with GAD. The aim of our study was to obtain the hair cortisol level in GAD patients at the beginning of the diagnosis and, if possible, 3months after the treatment.

Methods : In this study, 3 cm (weighing 60 mg) of the hair from the posterior vertex area of GAD patients at the beginning of the diagnosis (n=20), 3months after the treatment of GAD (n=4), healthy control group (n=20), was taken as a sample. Each sample was washed with isopropanol. Hair samples dried and grinded with ball-mill, mixed the powdered hair with methanol and Extracted cortisol, then centrifuged the specimens and poured the upper liquid into a new vial. Evaporated the solution to dry, mixed the remaining dried powdered with Phosphate buffer. Finally, using the chemiluminescence method, we measured cortisol levels.

Results : The patients mean cortisol level at the beginning of the diagnosis GAD was 4.00 nmol/L, and after the 3 months of treatment was 4.40 nmol/L, and the control group level was 4.64 nmol/L. (n mol/L= nano-mol per liter) According to statistical tests, P-Values between the groups were 0.715 (The beginning of diagnosis GAD and 3months after the treatment of GAD) and 0.766 (the beginning of diagnosis GAD with the healthy control group)

and 0.816 (3 months after treatment of GAD and healthy control group). In other words, P Value> 0.05 and there was no difference between groups.

Conclusion : In our study, hair cortisol concentration of the GAD patients was not significantly different at the beginning of diagnosis and 3months after the treatment. The hair cortisol concentration of the GAD patients at the beginning of diagnosis with the healthy control group also did not differ.

Keywords : GAD;Hair;Cortisol

Count: 204
Abstract ID: 494
subject: Neuropsychiatry and Psychology: Eating Disorders
Presentation Type: Oral

Hypothalamic Regulation of Energy Balance: A Novel Candidate for the Treatment of Obesity and Diabetes Mellitus

Submission Author: Mohammad javad Saeedi borujeni

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Background and Aim : “Energy balance” is the correlation between “calories in” and “calories out”. Disrupted energy balance, obesity, diabetes mellitus, and other related conditions considered as a major public health challenge for developed and developing countries. Aforementioned conditions cause economic and health burdens that require organized plans to both prevent and treat these disorders.

Methods : Data collection was performed based on the recent hypothesis about hypothalamus and energy balance. Major databases (PubMed, Scopus, Google Scholar, Science Direct, Academic Search Premier and EBSCOHost) were searched, for original studies, review articles and congress abstracts

Results : Recently, it has been reported that some of the neural circuits, especially in hypothalamus, controlling glucose homeostasis and energy expenditure. Based on the novel hypothesis, a circuit in the brain that includes the hypothalamus as well as mesencephalon/rhombencephalon areas is associated with the regulation of energy expenditure

Conclusion : Several neurotransmitters, peptides and receptors are associated with the aforementioned circuit and knowing it provide potential substrates for non-invasive therapeutic intervention in obesity and diabetic conditions.

Keywords : Energy balance, obesity, diabetes, hypothalamus

Count: 205
Abstract ID: 329
subject: Neuropsychiatry and Psychology: Addiction (Drug, Alcohol, Internet, Food) and Gambling
Presentation Type: Poster

Relation between early maladaptive schemas and attachment styles in pornography and cyber- bullying of cyberspace users.

Submission Author: Elham Dehnavi

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2. assistant professor, faculty of Psychology and Educational Sciences, Azad Islamic university, Roudhen.

Background and Aim : Considering that the Internet is an imported tool ,it can be very damaging in spite of many beneficial aspects.it can threaten specific individuals with specific attachment styles and specific early maladaptive schemas. Since the category of pornography and cyber-bullying , which is strongly dependent to virtual sex, and watching porn content and online sadomasochism, respectively, which is less studied and considered. The aim of this study is to investigate the relationship between early maladaptive schemas and attachment styles with pornography and cyber-bullying in cyberspace users.

Methods : For this purpose,348 users of cyberspace users have been chosen non-random(network and voluntary)and responded to two pornography and cyber-bullying scales, which based on likert scale .after recording data in spss21 software ,descriptive and inferential statistics were used to analyze them.

Results : In this study, 34.6% of users are male and 65.4% are female users, most of whom are women and 43.7% of users are single and 56.3% are married, most of whom, are married. The average of users with pornographic behavior is 22.83 and 19.75 with cyber-bullying behavior.Also the results showed there is a positive correlation in imparired autonomy and performance and disconnection and rejection schemas respectively with ?=./30 and ?=./41 with cyber-bullying and disconnection and rejection schema with ?=./27 with pornography at 5% level. Also, the findings of the study showed there is a positive correlation in unsafe attachment style and ambivalent attachment style rsepectively with ?=./13 , ?=./23 with cyber-bullying and ambivalent attachment style with ?=./23 with pornography at 5% level.

Conclusion : Which in fact indicates that as these factors increase ,the rate of these behaviors are increasing.

Keywords : pornography, cyber-bullying , attachment styles , early maladaptive schemas , cyberspace users

Count: 206
Abstract ID: 546
subject: Neuropsychiatry and Psychology: Addiction (Drug, Alcohol, Internet, Food) and Gambling
Presentation Type: Poster

The Effectiveness of Cognitive Emotion Regulatory Training on Reducing the Level of Anxiety and Depression of Addicted Prisoners in Tehran's Grand Prison

Submission Author: Meysam Shir aliyan

Meysam Shir aliyan[1]

1. Organization of prisons

Background and Aim : The purpose of this study was to investigate the effect of Cognitive emotional regulation training On reducing the level of anxiety and depression of addicted prisoners in the Central Tehran Prison

Methods : A quasi-experimental study was a pretest, post-test and follow-up study with control group .the statistical population included all of the prisoners of Central Tehran Prison, who were selected randomly by sampling method 30 people And tested and controlled in two groups of 15 Then, the experimental group received 9 sessions of the Cognitive emotion regulation group. Pre-test, post-test and 4 months follow-up were performed for both groups Data were collected using questionnaires Beck Anxiety and Depression

Results : The results of the study showed a one-way covariance analysis Which is the mean of anxiety scores Post-test and follow-up to pre-test There was a significant decrease in the experimental group And decreased significantly in the depression variable.

Conclusion : Therefore, it can be concluded that by regulating emotional education, it attempts to reduce the anxiety and depression of addicted prisoners.

Keywords : Cognitive Emotion Education, anxiety , depression, Prisoners, Addicts

Count: 207
Abstract ID: 559
subject: Neuropsychiatry and Psychology: Other
Presentation Type: Poster

Depression and religiosity and their correlates in Lebanese breast cancer patients in tehran

Submission Author: Faezeh Aghayan gol Kashani

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Background and Aim : Breast cancer bears considerable morbidity and mortality and is well known to increase the risk of major depression, whereas religiosity has been reported to be protective. We searched for an association between depression and religiosity in breast cancer patients. We also sought to find an association between depression and various sociodemographic and disease

Methods : 102 patients were interviewed in Tehran. Sociodemographic, cancer profile, and religiosity questionnaires were administered. We screened for depressive disorders by using the Mini-International Neuropsychiatric Interview and the Beck Depression Inventory.

Results : Most of our participants (n = 79; 77.4%) had high religiosity score. The prevalences of lifetime major depression, current major depression, and major depression after cancer diagnosis were 50.9%, 30.1%, and 43.1%, respectively. We could not find a correlation between religiosity and current depression, while the association with depression after cancer diagnosis was close to but did not reach statistical significance (P = .055) and in favor of a deleterious role of religiosity. Depression was only linked to marital status and insurance coverage. No association was found with disease-related variables.

Conclusion : Religiosity does not seem to be protective against depression development. The stress of cancer appears to be the main culprit in increasing the risk of depression.

Keywords : breast cancer, dysthymia, psycho-oncology, depression, religiosity

Count: 208
Abstract ID: 548
subject: Neuropsychiatry and Psychology: Other
Presentation Type: Poster

Assessing the concurrent validity of clinicalQ EEG and Structured Clinical Interview for DSM-5: a pilot study among Iranian's sample

Submission Author: Seyed Mohammadreza Alavizadeh

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Background and Aim : A number of specialists have reported that there are recognizable EEG patterns associated with a variety of psychological disorders; for example, deficient Alpha power in schizophrenics has consistently been reported and EEG slowing is a good indicator of degree of cognitive impairment. Similarly, specific EEG patterns have been shown to be associated with various forms of ADD learning disabilities. The Structured Clinical Interview for DSM-5 (SCID-5) is a semi-structured interview guide for making the major DSM-5 diagnoses. The purpose of present study is concurrent validating of clinicalQ EEG with SCID-5.

Methods : The sample conclude 58 outpatient clients, 19 men and 39 women, that they were referred to 2 psychological service's centers in Tehran province. The participants were interviewed with SCID-5 by a clinician; and they, also, have been diagnosed as appropriate disorders, depression, anxiety, PTSD, ADHD, and OCD. The clinicalQ EEG was conducted in same session with 8 channels E-probe neurofeedback system. Finally data was analyzed in SPSS environment.

Results : The results illustrate that clinicalQ is a validated method for diagnosing of mental disorders. The correlation of clinicalQ and SCID-5 was 0.88. In addition, the overall kappa agreement was 0.84.

Conclusion : The results have been supporting these hypothesis that the clinicalQ is a validated method for diagnosing mental disorders.

Keywords : concurrent validity; clinicalQ EEG; Structured Clinical Interview

Count: 209
Abstract ID: 629
subject: Neuropsychiatry and Psychology: Other
Presentation Type: Poster

The Effectiveness of Positive Therapy Training on the Mental Health of Spouses of Veterans of Psychiatric Nurses

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Background and Aim : Background and Aim: Veterans' husbands are severely pressured for physical and psychological problems, which is why their mental health affects them. And with positive psychotherapy can significantly reduce mental health. The purpose of this study was to evaluate the effectiveness of positive-therapeutic training on mental health of spouses of veterans of mental nerves.

Methods : : In this semi-experimental design with pretest-posttest design with control group, 40 wives of veterans with mental disorders who were referred to psychiatric hospital in Tehran in 2017 were selected using available sampling method. The subjects were randomly assigned into two groups of 20 experimental and control groups. The research instrument was General Health Questionnaire (GHQ-28). The experimental group was trained on a weekly basis for eight 90-minute sessions. Data were analyzed using covariance analysis.

Results : The mean scores of the two groups were significantly different in post-test with pre-test, pre-test, mental health and subscales, general health, physical symptoms, anxiety symptoms and sleep disorders, social function symptoms, and depression function.

Conclusion : Positive therapeutic education is effective on improving the mental health of spouses of veterans of mental nerves.

Keywords : Positive Therapy, Mental Health, Mental Veterans Wives

Count: 210
Abstract ID: 569
subject: Neuropsychiatry and Psychology: Other
Presentation Type: Poster

Quantitative electroencephalography (QEEG) in Psychiatric Disorders

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Background and Aim : Quantitative electroencephalography (QEEG) is a field concerned with the numerical analysis of electroencephalography data and associated behavioral correlates. Techniques used in digital signal analysis are extended to the analysis of electroencephalography (EEG). These include wavelet analysis and Fourier analysis, with new focus on shared activity between rhythms including phase synchrony (coherence, phase lag) and magnitude synchrony (comodulation/correlation, and asymmetry).

Methods : The analog signal comprises a micro voltage time series of the EEG, sampled digitally and sampling rates adequate to over-sample the signal (using the Nyquistprinciple of exceeding twice the highest frequency being detected). Modern EEG amplifiers use adequate sampling to resolve the EEG across the traditional medical band from DC to 70 or 100 Hz, using sample rates of 250/256, 500/512, to over 1000 samples per second, depending on the intended application. QEEG can be performed by open-source toolboxes such as EEGLAB or the Neurophysiological Biomarker Toolbox.

Results : Several QEEG products have received Class 2 FDA medical device clearance and the method has received some medical acceptance for use in epilepsy patients. However, QEEG has not been endorsed by the American Academy of Neurology or the American Clinical Neurophysiology Society. QEEG has been accepted for clinical application in some areas, such as cerebro-vascular disorders and epilepsy, though it remains yet to be accepted in other clinical areas, such as diagnosing mild traumatic brain injury or psychiatric disorders.

Conclusion : The use of qEEG techniques in investigations in clinical and research settings are ongoing. QEEG has also been utilized to provide neurofeedback, which is a form of biofeedback, wherein electrical activity in the brain is monitored by a computer program, which is applied to modulate visual or auditory stimuli - These stimuli, in turn, are designed to be controlled by the user. The review provides the future directions of research and aimed at expanding the evidence base of applied of QEEG and providing it as promising acceptable method in diagnostic.

Keywords : Quantitative electroencephalography (QEEG), signal analysis, Neurophysiology

Count: 211
Abstract ID: 673
subject: Neuropsychiatry and Psychology: Other
Presentation Type: Oral

Genetic risk factors for tendency to suicide detected in a neuroimaging genetic study

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Background and Aim : Suicide is a major public health problem, with almost one million people victims' world-wide each year. Psychological risk factors for suicidal behaviors are including, psychiatric and medical illness, impulsivity, aggression, alcohol and drug abuse specially stimulants, and low stress resilience. Genetic risk factors of suicide are not completely clarified. Our study aimed to detect genetic risk factors that increasing the vulnerability to committing suicide.

Methods : DNA was extracted from blood samples of 100 saved suicide victims with at least one attempt to suicide in last 12 months and 50 healthy subjects. Genotyping for the subjects was performed using the Affymetrix Genome-Wide Human SNP Array 6.0 (Affymetrix, Santa Clara, CA) according to the manufacturer's protocol.in addition five minutes rest state electroencephalography obtained from subject.

Results : Several SNPs were detected with genome-wide significance. The significant association found in 77 SNPs involved in dopaminergic pathway and neurodevelopment of CNS. 56 of significantly related SNPs were found as risk factors of psychiatric disorders specially schizophrenia; other 21 SNPs were related to the mitochondrial complexes, transcription factors and growth factor genes. High frequency of theta band in occipital lobe and decreased coherence in the frontal lobe were detected in suicide group.

Conclusion : The study showed strong genetic bases of suicidal thoughts that could be used for providing genetic prognostic markers for prediction of suicide risk along with electroencephalography neuromarkers. Also importance of mitochondrial complexes and growth factors in neuorobilogical functions and decision making processes of brain were showed.

Keywords : Suicide, SNP array, mitochondrial complexes, growth factors,electroencephalography

Count: 212
Abstract ID: 152
subject: Neuropsychiatry and Psychology: Other
Presentation Type: Poster

The relationship between perceived social support and hardiness with mental health and disability status among women with Multiple Sclerosis

Submission Author: Marzieh Hajibabaei

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Background and Aim : The purpose of this study was to determine relationships between perceived social support and hardiness with mental health and disability status among women with Multiple Sclerosis.

Methods : This study is a correlation contextual research. 83 female patients referred to the MS clinic of Tehran University completed the Multidimensional Scale of Perceived Social Support (Zimet and colleagues), the Expanded Disability Status Scale (Kurtzke), Mental Health (GHQ28) and the review of Kobasa personal views. Results were analyzed using parametric (descriptive and inferential) and nonparametric statistical methods.

Results : Statistical analysis showed that hardiness ($P < 0.01$, $r = -0.481$) control, ($P < 0.01$, $r = -0.401$) challenge ($P < 0.01$, $r = -0.423$) commitment ($P < 0.01$, $r = -0.427$) friendssupport ($P < 0.05$, $r = -0.268$) have positive correlation with mental health among women with MS. No significant relation between hardiness and perceived social support was found with disability status of women with MS.

Conclusion : Due to poor mental health of women with MS and also correlation between hardiness and its sub-scales with mental health, patients can enhance their mental health by increasing these skills.

Keywords : multiple sclerosis; hardiness; perceived social support; mental health; disability

Count: 213
Abstract ID: 633
subject: Neuropsychiatry and Psychology: Other
Presentation Type: Poster

The Effect of Relaxation on Anxiety in Patients with Epileptic Disease

Submission Author: ALIREZA ISLAMI

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Background and Aim : The purpose of this study was to investigate the effect of relaxation on anxiety in patients with epilepsy in Babol in 2017.

Methods : The research design was a quasi-experimental design with a pre-test, then a test with a control and experimental group. The statistical population of this study was all women with a history of epilepsy from 30 to 40 years old in Babol in the first half of 2017. Of these, 30 were selected by convenience sampling and placed in two experimental and control groups. . After selecting the sample group, a pretest was performed before the presentation of training, and after a one-month period, they were subjected to post-test. The instrument used in this research was Catholic anxiety inventory.

Results : The mean scores of the two groups in the post-test with control of the pre-test effect, were significantly different in the anxiety of those with a history of epilepsy.

Conclusion : The results showed that performing relaxation (relaxation of muscle tension) is effective in reducing the anxiety of people with epilepsy.

Keywords : Relaxation, Anxiety, Epilepsy

Count: 215
Abstract ID: 646
subject: Neuropsychiatry and Psychology: Other
Presentation Type: Poster

The Frequency of sleep disorders in children aged 5- 8 years old of Urmia in 2018

Submission Author: Iraj Mirkhan

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Background and Aim : Children have a major disorder in sleep disability because they have not yet been acquire the skills necessary to protect their cognitive and emotional functions. Therefore, the aim of this study was to investigate the prevalence of sleep disorders in children aged 5 to 8 Old of Urmia in 2018.

Methods : The present study was a Descriptive-cross-sectional. A total of 100 children aged 5 - 8 years old were selected through available sampling method in kindergartens in the Urmia city. The Sleep Disturbance Scale for Children (SDSC) was completed by mothers. Information was analyzed by spss 21.

Results : The results showed that the mean disorders of initiating and maintaining sleep 10.98, Sleep Breathing Disorders 3.7, Disorders of arousal 3.43, Sleep-Wake Transition Disorders 9.93, Disorders of excessive somnolence 6.86, Sleep Hyperhydrosis 3.26 Which at all scales had scores lower than the average, resulting in a lack of disorder. also Only a difference in Disorders of arousal between male and female ($p < 0.05$), and the scores of this disorder were higher in boys.

Conclusion : According to the results It can be said that the prevalence of sleep disorders in children was low. Also, the Disorders of arousal in boys is more than girls.

Keywords : Sleep Disorders, Children

Count: 216
Abstract ID: 16
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Neurotransmitters and Signaling Molecules
Presentation Type: Poster

Interaction between Tramadol and Methadone in kindling model of seizure and oxidative stress conditions in mice brain

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Background and Aim : There are paradoxical informations about role of tramdol in seizures,We aimed this study to assay role of opioid receptor in tramdol seizure

Methods : Tramadol (50 mg/mL) was infused at the constant rate of 0.5 mL/minute to mice. Infusion was cut if forelimb clonus followed by full clonus of the body. Dose of Tramadol (mg/kg mouse weight) to induce clonic seizures was as index of seizure threshold. Animals were divided into 4 groups of 6. Control group,tramadol (T) ,(Meth+T) and (Nal+T) group , 24 hours following injections, the animals were scarified .The brain tissues was assayed for malondialdehyde (MDA) ,glutathione (GSH) , Reactive Oxygen Species (ROS) ,protein carbonyl (PC) cintent

Results : The minimal dose of Tramadol to induce clonic seizures was 140 mg/kg and Naloxone could have increased the treshold to 175 mg/kg , combination of tramadol with methadone decreased the threshold significantly.Also combination of Naloxone with tramadole improved oxidative stress but methadone before tramadol has not increased oxidative stress significantly

Conclusion : The µ opioid receptor cane be involved in tramdol seizure and naloxone can be used for preventing seizure by tramdol in emergency conditions but much more precise clinical trials are necessary.

Keywords : Tramadol,Methadone,Naloxone,seizure,oxidative stress,in vivo

Count: 217
Abstract ID: 327
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Neurotransmitters and Signaling Molecules
Presentation Type: Poster

The impact of maternal diabetes on the offsprings brain BDNF level

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Background and Aim : One of the most common complications and important disorders during pregnancy is diabetes, which affects 10% of pregnant women during the gestation period and can cause various negative effects on the development of their fetus and their children based on the severity of the diabetes and its onset. According to the IDF report, 25.8 million children and adults suffer from diabetes in the United States, while 17% of the live births were born to diabetic mothers in 2013.WHO reports that over 220 million people are diabetic worldwide, a figure which is estimated to be doubled by 2030. Previous studies have shown that gestational diabetes can lead to widespread disorders in neurogenesis, migration, differentiation and cellular survival in the nervous system and also it can cause damage to synaptic plasticity in infants. Neurotrophins are one of the most important groups of signaling molecules in the brain and have different responsibilities such as, axon targeting, neuron growth, maturation of synapses during development, and synaptic plasticity. BDNF is a key neuroprotein in the central and peripheral nervous system and it is a strong regulator of neurogenesis, survival and differentiation of the neural population

Methods : Literature search was performed in PubMed library.

Results : BDNF regulates neuronal function and structure. in addition, it plays a role in proliferation, cell migration, plasticity and brain morphogenesis. The BDNF factor is involved in the homeostasis of glucose and energy, and is also found in endothelial cells, muscle cells, liver, adipose tissue, and active immune cells, and it is also stored in large quantities in blood platelets.BDNF plays an important role during the implantation in which it regulates the differentiation of cytotrophoblast as well as regulating expansion and survival of the placenta. Studies have shown that STZ injection into diabetic rats induces oxidative stress, decreased acetylcholine levels, and reduces the expression of BDNF and NGF in rats.

Conclusion : the results show that maternal diabetes causes abnormal fetal expression of neurotrophic factors such as BDNF , which is likely to play a role in later developmental disorders in the offspring

Keywords : maternal diabetes , BDNF , brain of offspring

Count: 218
Abstract ID: 137
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Channels, Receptors, Transporters,
Presentation Type: Poster

Orexin Type-2 Receptor Blockade Prevents the Nicotine-Induced Excitation of Nucleus Accumbens Core Neurons in Rats: An Electrophysiological Perspective

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Background and Aim : The nucleus accumbens core (NAcc) expresses orexin receptors and receives extensive orexinergic projections from the lateral hypothalamus (LH). The role of orexin-2 receptor (OX2R) in the regulation of NAcc neural activity has never been studied. Hence, in this study, we examined whether the OX2R antagonist (TCS OX2 29) can adjust the dopamine-dependent effects of nicotine on electrical activity of NAcc neurons, in urethane-anesthetized rats, using the single unit recording.

Methods : After 15 min of baseline recording from NAcc neuron, microinjection of orexin TCS OX2 29 (1, 3 and 10 ng/rat) or DMSO were executed, just 5 min before subcutaneous (sc) administration of nicotine (0.5 mg/kg) or saline, and the spontaneous firing activity continued to be recorded for 70 min, after nicotine injection.

Results : The results demonstrated that nicotine significantly excites the NAcc neurons and interestingly, the administration of TCS OX2 29 (3 and 10 ng/rat) into the NAcc, dose-dependently inhibited nicotine-induced increases of NAcc neuronal responses. Furthermore, administration of TCS OX2 29 (10 ng/rat), just 5 min before sc administration of saline instead of nicotine, could alter the neuronal responses, compared to the saline-control group.

Conclusion : In conclusion, our data revealed that TCS OX2 29 prevents the firing rates of nicotine-induced increases of NAcc neurons, so we propose the existence of an interesting interaction between nicotine and orexinergic system, and orexin system can play an important role in modulating the NAcc neurons firing rates. Further studies are required to clarify the fundamental mechanism of orexin system action, on NAcc neurons.

Keywords : Orexin system; TCS OX2 29; Nucleus accumbens core; Nicotine; Single unit recording.

Count: 219
Abstract ID: 460
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Channels, Receptors, Transporters,
Presentation Type: Poster

Role of CB2 cannabinoid receptors in pentylenetetrazole seizure threshold in mice

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Background and Aim : Epilepsy, with more than 1% worldwide prevalence, is the most common neurological disorder after stroke and Alzheimer's disease. Underlying cause of epilepsy is not found in two-thirds of patients. The endogenous cannabinoids (eCBs) are lipid-derived metabolites that are produced ''on-demand'' by postsynaptic cells and released immediately. CBs have both convulsant and anticonvulsant depending on the involved receptor (CB1 or CB2). However, the role of CB2 receptors in seizure activity is not fully determined. We examined involvement of CB2 receptors in pentylenetetrazole (PTZ) seizure threshold in mice.

Methods : Mice (n=10 in each group) received the CB2 receptor agonist, HU-308 (1, 5 and 10 µg/mouse), and the CB2 receptor antagonist, AM-630 (0.2, 1, and 5 µg/mouse) by intracerebroventricular (i.c.v.) injection. Two groups were considered as no injection, and solvent groups. After 10 min, the threshold of clonic seizures induced by PTZ was determined.

Results : AM630 increased seizure threshold in a dose-dependent manner (16% by 1 µg/mouse, and 33% by 5 µg/mouse, $P<0.05$). HU308 decreased seizure threshold dose-dependently (8% by 5 µg/mouse, and 13% by 10 µg/mouse).

Conclusion : The CB2 receptors are able to modulate PTZ seizure threshold and possess proconvulant effect.

Keywords : Seizure threshold; CB2 Cannabinoid receptors; Pentylenetetrazole; Mice

Count: 220
Abstract ID: 132
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Channels, Receptors, Transporters,
Presentation Type: Poster

Novel agonists of benzodiazepine receptors: Radioligand binding assay of 4,6-diphenylpyrimidin-2-ol derivatives.

Submission Author: Mona Khoramjouy

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Background and Aim : Radioligand receptor binding assay is quick and precise method, which can be used to determine the affinity of various ligands to the binding site of receptors in different tissues or samples, the distribution of receptors, and effects of physiological and pathological conditions on the expression of the receptors. The structure activity relationships (SAR) resulting from radioligand binding assays are used to design and synthesize new ligands as agonists or antagonists of receptors. There are two basic types of receptor binding experiments: saturation and competition. In Saturation studies determine the receptor binding affinity (Kd) and the receptor density (Bmax). In Competition studies, the affinity of ligands (Ki) are determined. The pharmacological effects of benzodiazepines (BZDs) such as anxiolytic, anticonvulsant, muscle relaxant, and sedative-hypnotic properties, make them the most important GABA-A receptor modulating medicines. New BZD receptor ligands with more selective effects and fewer adverse drug reactions were synthesized in the last two decades. In our previous studies, new 4,6-diphenylpyrimidin-2-ol derivatives as agonist or antagonist of benzodiazepine receptors were designed and synthesized. In this study, the affinity of ligands (Kd) and receptor density of tissue (B max) will be determined. [3H]-flumazenil is an antagonist of benzodiazepine receptors and is generally used as a radioligand. The effective ligands (high affinity) will be applied for further biological studies.

Methods : Male Sprague-Dawley rats weighing of 300-350 g will be anesthetized with isoflurane and then sacrificed. The cortical membrane tissue which is needed for radioligand binding assay are prepared as follows; the cortex tissues will be homogenized in ice-cold Tris–HCl buffer. The homogenate will be centrifuged. For the saturation binding studies of [3H]-flumazenil, seven different concentrations of [3H]-flumazenil were used. The amount of radioligand required to saturate the receptors was used to determine the receptor binding affinity of [3H]-flumazenil (Kd) and the benzodiazepine receptor density (Bmax) based on non-linear regression analysis of the saturation curve data. 100 µg of membrane protein in Tris-HCl buffer (50 mM, pH 7.4) was incubated with 8.6×10-

5 nmole [3H]-Flumazenil and increasing amount of 4,6-diphenylpyrimidin-2-ol derivatives in a final volume 0.5mL at 30 °C for 35 min.

Results : Based on results, the optimum conditions of radioligand receptor binding assay of benzodiazepines were 35 min incubation of ligands with 100 µg cortical membrane protein and 8.6 × 10-5 nmole [3H]-flumazenil in a final volume of 0.5 mL Tris-HCl buffer. The binding parameters of [3H]-flumazenil, Bmax and Kd were determined through saturation studies as 0.000526 ± 0.00047 nmol/mg and 1.2 ± 0.344 nM respectively. The affinity of compounds were measured and compared with each other.

Conclusion : The affinity of 30 derivative compounds of 4,6-diphenylpyrimidin-2-ol derivatives were determined. The results showed that approximately 10 out of 30 had higher affinities compared to diazepam. These compounds should be evaluated using pharmacological methods.

Keywords : Benzodiazepine; Radioligand receptor binding assay; [3H]-flumazenil; Rat

Count: 221
Abstract ID: 151
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Synaptic Transmission and Synaptic Plasticity
Presentation Type: Poster

Overexpression of rabies virus glycoprotein in the hippocampus strengthen synaptic function and memory performance

Submission Author: TARA ASGARI

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Background and Aim : Rabies is caused by a neurotropic virus of rabies (RABV) which exclusively infects neurons in the central nervous system. RABV encodes five essential proteins named N, P, L, M and G proteins. G protein (glycoprotein) has a main role in viral entry into neurons. It has been shown that RABV survives the host cells via anti-apoptotic effect of glycoprotein, probably through ion channels. This study was conducted to investigate the effect of RABV glycoprotein on memory performance and synaptic function in the hippocampus.

Methods : Plasmid containing the RABV glycoprotein genome was amplified and concentrated. It was packaged in lentiviral vector using HEK 293 cells, and then purified by high speed centrifugation. Two µl of the lentiviral vector was injected into the CA1 region under stereotaxic surgery and one week later, the rat's brain was cross-sectioned and green cells were detected under the fluorescent microscopy in order to confirm the gene expression. Spatial learning and memory was also assessed by Morris water maze. For electrophysiological study, the rats were anesthetized by urethane and long term potentiation was assessed in the perforant pathway one week after microinjection of the vector into the dentate gyrus.

Results : In this study, we found that expression of the RABV glycoprotein in the CA1 neurons improved spatial learning and memory, and also potentiated the synaptic function in the dentate gyrus of rats. This potentiation was independent to voltage gated potassium channel as the K channel opener and blocker, retigabine and 4-AP, did not reverse the effect. However, memantine as a NMDA antagonist blocked the potentiation induced by RABV glycoprotein.

Conclusion : In conclusion, our data indicated that over expression of glycoprotein of wild rabies virus facilitated synaptic transmission and boosted memory performance in a signaling pathway dependent to NMDA. However, further studies are needed to elucidate the underlying mechanisms.

Keywords : rabies, glycoprotein, NMDA, spatial memory, hippocampus

Count: 222
Abstract ID: 610
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Synaptic Transmission and Synaptic Plasticity
Presentation Type: Poster

Life style changing effects on Neuroplasticity in Multiple Scleroses Patients

Submission Author: Neda Hadizadeh

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Background and Aim : Multiple sclerosis (MS) is a chronic autoimmune disease of the central nervous system (CNS) that preferably affects young adults and causes a multitude of symptoms including visual disturbances, spasticity, weakness, impairment of walking, coordination difficulties, tremor/ataxia, sensory problems, and bladder disturbances. In addition, “invisible” symptoms such as fatigue, depression, and cognitive dysfunction are also common and may even be present early in the course of the disease. Apart from the widely known repair mechanisms like remyelination, another important phenomenon is neuronal plasticity. Initially, neuroplasticity was connected with the developmental stages of life; however, there is now growing evidence confirming that structural and functional reorganization occurs throughout our lifetime. Several functional studies have provided valuable data about the presence of neuronal plasticity in MS patients. CNS ability to compensate for neuronal damage is most evident in MS; however, it has been shown that brain plasticity is also preserved in patients with substantial brain damage.

Methods : Regardless of the numerous studies, the survey of lifestyle changing effects on neuroplasticity in Multiple Scleroses Patients is still not well considerate. Therefore, this article has been attempted to review past studies

Results : The result shows that the lifestyles can affect the neuroplasticity in significant ways to improve the brain plasticity and promote MS patients functions.

Conclusion : A diagnosis of MS can lead to depression and fear of stigma because the disease has the potential to progress to permanent disability. So concentrate on shifting to lifestyle changes that can alleviate symptoms and possibly extend the time span between attacks. Exercise, sleep, a healthy diet, and et al are the examples of lifestyle which may be part of the solution for multiple sclerosis patients. Researchers are increasingly looking to lifestyle to help mitigate the often-debilitating effects of MS, which include problems with muscle control, balance, vision, and thinking.

Keywords : Life style, Neuroplasticity, Multiple Scleroses.

Count: 223
Abstract ID: 46
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Gliology (Gliotransmission, Gliogenesis, Neuro-glia Cross Talk)
Presentation Type: Poster

chronic exposure to ketamine induces neuronal lose and glial reaction in CA4 region of hippocampus

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Background and Aim : Evidence has shown that even acute single dose of ketamine is associated with neurodegeneration in hippocampus. The aim of this study was to examine the effects of chronic exposure to ketamine on hippocampus proper in young adult male rats

Methods : Twenty young adult male wistar rats weighing 120-150 g were randomly divided into two groups. Experimental group received ketamine intraperitoneally at the dose of 10mg/kg for one week. The control animals only received saline. At the end of week animals were anesthetized and the hippocampus and adrenal were harvested for further study. Cytological examination of cresyl violet stained sections of ketamine group showed dark neurons in CA4 region

Results : The number of dark neurons in CA4 (15±3) showed meaningful difference with control ($P<0.001$). The weight of wet brain in ketamine group (1.34±0.04 gr) showed significant level of difference in comparison with those of control (1.6±.2gr) ($P<0.05$).

Conclusion : The presence of oligodendrocytes aggregation around degenerating and healthy looking neurons was only recognized in ketamine group. Also in ketamine exposed animals, hypertrophic astrocytes especially in white matter hilar region, were observed. According to our findings it could be concluded repeated or chronic ketamine use is associated neurodegeneration in CA4region of hippocampus and sever glial reaction.

Keywords : Ketamine, hippocampus, CA4, oligodendrocytes, astrocytes

Count: 224
Abstract ID: 276
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Gliology (Gliotransmission, Gliogenesis, Neuro-glia Cross Talk)
Presentation Type: Oral

Pharmacological Upregulation of Glutamate Transporter 1 Improves Cognitive Deficits in an Animal Model of Temporal Lobe Epilepsy

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Background and Aim : Epilepsy has been one of the major mental disorders through centuries. It is defined as spontaneous recurrent seizures and is accompanied by many cognitive abnormalities including learning and memory. It is well described that one of the main mechanisms underlying these cognitive deficits is glutamate excitotoxicity. Astrocytes play an important role in the epileptogenesis process as the main glutamate scavengers. Excess glutamate can be cleared by GLT-1 glutamate transporters and thus excitotoxicity can be reduced. In this study, the effect of GLT-1 pharmacological upregulation on object recognition memory was assessed.

Methods : Male Wistar rats (200-280 g) were randomly divided into 4 groups (N=5): 1. Control group (received vehicle); 2. Pilocarpine group (temporal lobe epilepsy was induced using pilocarpine); 3. Pil+Cef group (animals received pilocarpine and 5 injections of Ceftriaxone 200 mg/kg); 4. Ceftriaxone group (receiving only 5 injections of Ceftriaxone 200mg/kg). Animal model was induced by an injection of lithium (127mg/kg) followed by pilocarpine i.p. administration (30mg/kg), 20 hours later. Ceftriaxone was injected 48 hours and 24 hours before and after pilocarpine (five consecutive days). Seizure behavior was monitored 3 weeks after model induction and animals showing spontaneous recurrent seizures were chosen for behavioral analysis. Object recognition memory was assessed using Novel Object Recognition Task. The test was carried out in three phases. In the habituation phase, the animals were placed in the apparatus for ten minutes. 24 hours later, during the acquisition phase, animals were placed along with the familiar object and were given 10 minutes to explore the objects. 90 minutes later, a test trial of 3 minutes was taken, during which the animal's exploration behavior towards familiar and novel object was evaluated using a video camera and ANY-Maze tracking software. Gene expression was evaluated using RT-qPCR for GLT-1 mRNA transcript. Hippocampus was extracted and homogenized and RNA was extracted using conventional Trizol method. cDNA was synthetized using random hexamer primers and gene expression was studied by SYBR Green qPCR. Data was analyzed using GraphPad Prism 7.0.

Results : Analyzing the results obtained showed that temporal lobe epilepsy can severely damage object recognition memory in Pilocarpine group compared to Control animals ($p<0.05$). Ceftriaxone treatment increased GLT-1

expression ($p<0.0001$) and significantly improved object recognition memory studied in NORT compared to animals in Pilocarpine group ($p<0.001$). Exploration behavior was intact in all animals, showing that neither TLE induction, nor Ceftriaxone treatment do not affect this behavior.

Conclusion : TLE can increase excitotoxicity and consequently cause severe damage to hippocampus, the main center of learning and memory. In this study, it is demonstrated that decreasing glutamate excitotoxicity by targeting astrocytic glutamate clearance can reverse this damage. Further study is necessary to evaluate the therapeutic potential of this treatment on TLE cognitive defects.

Keywords : Epilepsy, learning, memory, GLT-1, astrocyte, NORT

Count: 225
Abstract ID: 523
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Seizure and Epileptic Disorders
Presentation Type: Poster

Arbutin administration attenuates memory deficit and neuronal loss in pentylenetetrazol-induced kindling model in mice

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Background and Aim : Epilepsy is one of the most common chronic neurological disorders which provoke progressive neuronal degeneration and memory impairment. In recent years, application of herbal compounds with anti-inflammatory properties, such as arbutin has been introduced as useful agent in reducing of the epilepsy symptoms. In this study, the effect of arbutin application on memory improvement and neuronal density was evaluated in pentylenetetrazol (PTZ)-induced kindling model

Methods : Male NMRI mice have received the daily injection of arbutin at dose of 25 and 50 mg/kg. All interventions were injected intraperitoneally (i.p.), 10 days before PTZ administration and the injections were continued until 1 h before each PTZ injection. Spatial learning and memory was evaluated using Morris water maze test after the 7th PTZ injection. Animals have received 10 injections of PTZ and then, brain tissues were removed. Immunostaining against NeuN as mature neuronal marker was performed on brain sections.

Results : Our results showed that arbutin administration reduced the seizures behavior and prevented cognitive impairment in fully-kindled animals. Immunostaining data demonstrated that the level of neuronal loss was reduced in animals under treatment of arbutin.

Conclusion : Overall, the results of this study suggest that arbutin administration effectively ameliorates memory impairment and alleviates the level of neuronal death in PTZ-induced kindling model.

Keywords : Epilepsy; Pentylenetetrazol; Arbutin; Spatial memory; Neuronal loss

Count: 226
Abstract ID: 124
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Seizure and Epileptic Disorders
Presentation Type: Poster

Leptin Reverses PTZ-Induced Impairment of Learning and Memory in the Rat Passive-avoidance Test

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Background and Aim : Leptin is a peptide hormone secreted by adipose tissue. Previous studies suggest that leptin plays a role in learning and memory. The life quality of patients with epileptic seizures is highly affected by cognitive deficits. There is some evidence that Leptin can have antiepileptic effects. The main goal of this research was investigating the possible effect of Leptin on seizure-induced learning and memory dysfunction.

Methods : To this end, Male rats were divided into 5 groups including control and pentylenetetrazol (PTZ) plus saline or Leptin (0.25, 1 or 2µg/kg). After one week of intrahippocampal surgery period, PTZ (50 mg/kg) was injected intraperitoneally and after 30 min, saline or different doses of Leptin were injected into bilateral CA1 region. Passive-avoidance test in order to measure the learning and memory behavior, started thirty minutes after the intrahippocampal injection of saline or Leptin.

Results : PTZ-induced seizure in rats showed deficits in learning and memory when passive avoidance test was performed ($P < 0.01$). Intrahippocampal injection of Leptin at the dose of 1µg/kg reversed the impairment in learning and memory behavior following seizure ($P < 0.05$).

Conclusion : These findings suggest that Leptin can improve memory in PTZ-treated rats.

Keywords : leptin - seizure - learning and memory - shuttle box

Count: 227
Abstract ID: 541
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Seizure and Epileptic Disorders
Presentation Type: Poster

Favorable effect of probiotics on cognition

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Background and Aim : Repeated seizure attacks lead to extensive neuronal damage and cognitive impairment such as memory loss and learning. Probiotics have been shown to reduce the frequency of seizures, resulting in extensive neuronal damage, and cognitive impairment such as memory loss and learning. Probiotics have reduced nitric oxide levels and improved memory and space learning The present study was designed to investigate the effect of probiotics on learning, memory and the antioxidant nitric oxide in epileptic rats.

Methods : In this experimental study, 40 male rats were randomly divided into five groups: control; kindeled by penthylenetetrazole (PTZ); kindeled and valproic acid administered (VPA); kindeled after probiotic treated (probiotic + PTZ), kindeled before probiotic treatment (PTZ + Probiotic). The animals were treated by a mixture of probiotic bacteria for 4 weeks. Chemical kindling was induced by intraperitoneal injection (35 mg / kg) of PTZ every 48 hours for 24 days. The learning and spatial memory were evaluated by Morris water maze. The brain nitric oxide was assayed by Miranda method; MDA concentrations was evaluated using the thiobarbituric acid reactive substance method. Data were analyzed by one-way ANOVA and LSD post-test.

Results : The oral bacteriotherapy partially improved the spatial learning($P<0.001$) and memory ($P<0.05$) in the kindled rats. The intervention also decreases NO($P<0.001$) and MDA($P<0.001$) oxidant biomarkers

Conclusion : Probiotic supplementation reduces the level of nitric oxide and improves the learning and memory process. Possible relationship between oxidative stressors and behavioral behavior needs to be further investigated.

Keywords : probiotics, spatial memory, chemical kindling, rat, stress oxidative

Count: 228
Abstract ID: 469
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Seizure and Epileptic Disorders
Presentation Type: Oral

The effect of omega-3 on the seizure attacks and inflammatory cytokines in drug-resistant epileptic patients: a double-blind randomized placebo-controlled clinical trial

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Background and Aim : To assess the effects of oral omega-3 as an adjuvant therapy with antiepileptic drugs (AED) on the clinical and para-clinical symptoms of drug-resistant epileptic (DRE) patients.

Methods : In this double blind randomized clinical trial (RCT), 40 DRE patients were studied in 2 groups. Omega-3 group (20 patients) received standard treatment of epilepsy plus 600 mg omega-3 twice a day for 4 months and soybean oil placebo group (20 patients) received only the standard treatment of epilepsy and soybean oil placebo. During the study, the numbers of seizures and attacks frequency were recorded. Also, before the starting of the intervention and after the treatment completion, tumor necrosis factor (TNF)-α and interleukin (IL)-6, as inflammatory cytokines were determined in the blood serum. Data were analyzed using the software Stata version 11.

Results : The results indicated that the number of seizures significantly decreased ($p<0.05$) in patients supplemented with omega-3 versus placebo group. Also, in patients receiving the omega-3, seizure frequency was reduced significantly 3 and 4 months after beginning of the study compared to placebo ($p<0.001$ and $p<0.01$; respectively). The 50% responder rateof omega-3was65% ($P<0.01$,versus placebo).Median percentage reduction in seizure frequency was 68%($P<0.01$,versus placebo). Additionally, at the end of the study, serum levels of TNF-α and IL-6 in the omega-3 group decreased significantly ($p<0.001$ and $p<0.05$; respectively) when compared to placebo.

Conclusion : According to the results, omega-3 can decrease the seizure attacks, and neuroinflammation. The findings of the current RCT strongly suggested that oral administration of omega-3 can be considered for using as a supplemental therapy in DRE patient.

Keywords : Drug-Resistant Epilepsy, Omega-3, Seizures, Inflammation, Clinical Trial

Count: 229
Abstract ID: 173
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Seizure and Epileptic Disorders
Presentation Type: Poster

Effects of Epilepsy on Sleep Habits of Epileptic Children

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Background and Aim : Epilepsy is one of the most common chronic neurological disorders that can have a detrimental effect on the quality of life of patient's .the children with epilepsy often experience many behavioral and psychological problems than healthy children. One of the most common behavioral problems in children with epilepsy frequently overlooked involves sleep disorders. Adequate sleep plays a vital role in overall health across all age groups. Unfortunately, disrupted sleep patterns for children and their parents are commonly seen clinically in tandem with childhood epilepsy. The purpose of this study is to determine the effects of epilepsy on sleep habits of epileptic children in Hamadan, Iran.

Methods : The present study was a descriptive- correlation study. Sample size was determined as 100 patients. Sampling was done using convenience sampling techniques. Data was collected by using The Early Childhood Epilepsy Severity Scale (E-Chess) and Children's Sleep Habits Questionnaire (CSHQ). It was analyzed by using SPSS (20) and descriptive and inferential statistics.

Results : The mean score of sleep habits were 55.0 ± 6.7. Bedtime resistance (12.1 ± 2.9), parasomnias (11.0 ± 1.8) and sleep anxiety (8.2 ± 2.46) were the most frequent sleep disorders in the studied samples. Based on Pearson's r, there were significant positive bidirectional relationships between bedtime resistance ($rs = 0.129$, $p < 0.019$), parasomnias ($rs = 0.298$, $p < 0.005$), sleep disordered breathing ($rs = 0.295$, $p < 0.005$), CSHQ total score ($rs = 0.144$, $p < 0.022$) on the one hand, and children's epilepsy severity on the other.

Conclusion : Epilepsy severity contributed to the sleep disturbances. Evaluation of sleep problems should form part of the comprehensive care of children with severe epilepsy.

Keywords : Sleep, Sleep disturbance, Epilepsy, Children

Count: 230
Abstract ID: 449
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Seizure and Epileptic Disorders
Presentation Type: Poster

Moderate treadmill exercise improved the anticonvulsive effect of carbamazepine in rat.

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Background and Aim : Epilepsy is a one of brain disorders mostly characterized by unpredicted, recurrent and spontaneous seizures. Some of people with epilepsy are resistant to drugs. Additionally, most of antiepileptic drugs such as carbamazepine have side effects, including drowsiness, behavioral changes, dizziness, and weight gain. Patients are commonly reluctant to use these drugs. Physical exercise has reduced seizure frequency as well as susceptibility to subsequently evoked seizures. This study was aimed the synergic effects of exercise on the carbamazepine as a common anticonvulsant treatment for tonic-clonic epilepsy

Methods : In this experimental study Sprague dawley rats were randomly divided into: 1) Seizure: seizures induced by intraperitoneal injection of 35 mg/kg PTZ each other day for 4 weeks. 2) Sham (solvent) 3) Exercise: animals were forced to run on a motorized treadmill consisted of running during experiment, 30 minutes daily 5 times per week 4) Carbamazepine: Carbamazepine at a dose of 25, 50 and 75 mg / kg for a period of four weeks, and half hour later, PTZ was. 5) Carbamazapin + exercise: Beside of treatment by carbamazepine (25, 50 and 75 mg / kg), animals were forced to run in the same protocol during seizure induction. The frequency as well as severity of seizuresand the number of normal and dark neurons was analyzed.

Results : Our study demonstrated that the frequency as well as severity of seizures and the number of normal and dark neurons in the exercise group significantly decreased compared to the seizure group. The frequency as well as severity of seizures and the number of normal and dark neurons in the carbamazepine + exercise groups significantly decreased compared to carbamazepine group .The effective dose of carbamazepine was significantly lower (50 mg/kg) in the carbamazepine + exercise groups than carbamazepine group (75 mg/kg).

Conclusion : Our finding showed the synergic effect of exercise on the anticonvulsive effect of carbamazepine. It suggests the potential effect of exercise to reduce the side effect of carbamazepine

Keywords : Epilepsy; Exercise; Seizure; brain; Carbamazepine

Count: 231
Abstract ID: 221
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Seizure and Epileptic Disorders
Presentation Type: Oral

The role of endocannabinoid system in mediating effect of Low frequency stimulation improvement on spatial learning and memory impairment by kindling

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Background and Aim : Introduction: Kindled seizures can impair learning and memory. Low frequency stimulation (LFS) in fully kindled animals has an improving effect on spatial learning and memory impairment by kindling. Recent studies have shown that the endocannabinoid system plays a regulatory role in the suppression of seizure activity. In the present study the role of endocannabinoid in mediating the improving effect of LFS on spatial learning and memory impairment by kindling was investigated.

Methods : Method: Animals were kindled by electrical stimulation of hippocampal CA1 area in a semi-rapid manner (12 stimulations per day). One group of animals received four trials of LFS at 30 s, 6 h, 24 h, and 30 h following the last kindling stimulation. Each LFS trial was consisted of 4 packages at 5 min intervals. Each package contained 200 monophasic square wave pulses of 0.1 ms duration at 1 Hz. a selective CB1 antagonist (AM251, 1 mg/kg) were injected Intraperitoneally 30 min before LFS.

Results : Result: LFS had an improving effect on kindling-induced impairment in learning and memory. Pretreatment of animals with AM251 reduced the improving effect of LFS on kindling-induced impairment in learning and memory.

Conclusion : Conclusion: Based on these results, we suggest that the improving effect of LFS on learning and memory impairment by kindling might be mediated through activation of endocannabinoid system (CB1).

Keywords : Keywords: endocannabinoid, Low frequency stimulation, kindling, learning and memory

Count: 232
Abstract ID: 219
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Seizure and Epileptic Disorders
Presentation Type: Poster

Effect of acute caffeine administration on PTZ-induced seizure threshold in mice and nitric oxide metabolites: Role of adenosine A2A receptors

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Background and Aim : Caffeine is a non-selective antagonist of A1 and A2A adenosine receptors (ARs). In this regard, nitric oxide-cyclic guanosine monophosphate (NO-cGMP) pathway is partly involved in the central effects of caffeine. Moreover, activation of A2ARs results in an increase in the NO production. Thus, the aim of the current study was to investigate the effects of acute administration of caffeine on pentylenetetrazole (PTZ) -induced clonic seizure threshold in mice and levels of nitric oxide metabolites (NOx) by focusing on A2ARs.

Methods : Male NMRI mice weighing 25-30 g were used in this study. The effect of caffeine (5, 50, and 100 mg/kg) or SCH-442416 (5 and 10 mg/kg) [a selective A2ARs antagonist] was investigated on PTZ- induced clonic seizure threshold. In pre-treatment groups, SCH-442416 (5 and 10 mg/kg) was acutely administrated 30 min before the best dose of caffeine. Seizure threshold was assessed by intravenous (i.v.) infusion of PTZ. Nitric oxide metabolites in the brain tissues were measured with the Greiss method.

Results : Caffeine at doses of 5 and 50 mg/kg significantly decreased seizure threshold ($P<0.05$ and $P<0.01$ respectively), while 100 mg/kg of caffeine did not change the seizure threshold. SCH-442416 (5 and 10 mg/kg) per se did not significantly change PTZ-induced seizure threshold, while as pre-treatment before 100 mg/kg of caffeine significantly decreased PTZ-induced seizure threshold. Only a dose of 100 mg/kg of caffeine significantly decreased NOx levels ($P<0.05$). SCH-442416 per se or as pre-treatment before 100 mg/kg of caffeine did not significantly change NOx levels.

Conclusion : The results of the present study confirmed and extended previous results that some doses of caffeine do not change seizure threshold. Probably, this effect of caffeine is partly due to decrease in NOx levels and attenuation of the NO-cGMP pathway. Meanwhile, considering different effect of caffeine in the absence and presence of SCH-442416, it seems that A2ARs is to somewhat involved in the effect of caffeine on seizure threshold.

Keywords : Caffeine,Seizure,Pentylenetetrazole, Adenosine, SCH-442416

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Abstract ID: 285
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Seizure and Epileptic Disorders
Presentation Type: Poster

TGFB Association with Febrile Seizures

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Background and Aim : Febrile seizure (FS) is the most common seizure in children with a prevalence of 2.5%. Pathogenesis of FSs involves both genetics and Inflammatory factors.

Methods : Seventy nine patients with FS were enrolled in this study and compared with 140 controls. Cytokine genotyping was performed, using polymerase chain reaction with sequence-specific primers. The allele and genotype frequency of three single nucleotide polymorphisms (SNPs) within the IL-10 gene at -1082, -819 and -592 positions (rs1800896, rs1800871, rs1800872), and two SNPs within the TGFB at codons 10 and 25 (rs1982037, rs1800471) were determined.

Results : No significant difference was detected in allelic frequency of IL-10 at -1082, -819 and -592 positions (rs1800896, rs1800871, rs1800872) and TGFB at codon 25 (rs1800471), between patients and controls. A significant negative association was observed at the codon 10/CT (rs1982037) in the patient group (OR, 0.5; 95%CI, 0.27–0.93; p = 0.026). Further, a negative association was detected in patients with simple FS at same position (OR, 0.41; 95%CI, 0.18–0.93; p = 0.03), thus revealing a protective effects in FS patients. There was no significant difference in allelic and genotype frequency between simple and complex FS samples. Furthermore, haplotype analysis

revealed significant difference in frequency of TGFB/TC haplotype in comparison between complex FS patients and controls ($p = 0.048$).

Conclusion : Certain alleles, genotypes, and haplotypes in TGFB genes were over represented in patients with FS, which possibly could predispose individuals to this disease.

Keywords : Febrile seizure, Gene polymorphisms, Interleukin-10, TGF-b

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subject: Epilepsy, Neural Excitability, Synapses, and Glia: Seizure and Epileptic Disorders
Presentation Type: Poster

Low-Complexity Epileptic Seizure Prediction Based on Linear Features and LDA Classifier

Submission Author: Ramin Ghalandari zade

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Background and Aim : Epilepsy is a neurological disorder that affects 1.5 percent of world's people. Nearly one third of this population are drug resistant who suffer from non controlled seizures. Therefore development a portable and reliable prediction system is prime of significance to increase the quality of patients' life. Studies of long term electroencephalographic signal (EEG) for epileptic patients indicate that it is possible to predict the seizures.

Methods : In this work we focus on a hardware efficient approach that relies to machine learning for prediction. In the proposed algorithm first the appropriate channels are selected by performing an automatic channel selection scenario. To select effective channels, we first use the Poisson correlation coefficient to remove channels that are highly correlated with the other. Then, using the Relief algorithm, we can obtain best channels that are capable of predicting epileptic seizure. Afterward linear and spectral features are extracted and proper features are selected by feature selection algorithm such as sequential feature selection. then by defining an appropriate cost function at the training stage, this feature selection method shows a good ability to acquire the proper features for classification stage. Finally using the LDA classifier the decision is made that the extracted features are related to a seizure or not.

Results : This algorithm was successfully test on CHB-MIT data set and the sensitivity and FPR were 98% and 0.16/h respectively.

Conclusion : while many methods have been presented for predicting epileptic seizure, however this method fail to work on longer EEG signal or complex method that give a good result in prediction is not efficient for hardware implementation, So we're looking for a patient-specific algorithm that effectively learn from patient data without need to high hardware complexity. So although, patient-specific approaches, can achieve high sensitivity and low error rates, but they are less generalized than deep neural networks methods that use very large dataset from many patients for learning, and thus future research need to be validated with real dataset.

Keywords : LDA classifier;channel selection;Relief;sequential feature selection

Count: 235
Abstract ID: 334
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Seizure and Epileptic Disorders
Presentation Type: Poster

The evaluation of ErbB4 receptor changes in the tonic-clonic seizures induced by pentylenetetrazol

Submission Author: Fariba Karimzadeh

Fariba Karimzadeh[1]

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Background and Aim : Epilepsy is one of the most neurological disorder that 0.5 – 1 percente of people in the world suffer of it. Variety of receptors may be involved in the pathogenesis of seizures. ErbB4 receptors have critical role in the pathophysiology of epilepsy. This study was aimed to assess the role of ErbB4 receptor in the pathophysiology of tonic-clonic seizures induced by pentylentetrazol (PTZ).

Methods : Method: Animal were divided to Control, Sham and PTZ groups. Seizures were induced during 4 weeks in PTZ group. The brains were removed to assess the gene expression of ErbB4 as well as protein level in the hippocampus and cortex areas. In addition, distribution of ErbB4 receptor was evaluated in the hippocampus and cortex areas.

Results : Results: The gene expression of ErbB4 in the somatosensory cortex and hippocampus of epileptic rats (PTZ) decreased compared to control and sham groups. Furthermore, distribution of ErbB4 receptors in the somatosensory cortex of epileptic rats increased compared to the others. In contrary, distribution of ErbB4 receptors in the hippocampal areas of epileptic rats decreased compared to the others.

Conclusion : Conclusion: These findings suggested the potential role of ErbB4 receptor in the pathogenesis of epilepsy. In addition, this receptor may be considered as an effective goal for seizure inhibition.

Keywords : Epilepsy, cortex, brain, rat

Count: 236
Abstract ID: 332
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Seizure and Epileptic Disorders
Presentation Type: Oral

Notch l discrepancies during development of chronic seizures induced by pentylenetetrazol

Submission Author: Fariba Karimzadeh

Fariba Karimzadeh[1]

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Background and Aim : Introduction: The critical role of Notch signaling has been shown in the pathophysiology of some neurological disorders including schizophrenia, epilepsy and Alzheimer's disease. In this study, the expression of Notch1 receptor was evaluated in the neocortex and hippocampus during development of chronic seizures induced by injection of pentylenetetrazol (PTZ) intraperitoneally (ip). In addition, the effect of pharmacological activation as well as inhibition of Notch 1 receptors was assessed on the epileptic activities following by PTZ injection.

Methods : Methods: The animals were divided into sham: normal saline was injected (ip) in the same as protocol of PTZ injection, Early stage group: PTZ was injected every 48 h over a period of one week and End stage group: PTZ was injected every 48 h over a period of 4 weeks. The gene expression as well as distribution of Notch 1 receptor was assessed in the parietal cortex and hippocampus. In addition, the effect of agonist or antagonist of Notch 1 receptor was assessed on the epileptic discharges induced by PTZ injection.

Results : Results: The gene expression of Notch 1 increased in the parietal cortex and decreased in the hippocampus significantly in the End stage group compared to sham, and early groups. Furthermore, distribution of Notch1 receptor increased in the somatosensory cortex in the End stage group. The Notch 1 receptor was down-regulated in the CA1 hippocampal area following induction of chronic seizures. Intraventricular microinjection of agonist significantly increased the amplitude as well as frequency and decreased the latency of spikes.

Conclusion : Conclusion: The changes of Notch 1 receptor expression in the neocortex and hippocampus during appearance of chronic seizures as well as its effects on the feature of epileptic activities suggest Notch signalling as a critical pathway to develop the chronic seizures.

Keywords : Epilepsy; Notch 1; Electroencephalogram; Neurobiology

Count: 237
Abstract ID: 333
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Seizure and Epileptic Disorders
Presentation Type: Poster

Alterations in Neuregulin 1 and ErbB4 expression in a genetic animal model of absence epilepsy

Submission Author: Fariba Karimzadeh

Fariba Karimzadeh[1]

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Background and Aim : Neuregulin 1 (NRG1) and its receptor ErbB4, play a crucial role in the pathophysiology of several neurological disorders, including schizophrenia and epilepsy. In this study, the expression of NRG-1 and its receptor ErbB4 in the somatosensory cortex and hippocampus were assessed during development of absence seizures in the WAG/Rij rats as a valid genetic animal model of absence epilepsy.

Methods : The cortical and hippocampal expression of NRG1 and ErbB4 receptors was assessed in four experimental groups of both WAG/Rij and Wistar rats at 2 and 6 months of age.

Results : We found that the mRNA and protein expression of NRG1 and ErbB4 was significantly lower in 2- and 6-month-old WAG/Rij rats compared to age-matched Wistar rats in the somatosensory cortex. Similarly, the mRNA and protein level of hippocampal NRG1 was lower than 2-month-old WAG/Rij rats compared to non-epileptic 2-month-old Wistar rats. However, we also found that the mRNA and protein level of hippocampal ErbB4 of 6-month-old WAG/Rij rats was higher than age-matched Wistar rats.

Conclusion : Our findings suggest the potential involvement of NRG1/ErbB4 pathway in the development and progression of absence epilepsy and could represent a potential therapeutic target for the treatment of absence seizures.

Keywords : WAG/Rij rats- Spike-wave discharges, Epileptogenesis, Brain

Count: 238
Abstract ID: 407
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Seizure and Epileptic Disorders
Presentation Type: Poster

Pregestational stress increased seizure susceptibility in offspring

Submission Author: Maryam Mahmoodkhani

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Background and Aim : Neurodevelopmental programming — the implementation of the genetic and epigenetic blueprints that guide and coordinate normal brain development — requires tight regulation of transcriptional processes.Epilepsy is a neurodevelopmental disorder which is strongly influenced by genetic and environmental factors .Many studies have found that stress during pregnancy is linked to an increased incidence of epileptic behaviors. However, few studies have investigated effect of pre-gestational stress on seizure susceptibility in offspring. We investigated the effect of pre-gestational stress on epileptic behaviors in offspring.

Methods : The male rats were predatory stressed (exposed to a cat) twice per50 (male) consecutive days. At the end of the stress procedure, the rats coupled as follows: male control /female control (Mc-Fc) ,male stress/female control.Then,the puppies born from these groups were evaluated for pentylentetrazole (PTZ)-induced seizure.Also in this study assessed sperm chromatin maturity using aniline blue (AB) staining.

Results : Statistical analysis was carried out using SPSS 16 software (SPSS/PC-16, SPSS Inc, USA).Data distribution was controlled using Kolmogorov–Smirnov test. The data that were normally distributed were analyzed using parametric techniques.Two-group comparisons were made using the t-test, whereas multiple-group comparisons were made using one-way ANOVA . The data that were not normally distributed were analyzed using Kruskal–Wallis .

Onset of first epileptic behavior significantly decreased in stressed groups. Number of focal seizure and number of tonic-clonic seizure significantly increased in stressed groups.Also significant differences were detected in the choromatin maturity of sperm between groups.

Conclusion : These data emphasize the impact of pre-gestational stress during spermatogenesis epileptic behaviors in offspringand epigenetic marks generated within germ cells as a result of environmental influences throughout life can also shape future generations long before conception occurs.

Keywords : Predatory stress- Pregestational period- Epilepsy

Count: 239
Abstract ID: 433
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Seizure and Epileptic Disorders
Presentation Type: Poster

Expression Analysis of CYFIP1 and CAMKK2 Genes in the Blood of Epileptic and Schizophrenic Patients

Submission Author: Amir Namvar

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Background and Aim : Altered cerebral function is a hallmark of many neurological disorders, including schizophrenia and epilepsy. Genetic predisposition is a known factor in the development of these disorders. Due to their common pathophysiology, a simultaneous study of different neurological diseases has helped scientists to better understand the underlying mechanisms. This approach facilitates identification of dysfunctional components, paving the way for developing treatments. Schizophrenia (SCZ) is a long-term health condition with variable neuropsychological pathologies leading to alterations in cognition, feeling, and perception of reality. Epilepsy is another prevalent neurological disorder associated with immune dysregulation. It is caused by abnormal balance between neuronal excitation and inhibition leading to synchronizing discharges. In 2012, Bozdagi et al. evaluated the role of CYFIP1 gene in physiology and synaptic performance of mice. They observed that the haploinsufficiency of this gene resulted in metabotropic glutamate receptor-dependent increase in long term depression (LTD). These results indicate the haploinsufficiency of the CYFIP1 gene is the main determinant of Fmr1 knockout mouse phenotypes. The results support a model in which haploinsufficiency of CYFIP1 in patients leads to intermediate phenotypes and increased risk of psychological and neurological disorders. In 2018, Noroozi et al. reported upregulation of in autism spectrum disorder (ASD). In a study by X-j Luo et al. converging lines of evidence strongly suggest that CAMKK2 has a pivotal role in susceptibility to SCZ. Based on the proposed roles of CAMKK2 and CYFIP1 in a spectrum of neurological disorders, we designed this study to determine relative expressions of these genes in SCZ and epileptic patients compared with healthy subjects.

Methods : In the present case-control study, we enrolled 40 patients with generalized epilepsy (20 females and 20 males, age mean 36.9 ± 2.3 years), 40 healthy controls matched with epileptic patients (23 females and 17 males), 50 schizophrenic patients (35 males and 15 females, age mean 47.50 ± 2.6 years), and 50 matched healthy controls (27 males and 23 females). Peripheral blood samples were collected from the participants. Total RNA was extracted. The cDNA was synthesized. Specific primers and probes for the CAMKK2 and CYFIP1 were designed. HPRT1 gene was selected as the reference gene to normalize expression levels of CAMKK2 and CYFIP1 genes. Real-time quantitative PCR was performed.

Results : The results show significant upregulation of the CYFIP1 gene in epilepsy, as compared with controls ($P < 0.029$). The transcript levels of CAMKK2 were not significantly different either between epileptic patients and healthy subjects or between age- and sex-based subgroups. Gender analysis in males and females demonstrated no significant difference in CAMKK2 gene expression between cases and controls in either sexes.

Conclusion : This study shows dysregulation in the gene expression level of CYFIP1 and CAMKK2 in two socially devastating neurological disorders, namely epilepsy and SCZ. Based on differential gene expression levels of CAMKK2 in SCZ patients (downregulation just in female patients), genes could play sexspecific roles in health and disease. Our results may also provide new insight into variations in pathogenesis based on subpopulations (age, sex, etc.) of patients suffering from epilepsy and SCZ.

Keywords : CAMKK2 ; CYFIP1 ; Epilepsy ; Schizophrenia

Count: 240
Abstract ID: 434
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Seizure and Epileptic Disorders
Presentation Type: Poster

Effect of Monophosphoryl lipid A on the rate of PTZ kindling in rat

Submission Author: Mozhde Radpour

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Background and Aim : Epilepsy is one of the most common neurological disorders worldwide. Neuroinflammation provokes epileptogenesis. Toll-like receptors of microglia play a central role in neuroinflammation. Monophosphoryl lipid A (MPL) is a toll-like receptor agonist inducing cytokine release and neuroinflammation. We examined the impact of MPL on the speed of pentylentetrazole kindling (PTZ) in rat.

Methods : MPL (1, 0.1, and 0.01 µg/ rat) were infused into the left lateral ventricle of male Wistar rats (n=6 for each group). In control group rats received solvent of MPL. Twenty-four hours after the injection, rats received PTZ (35 mg/kg, i.p.) every other day until manifestation of generalized seizures.

Results : Rats received MPL needed the less number of PTZ injections (0.01 µg/rat:5.8±,0.98 0.1 µg/rat:7.4±2.25,1 µg/rat: 5.4±2.2,) compared to control rats (11.5±3.5)to become kindled.

Conclusion : MPL as a toll-like receptor agonist increases the rate of kindling in rats.

Keywords : MPL;PTZ kindling;seizure

Count: 241
Abstract ID: 123
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Seizure and Epileptic Disorders
Presentation Type: Poster

Effects of intrahippocampal injection of Leptin on seizure-induced cognitive impairment in male rats

Submission Author: Hanie Safa

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Background and Aim : Leptin is a peptide hormone secreted by adipose tissue. Leptin also acts in the hippocampus where it facilitates the induction of long-term potentiation and enhances NMDA receptor-mediated transmission. This suggests that Leptin plays a role in learning and memory. There is some evidence that Leptin can have antiepileptic effects. This suggests that Leptin in the brain may be involved in cognitive deficits associated with seizure. In the current study, the possible effects of Leptin on spatial memory impairment following PTZ-induced seizures in male rats were examined.

Methods : Male rats were divided into 5 groups including control and pentylenetetrazol (PTZ) plus saline or Leptin (0.25, 1 or 2 µg/kg). After one week of intrahippocampal surgery period, PTZ (50 mg/kg) was injected intraperitoneally and after 30 min, saline or different doses of Leptin were injected into bilateral CA1 region. Morris water maze (MWM) training started thirty minutes after the intrahippocampal injection of saline or Leptin.

Results : Our results demonstrated the signi?cant impairment of spatial memory in PTZ group ($P < 0.01$). Intrahippocampal injection of Leptin at the dose of 1µg/kg signi?cantly improved spatial memory in PTZ + Leptin group compared to PTZ group ($P < 0.01$).

Conclusion : Obtained results showed that Leptin in PTZ-treated animals has an improving effect on spatial learning and memory.

Keywords : leptin - seizure - learning and memory - morris water maze

Count: 242
Abstract ID: 544
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Seizure and Epileptic Disorders
Presentation Type: Oral

The role of 5-HT3 receptors on the severity of seizure in the electrical amygdala kindled rats

Submission Author: Abdolrahman Sarihi

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Background and Aim : The most common epileptic syndrome in adults is temporal lobe epilepsy (TLE) and one of the most commonly used animal models of TLE seizures is the kindling model of epilepsy. Among different neuromodulators, serotonin has been shown to have anticonvulsant activity in various laboratory models of epilepsy. The aim of the present study was to investigate the role of 5-HT3 receptor antagonist on the severity of seizure in the electrical amygdala kindled rats.

Methods : Animals were randomly assigned to five groups as kindled, kindled + vehicle, kindled + Ramosetron (selective5-HT3 receptor antagonist) at the doses of 1, 10 and 100µg. Animals of the kindled group were stimulated according to the chronic kindling protocol (1 stimulation/day) and achieved to the stage 5 seizure after 10-15 days. Rats were implanted with a cannula aimed at The entorhinal cortex.

Results : In fully-kindled animals, only treatment by the high dose of Ramosetron (100 µg) reduced after discharge duration of amygdala compared with Kindled + vehicle group. The injection of three doses of Ramosetron did not change Seizure duration and Stage 5 duration. Data revealed that microinjection of Ramosetron at the dose of (100 µg) increased stage 4 latency.

Conclusion : Our finding shown that despite anticonvulsant nature of serotonin, 5-HT3 receptor antagonism suppressed kindling rate

Keywords : Ramosetron, entorhinal cortex, amigdala, kindling, rat

Count: 243
Abstract ID: 86
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Seizure and Epileptic Disorders
Presentation Type: Oral

Protective effects of Artemisia persica essential oil against pentylenetetrazol-induced seizure in male mice with an emphasis on its mechanism of action

Submission Author: Mahbubeh Setorki

Mahbubeh Setorki[1]

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Background and Aim : The purpose of this study is to investigate the protective effects of Artemisia persica essential oil against pentylenetetrazol-induced seizure in male mice

Methods : Seventy male BALB/c mice were randomly divided into seven groups of 10 each, consisting of control, PTZ, three intervention (given PTZ and 50, 75, and 100 mg/kg of A. persica essential oil), diazepam (given PTZ, 100 mg/kg of A. persica essential oil, and diazepam), and flumazinil (given PTZ, 100 mg/kg of A. persica essential oil, and flumazenil) groups

Results : Treatment with 50 mg/kg of A. persica essential oil significantly reduced seizure latency ($P < 0.05$) in mice with PTZ-induced seizure.Treatment with essential oil at 100 mg/kg significantly increased tonic seizures, and at 50, 75, and 100 mg/kg, significantly decreased head tics and spinning and jumping ($P < 0.05$).In rats receiving 100 mg/kg of essential oil and flumazenil, head tics and jumping and spinning did not significantly differ compared to those in PTZ kindling group. Treatment with different doses of A. persica essential oil significantly decreased serum nitric oxide level, serum and brain malondialdehyde levels, and serum antioxidant capacity in mice with PTZ-induced seizure ($P <0.05$).A. persica essential oil at 100 mg/kg also significantly decreased IL-1B and TNFα gene expression in epileptic mice ($P < 0.05$)

Conclusion : A. persica essential oil has protective effects against PTZ-induced seizure,which is possibly due to the effect of benzodiazepine receptors and its antioxidant and anti-inflammatory activity.

Keywords : Artemisia persica, Flumazenil, Diazepam, Seizure, pentylenetetrazole

Count: 244
Abstract ID: 571
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Seizure and Epileptic Disorders
Presentation Type: Poster

The relationship between iron deficiency anemia and simple febrile convulsion in children

Submission Author: Mojtaba Sharafkhah

Mojtaba Sharafkhah[1]

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Background and Aim : Simple febrile convulsion is the most common disease of the nervous system in children. There are hypotheses that iron deficiency may affect febrile convulsion and the threshold of neuron excitation. This study was conducted with the objective of finding the effects of iron deficiency anemia on simple febrile convulsion episodes.

Methods : The study was conducted at AmirKabir Hospital of Arak Medical Sciences University, Arak, Iran. This is a case-control study. In this study, 382 children who were selected according to our inclusion and exclusion factors, were divided into two groups of the case (febrile convulsion) and control (other factors causing fever) by their cause of hospitalization. After fever subsided, 5 ml blood sample was taken from each child and complete blood count and iron profile tests were performed. The results were interpreted using descriptive statistics and independent t-test.

Results : The prevalence of anemia in the group with febrile convulsion was significantly less than that in the control group: 22.5% of the children in the group with febrile convulsion and 34% in the control group exhibited anemia ($P < 0.001$). Moreover, the group with febrile convulsion had significantly higher blood indices, such as Hb, Hct, MCV, MCH, and MCHC, compared to the control group ($P < 0.001$).

Conclusion : Iron deficiency can prevent febrile convulsion in children and probably increases the threshold of neuron excitation in fever.

Keywords : Child; Iron deficiency; febrile convulsions

Count: 245
Abstract ID: 300
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Seizure and Epileptic Disorders
Presentation Type: Poster

Anticonvulsant activity of pistacia lentiscus gum in animal model

Submission Author: Asie Shojaii

Asie Shojaii[1]

1. Iran university of medical sciences

Background and Aim : Epilepsy is one of the most common neurological disorders which affect about 50 million people worldwide. Modern antiepileptic drugs caused some side effects, dose-related, chronic toxicity, and teratogenic effects. Also approximately 30% of the patients do not treat with current antiepileptic drugs therapy. Pistacia lentiscus ,commonly known as mastic tree, is a plant of Anacardiaceae family, which is recommended for treatment of seizure in Iranian traditional medicine. According to our investigations, antiepileptic effect of mastic gum has not been studied so far. So, in present study, anticonvulsant activity of mastic gum was studied in PTZ-induced seizure in rats for the first time.

Methods : In this study, anticonvulsant effects of hydroalcoholic extract of Pistacia lentiscus gum were examined by using pentylentetrazole (PTZ) (30 mg/kg, i.p.) model in rats. Pistacia lentiscus gum extract (50, 100 mg/kg), phenobarbital (1 mg/kg) and normal saline (2 ml, NS 9%) were injected (ip) 30 minutes before PTZ (30 mg/kg, ip), Pistacia lentiscus gum extract (100 mg/kg). The time taken before the onset of clonic convulsions (latency stages) and the duration of colonic convulsions, were recorded

Results : Pistacia lentiscus extract at the doses of 50 , 100 mg/kg before PTZ injection prolonged the time of onset of seizure (Stage 2, 4, 5 Latency) and decreased the duration of seizures (Stage 4,5 Duration) compared to control (saline) group ($p< 0.05$) in a dose-dependent manner.Also, injection of Pistacia gum extract and at dose 100 mg after PTZ injection showed significant increase in latency stage of duration(stage 2, 4 latency) and decrease the duration of seizures comparing to control group.

Conclusion : It seems that Pistacia lentiscus gum could be a good candidate and be useful for seizure control and treatment. Although further experimental and clinical studies are necessary to confirm this effects

Keywords : Pistacia lentiscus, gum, epilepsy, animal, seizure, PTZ

Count: 246
Abstract ID: 283
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Seizure and Epileptic Disorders
Presentation Type: Poster

GLT1 Glutamate Transporter Upregulation by Ceftriaxone Can Increase Glutamine Synthetase Expression In Acute Phase of Epileptogenesis

Submission Author: Amirhossein Vedadian

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Background and Aim : Epilepsy is defined as spontaneous recurrent seizures and is accompanied by many cellular and molecular abnormalities including gene expression and cellular reorganization. It is well described that one of the main mechanisms underlying these changes is glutamate excitotoxicity. Astrocytes play an important role in the epileptogenesis process as the main glutamate scavengers. Excess glutamate can be cleared by GLT-1 glutamate transporters and can be converted to Glutamine by Glutamine Synthetase (GS) enzyme. The glutamine is then transported to the nearby neurons for synthesis of GABA and glutamate. In this study, the effect of GLT-1 pharmacological upregulation on the expression of GS was assessed.

Methods : Male Wistar rats (200-280 g) were randomly divided into 4 groups (N=5): 1. Control group (received vehicle); 2. Pilocarpine group (temporal lobe epilepsy was induced using pilocarpine); 3. Pil+Cef group (animals received pilocarpine and 5 injections of Ceftriaxone 200 mg/kg); 4. Ceftriaxone group (receiving only 5 injections of Ceftriaxone 200mg/kg). Animal model was induced by an injection of lithium (127mg/kg) followed by pilocarpine i.p. administration (30mg/kg), 20 hours later. Ceftriaxone was injected 48 hours and 24 hours before and after pilocarpine (five consecutive days). Seizure behavior was monitored 4 hours and 3 weeks after model induction and animals showing spontaneous recurrent seizures were chosen for gene expression analysis, 72 hours and 31 days after model induction. To measure gene expression, RNA was extracted by conventional TRIzol method (RNX-Plus, SinaClone, Iran) from the hippocampus tissue. The concentration and integrity of extracted RNA was determined by UV spectrophotometry and gel electrophoresis. cDNA was synthesized using RevertAid First Strand cDNA Synthesis Kit (Thermo Fisher, USA). The primers were designed and synthesized by Macrogen, Inc. (Seoul, South Korea). Reaction system was 2X SYBR Green PCR Master mix (Parstous, Iran) 12.5 µl + upstream and downstream primers (10 pmol/ul) 1 µl each + cDNA template 1 µl, adding water to the total volume of 25 ul. The reaction condition was the same for all genes analyzed: an initial denaturation at 95°C for 2 min, and 40 cycles of 95°C for 15 sec, 58°C for 20 sec, 72°C for 25 sec. Amplification curves were constructed, and the relative expression of mRNA was calculated by 2-ΔΔCq method as previously described. Data was analyzed using GraphPad Prism 7.0.

Results : Analyzing the results obtained showed that temporal lobe epilepsy has no effect on the GS gene expression compared to control animals, while Ceftriaxone treatment can upregulate GS expression compared to that of animals in Pilocarpine group ($p<0.0001$). Furthermore, 31 days post SE, no significant change in GS expression is observed among the groups studied.

Conclusion : TLE can increase excitotoxicity and consequently cause severe damage to hippocampus. In this study, it is demonstrated that decreasing glutamate excitotoxicity by targeting astrocytic glutamate clearance can upregulate GS expression in short term and thus improve the glutamate-glutamine cycle. This improvement can further increase the glutamine needed for GABA synthesis. It is believed that malfunctioning of this cycle can severely damage synaptic activity and thus cause hyperexcitability.

Keywords : Epilepsy, GS, GLT-1, astrocyte

Count: 247
Abstract ID: 280
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Seizure and Epileptic Disorders
Presentation Type: Poster

Effect of betahistine on pentylenetetrazole induced kindling in mice

Submission Author: Azadeh Yazdi

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Background and Aim : Epilepsy is a brain disorder characterized by repeated and spontaneous attacks. Central histaminergic neuron system plays an important role in the inhibition of seizures through stimulation of histamine H1 receptors. Meanwhile, H3 receptor antagonists, which enhance endogenous histamine release in the brain, have been demonstrated to have a potent anticonvulsant action. Betahistine acts as a histamine H1-agonist and H3-receptor antagonist which causes an increased output of histamine from histaminergic nerve endings which can further increase the direct H1-agonist activity. In the current study, we evaluated the effect of betahistine administration in PTZ induced chemical kindled mice.

Methods : Kindling model was induced by i.p. injection of PTZ (36 mg/kg) once every 48 h until stage 5 seizures on three consecutive trials were achieved. Different doses of betahistine (1, 10, 20 mg/kg) were administrated every day started 8 days before PTZ injection continued until scarification. Animal behaviors were monitored for a period of 20 min after each PTZ injection.

Results : the finding showed that repetitive and chronic administration of betahistine at dose 1 mg/kg decreased the seizure induction stages. Additionally, an acute dose of 10 mg/kg promoted PTZ induced seizure while its chronic administration was effective.

Conclusion : chronic pretreatment of Betahistine at low dose decreases the stages of a seizure.

Keywords : betahistine; seizure; pentylenetetrazole, kindling

Count: 248
Abstract ID: 240
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Seizure and Epileptic Disorders
Presentation Type: Poster

The Effect of Electromagnetic Waves and Changes in Amount Intracellular Ions on Epilepsy

Submission Author: Mohadeseh Zahedi

Mohadeseh Zahedi[1], Saba Dehghani[2], Kimia Jazi[3], Samin Hakimi[4], Mahnaz Rahimi[5], Elham Alirezaie[6], Alireza Arezomand[7], Mohsen Eslami Farsani[8], Mohammadreza Azizkhani[9]

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Background and Aim : The purpose of this study was to investigate the effect of mobile electromagnetic waves on epilepsy. Epilepsy is a type of nerve disorder in which a restricted area or wide area of the brain exhibits self-mediated activity in which the proper functioning of the brain is impaired.Mobile electromagnetic waves: Cellular waves are a part of electromagnetic waves, these waves are a collection of photons that are transmitted perpendicular to electric and magnetic fields.

Methods : Search methods we performed systemic review of literature with related key words in Pub Med ,google Shclarand Europe PMC to gather information in articles published since 2014 and summarized here.

Results : According to studies, there is an association between electromagnetic radiation and epileptic seizures. Electromagnetic waves increase the sensitivity of the irritable cells of the nervous system and, as a result, affect neurotic behavior and epilepsy, as neural synapses play an essential role in the relationship between the neurons of the mammalian brain and the malfunction of these synapses through these waves Causes seizures. An example of these receptors is gamma aminobutyric acid (GABA) receptor, which is affected by electromagnetic waves of its gabarergicactivity in some regions of the brain. It has also been shown that prolonged exposure to these waves leads to a change in the level of calcium ions in the neurons and leads to oxidative stress. Generally, these waves change the transmission of nerve carriers and the function of ion channels, which can be the cause of prolonged seizure and the number of epileptic seizures.

Conclusion : As research shows that mobile-induced electromagnetic waves can affect the severity of epileptic seizures and the frequency of attacks it poses, increasing awareness and minimizing the use of cell phones can help improve recovery and reduce attacks. Epilepsy helped.

Keywords : Electromagnetic Radiation, Cellular Phone, mobile electromagnetic,,Seizures, Epilepsy

Count: 249
Abstract ID: 256
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Other
Presentation Type: Poster

The Nervous System and Neuronal Cell Stimulate and Effected by The Mobile Waves

Submission Author: Saba Dehghani

Saba Dehghani[1], Mahnaz Rahimi[2], Samin Hakimi[3], Kimia Jazi[4], Mohadese Zahedi[5], Hadi Dokhanchi[6], Alireza Arezomand[7], Mohammadreza Azizkhani[8], Mohsen Eslami Farsani[9], Fatemeh Heydari[10]

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Background and Aim : With the increasing use of mobile communication, concerns have been expressed about the possible interactions of electromagnetic radiation with the human organism and, in particular, the brain. Various studies indicate that the emissions from a cell phone can be extremely harmful, causing genetic damage, tumours, memory loss, increased blood pressure and weakening of the immune system. The fact that this radiation is invisible, intangible, and enters and leaves our bodies without our knowledge makes it even more intimidating.

Methods : We conducted a literature review about mobile radio on nervous system from 2008-2018usingscientific search engines and sites such as Google Scholar, Scopus, Academic Search, PubMed, Springer, SID, Iran doc … 74 articles were founded and then selected 33 article for this study.

Results : Most of the energy from a cellular telephone antenna is deposited in the skin and the outer portion of the brain (cerebral cortex) Several studies investigated the effects of radiofrequency electromagnetic radiation on evoked potentials in the brain. Radio waves arenon-ionizing radiation that does not have enough energy to break apart atoms and molecules and turn them into ions, which are electrically-charged particles. This means that "non-ionizing radiation does not damage genetic material (DNA) in molecules directly and cannot therefore cause cancer or any other illness in people." The radiation caused a duration-dependent biphasic effect on cholinergic activity in the brain. Many animal and human studies have reported various effects on the central nervous system and cognitive performance from of exposure to electromagnetic fields (EMF) emitted by mobile phones.

Conclusion : The evidence from above studies shows that the human brain is sensitive to cell phone radiation. The observed brain activity change cannot be explained by only a heating (or thermal) effect as a result of temperature rise from energy absorption. However, no underlying biological mechanism has been identified to explain the effects. We also don't know what health consequence may be resulted from such repeated stimulations. More research is still needed to understand the mechanism and long-term health effects of cell phone radiation on humans. The current safety standard did not take into account any non-thermal effects, such as evidenced in the above studies. As of today there is no known safe level of exposure to cell phone radiation.

Keywords : mobile waves, nervous system, brain

Count: 250
Abstract ID: 663
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Other
Presentation Type: Poster

Animal models of epilepsy: use and limitations

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Background and Aim : Epilepsy is a chronic neurological condition characterized by recurrent seizures that affects millions of people worldwide. Comprehension of the complex mechanisms underlying epileptogenesis and seizure generation in temporal lobe epilepsy and other forms of epilepsy cannot be fully acquired in clinical studies with humans. As a result, the use of appropriate animal models is essential. In the present review, we summarize some of the most frequently used rodent animal models of TLE, highlighting induction methods and manifestations as well as major uses and limitations.

Methods : In this review, we have searched different animal models of epilepsy with keywords “animal model”, “epilepsy”, and “seizure” in PUBMED, Science Direct, PLOS ONE and Frontiers in neurology. We have studied different methods in inducing epilepsy on rodent animals and their features such as usage, limitations, manifestation.

Results : Rodents with spontaneous recurrent seizures have been generated by using chemoconvulsants, primarily pilocarpine and kainic acid. Kainic acid was one of the first compounds used to model TLE in rodents. The systemic or intracerebral administration of which causes neuronal depolarization and seizures, preferentially targeting the hippocampus. Injected rodents show recurrent seizures, usually secondarily generalized and of variable frequency, with remarkable histopathological correlates of hippocampal sclerosis. Kainic acid has the advantage of causing habitually hippocampus-restricted injuries, unlike pilocarpine, which can also produce lesions in neocortical areas. Nevertheless, extrahippocampal areas are also significantly compromised in human TLE, making pilocarpine another useful chemoconvulsant. Pilocarpine is a muscarinic acetylcholine receptor agonist. Systemic or intracerebral injection of pilocarpine causes seizures that build up into a limbic SE. Structural damages and subsequent development of spontaneous recurrent seizures resemble those of human complex partial seizures. In fact, antiepileptic drugs (AEDs) that are effective against complex partial seizures in humans can also halt spontaneous seizures in the pilocarpine model. In addition, there are several network and neurochemical similarities between human TLE and the pilocarpine model. Other compounds such as pentylenetetrazol (PTZ), strychnine, N-methyl-D, L-aspartate, tetanus toxin, and penicillin are widely used as acute seizure models, and not as animal models of epilepsy. The difference is that seizure models may be useful for rapid screening of AED action, but they do not necessarily result in chronic epilepsy, with the exception of tetanus toxin, and probably of repeated penicillin injections. Animal models of seizures induced by electrical stimulation convey the advantage of reproducing

epileptogenic features in the intact brain with low mortality and high reproducibility. Moreover, unlike chemical-induced seizures, postictal alterations from electrical stimulation can be investigated when the epileptogenic cause is no longer present.

Conclusion : Chemoconvulsants allow for rapid investigation of epileptogenic mechanisms and AED screening at the expense of high mortality of subjects and high variability in the frequency and severity of spontaneous seizures. Electrical stimulation protocols are less harmful to subjects and offer better control of seizures, but electrophysiological procedures can be costly and time-consuming. The quest for seizure mechanisms can additionally provide insights into overall brain functions and consciousness, and animal models will continue to promote the progress of both epilepsy and neurophysiology research

Keywords : epilepsy, Animal model, seizure, chemical model, electrical stimulation

Count: 251
Abstract ID: 217
subject: Epilepsy, Neural Excitability, Synapses, and Glia: Other
Presentation Type: Poster

Effect of ketogenic diet on epilepsy

Submission Author: Mahnaz Rahimi jafari

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Background and Aim : Epilepsy is one of the most common and disabling neurologic conditions and it knows no age, racial, social class, geographic, or national boundaries. Epilepsy is defined as the condition of unprovoked, recurrent seizures. Children are particularly susceptible to seizures, and most forms of epilepsy begin in childhood

Methods : This article is a review of research regarding ketogenic diet in treatment of epilepsy.We performed systemic review of literature with related key words in pubmed , google sholar and Europe PMC to gather information in articles published since 2018 and summarized here This article is a review of research regarding ketogenic diet in treatment of epilepsy.

Results : The Ketogenic Diet (KD) is a well-established treatment for epilepsy in children and adults. . Ketogenic diet is a high fat low carbohydrate and low protein diet, which has been found to reduce epileptogenesis in body most probably by production of ketone bodies. This diet is also cheaper than most new anticonvulsants. The ketogenic diet's current success rate, when properly executed, greatly exceeds that of the medications which have recently become available. In this diet we may observe urinary problems, pain and other sensations, fatigue, daytime sleepiness, and cognitive impairment. The most common adverse is excessive hunger.

Conclusion : The ketogenic diet is an effective treatment for children with refractory epilepsy. Education and collaboration of the patient and their family is essential. The patient should be managed by an experienced multidisciplinary team using a protocol

Keywords : ketogenic diet, epilepsy, seizures

Count: 252
Abstract ID: 174
subject: Novel and Cutting-Edge Technologies: Brain Mapping (MRI, fMRI, PET, Brain Mapping, EEG, EMG, QEEG, FNIRS)
Presentation Type: Poster

A proposal of coordinate system for smelling sense to code through EEG signal

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Background and Aim : Smelling is in fact the perception of smells received by sensor cells in the nasal cavity. Smelling happens when odor molecules stick on the walls of smelling receivers. These receivers are used to get the messages of odors and send the signals to the smelling zone of the brain. One of those challenges in multimedia is the experience of smelling sense as it is interpreted as computer smell. In this research, our question was that, "can smelling signals be coded according to the kind of odor which is felt?"

Methods : Our purpose was to achieve an algorithm based on EEG signals to find a logical relationship between the kind of odor and the digit estimated and known as the code. In order to reach the certain goal, we should first prepare some arrangement which were in order, planning question form, selecting participants, using 16 channel system to get brain signals and choosing kinds of smells in our experiments. According to the process, we used different odors mixed by different percent of vanilla and cats food. The experiment began when the situation was relaxation and the subject was eye-closed. We started the 16 channel system and began to get the signals. Every person was to smell each smell for 8 seconds, 5 times and then 2 seconds of ventilation also 2 minutes of ventilation between 2 smells was done.

Results : In order to analyze the data, the time signal saved in the software were shifted from the time zone to the frequency zone. Then considering the last observations and article among the mass of data related to electrode and signals of frequency zone, we analyzed the Gamma band, Delta phase and Fp1, T3 electrodes in the front and side part of the brain. To reach a better result, we got an average as we repeated the experiment series times. Regarding the observations and analyze, we found out four important parameters Gamma power, Delta phase, smelling sense and mass volume. Based on these, we came to the result that volume is a separate parameter that may not come with other three parameters in a certain system, Ultimately, consider the received data, we planned the coordinate system

which is similar to a spherical coordinate system. Its radius is the smelling sense and the surface and vertical angles are Gamma power and Delta Phase, respectively.

Conclusion : As the way of transferring smell or smelling sense is an important challenge attracting researchers in this field, we looked for a logical algorithm based on important parameters to be was to code smells. By means of the EEG record system and by analyzing data and studying the last articles, we come to the conclusion that smelling and its sense can affect Gamma band and Delta phase in the front and side part of the brain. This led the definition of a coordinate system for smelling.

Keywords : EEG Brain Waves,Smell,Coding,Coordinate system

Count: 253
Abstract ID: 560
subject: Novel and Cutting-Edge Technologies: Brain Mapping (MRI, fMRI, PET, Brain Mapping, EEG, EMG, QEEG, FNIRS)
Presentation Type: Oral

Topography and Timing of Activity in Right Inferior Frontal Cortex and Anterior Insula for Stopping Movement

Submission Author: Amir Hossein Ashna

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Background and Aim : Stopping incipient action activates both the right inferior frontal cortex (rIFC) and the anterior insula (rAI). Controversy has arisen as to whether these comprise a unitary cortical cluster—the rIFC/rAI—or whether rIFC is the primary stopping locus.

Methods : To address this, we recorded directly from these structures while taking advantage of the high spatiotemporal resolution of closely spaced stereo-electroencephalographic (SEEG) electrodes.We studied 12 patients performing a stop-signal task. On each trial they initiated a motor response (Go) and tried to stop to an occasional stop signal. Both the rIFC and rAI exhibited an increase in broadband gamma activity (BGA) after the stop signal and within the time of stopping (stop signal reaction time, SSRT), regardless of the success of stopping.

Results : The proportion of electrodes with this response was significantly greater in the rIFC than the rAI. Also, the rIFC response preceded that in the rAI. Last, while the BGA increase in rIFC occurred mainly prior to SSRT, the rAI showed a sustained increase in the beta and low gamma bands after the SSRT.In summary, the rIFC was activated soon after the stop signal, prior to and more robustly than the rAI, which on the other hand, showed a more prolonged response after the onset of stopping.

Conclusion : Our results are most compatible with the notion that the rIFC is involved in triggering outright stopping in concert with a wider network, while the rAI is likely engaged by other processes, such as arousal, saliency, or behavioral adjustments.

Keywords : electrocorticography; frontal lobe; humans; inhibition

Count: 254
Abstract ID: 516
subject: Novel and Cutting-Edge Technologies: Brain Mapping (MRI, fMRI, PET, Brain Mapping, EEG, EMG, QEEG, FNIRS)
Presentation Type: Oral

Evaluating Brain Response to Culture-Inspired Design Through EEG Analysis: Neural Insights for Understanding Consumer Cognition and Sustainable Preferences

Submission Author: Amanollah Golshan

Ahad Shahhoseini[1], Amanollah Golshan[2]

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Background and Aim : There is an increasing tendency in design practice and architecture, usually referred to as Design for Sustainable Behavior (DfSB), to adapt methods and techniques from the field of neuroscience for sustainable purposes. Consequently, behavior change is of growing importance to successful sustainable design initiatives. Among systematic categorizations of relevant techniques, Behavior Change Wheel, which is based on a taxonomical review of all behavior change interventions, provides designers with a range of successful interventions that could be employed to yield the desirable result in DfSB. Prior researches identified three types of behavior generators within the Behavior Change Wheel: capability, opportunity, and motivation. Each generator is subsequently divided into two categories. As respects “opportunity”, there are physical and social factors, the latter stemming from the cultural milieu that dictates the way we think about things. Understanding cultural context and cognitive diversity are among prerequisites for DfSB. This research aims at investigating the role of culture in consumers perception and their product preferences through historical-cultural analysis and empirical experiment using QEEG analysis.

Methods : The kitchen element in the historical Iranian houses was investigated based on architectural, spatial, and semiotic methods and the resultant criteria were applied to a conceptual modern/contemporary kitchen design, three-dimensionally modeled using Rhino and Virtual-Ray programs. Ten Iranian students from Tabriz Islamic Art University participated in the experiment, during which they were presented by two kitchen designs, one the aforesaid three-dimensionally modeled concept and the other a typical design found in the bulk of the contemporary residences. A 64-channel EEG device was used to empirically observe and assess cortical activity of corresponding brain regions in the subjects. During the experiment, patterns of cortical activity in five principal frequency bands were acquired.

Results : The findings point out to a predominantly significant change in the EEG power spectral activities in the frontal, occipital, and temporal regions when participants were exposed to the culture-inspired concept design,

indicating a considerable pattern of preference in comparison to the typical contemporary design which did not obtain the same results for the cortical activities.

Conclusion : This study demonstrated that investigating cultural-historical elements in the built environments, particularly residential spaces, and applying the consequent criteria in the architectural designs may significantly contribute to augmenting user preferences, hence prolonging the design lifecycle and adding to the appeal of sustainable environments. It is also noteworthy that consumer preferences and cognition were shown to be significantly stemming from cultural contexts, subsequently indicating the role of culture in modifying neural mechanisms affecting choice and user satisfaction.

Keywords : neuroscience design, architectural cognition, design for sustainable behavior; Electroencephalogram (EEG)

Count: 255
Abstract ID: 369
subject: Novel and Cutting-Edge Technologies: Brain Mapping (MRI, fMRI, PET, Brain Mapping, EEG, EMG, QEEG, FNIRS)
Presentation Type: Poster

Changes in the Motor Cortex Activity During Imagining of the Execution of a Hand Movement Using Functional Near Infrared Spectroscopy

Submission Author: Maziar Jalalvandi

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Background and Aim : Near infrared Spectroscopy is a method used to study the changes in optical signals. fNIRS is a useful tool designed to record the changes in the density of blood's oxygenated hemoglobin (oxyHb) and deoxygenated hemoglobin (deoxyHb) molecules during brain activity. This method makes it possible to evaluate the hemodynamic changes of the brain during neuronal activity in a completely non-aggressive manner. The present study has been designed in order to investigate and evaluate the brain cortex activities during imagining of the execution of hand motor tasks which are performed many times every day.

Methods : The present study aimed at investigating the brain motor cortex activity during imagining of the execution of the right hand motor tasks in vertical and horizontal directions. In order to carry out the study, seven healthy young right handed volunteers (25 to 40 years of age) were asked to think about right hand movements in different directions according to the designed movement pattern. The required data were collected in two 845 and 763 nanometre wavelengths using a 48 channeled fNIRS machine (called OxyMonfNIRS manufactured by Artinis) compatible with MRI. 8 infrared transmitters and 8 infrared receivers were used for the purposes of this experiment which made up 20 channels in total. The distance between the transmitters and receivers was 30 mm, while the sampling frequency was 10 Hz. Furthermore, the obtained data were processed and analyzed using the NIRS_SPM toolbox.

Results : The results demonstrated that signal intensity of the brain motor cortex during imagining of the execution of motor tasks had increased significantly ($p \leq 0.05$) in comparison with the resting state. Analysis of the obtained data showed that the brain activity patterns during imagining of the execution of a movement form in various points of the motor cortex in terms of location. Moreover, depending on the direction of the movement, activity plans have

distinguishable patterns. The maximum activity during imagining of the execution of hand motor tasks was recorded in the primary motor cortex (M1).

Conclusion : The results of the present study showed that it is possible to record the hemodynamic changes of the motor cortex during imagining of the execution of a hand movement using fNIRS imaging. Moreover, the findings of our study showed that it is possible to distinguish between the patterns of brain activity during imagining of the execution of a hand movement in different directions using the recorded signals obtained through near infrared spectrograph. Furthermore, our findings can help develop this concept that the brain motor cortex has a role in encoding movement direction. Finally, the results of the study can be useful in further studies related to movement control and BCI.

Keywords : Hemodynamic, Optical Imaging, fNIRS, Motor Cortex .

Count: 256
Abstract ID: 484
subject: Novel and Cutting-Edge Technologies: Brain Mapping (MRI, fMRI, PET, Brain Mapping, EEG, EMG, QEEG, FNIRS)
Presentation Type: Poster

Radiotracers Used in Recent Nuclear Neuroimaging

Submission Author: Najme Karamzade Ziarati

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Background and Aim : Neuroimaging is an interdisciplinary field in which conventional radiology and nuclear medicine play important roles; however, the role of conventional radiology is more stablished. Although brain perfusion single photon emission computed tomography (SPECT), fluorodeoxyglucose positron emission tomography (FDG-PET), and dopamine transporter scan (DAT scan) are routinely used for evaluation of epilepsy, dementia and movement disorders, potential of nuclear medicine is much wider. Here, we review applications of various radiotracers in human brain imaging in both research and clinical usage in recent years.

Methods : This review examined 220 articles published since 2012/01/01 up to 2018/10/20 indexed in PubMed database using MeSH terms of neuroimaging AND human AND radionuclide. Case reports, animal studies and articles in which nuclear medicine modalities didn't have the main role were omitted.

Results : Among 220 articles published since 2012/01/01 to 2018/10/20, most of the studies performed about neurodegenerative disease especially Alzheimer, movement disorders, depression, substance abuse and smoking, brain tumors and also epilepsy using various radiotracers. Other entities include psychosis, eating disorders, personality assessment, neuro inflammation, vascular disease, aging, alcohol consumption and attention deficit hyperactivity disorder (ADHD). Tau binding, cerebral blood flow, glucose metabolism, serotonin transport and dopamine receptor binding were the most commonly evaluated pathways for assessing mentioned diseases. [18F]-FDG, [11C]-PiB, [15O2]-Water, [18F]-Fallypride were the utmost used tracers.

Conclusion : The data obtained shows wide capability of nuclear medicine for assessment of neural pathways and also neuro/psychological disorders. In addition to further prospective and controlled studies, more interactions between the various specialties, particularly neurology, psychiatry and clinical psychology, as well as neurosurgery with nuclear pharmacy and nuclear medicine are needed to explain the appropriate imaging indications with different radiotracers.

Keywords : neuroimaging, nuclear medicine, PET, SPECT, radiotracer

Count: 257
Abstract ID: 189
subject: Novel and Cutting-Edge Technologies: Brain Mapping (MRI, fMRI, PET, Brain Mapping, EEG, EMG, QEEG, FNIRS)
Presentation Type: Poster

The Religious Brain: Exploring the Effect of Listening to Quran Recitation on Fronto-parietal Network

Submission Author: Reza Kazemi

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Background and Aim : Religious practices have been associated with cognitive experiences affecting the frontal-parietal network. According to Islamic texts, every surah of the Quran has therapeutic benefits and the Ensān Surah can ameliorate depression. The present study aimed to investigate the effects of listening to the Ensān Surah recitation on the frontal-parietal network, which plays a crucial role in cognitive control and emotion processing. We hypothesized that listening to the Ensān Surah recitation would reduce all frequency bands in the frontal-parietal network

Methods : Quantitative electroencephalography was performed on 78 subjects in three groups of before, during and after the intervention. In the experimental group, 26 subjects listened to the Ensān Surah. In the first control group, 26 subjects listened to an Arabic voice that was simulated as a Quranic surah (fake surah). In the second control group, the sound of nature was played for 26 subjects.

Results : Results of the current density analysis indicated that listening to the Ensān Surah reduced the current density in all frequency bands in the middle frontal gyrus, parahippocampal gyrus, uncus, parietal lobule and cuneus in comparison with the baseline. Listening to a fake surah, on the other hand, reduced delta in the posterior parietal lobe; and listening to the sound of nature reduced all frequency bands except for alpha in the parahippocampal gyrus, middle temporal gyrus, posterior parietal lobe and middle occipital gyrus.

Conclusion : Effects of listening to Quran recitation (Ensān Surah) on the frontal parietal network can indicate possible effects of this surah on depression, where cognitive and emotional balance is partly impaired

Keywords : Quran Recitation, Current Source Density, eLORETA, fronto-parietal network

Count: 258
Abstract ID: 382
subject: Novel and Cutting-Edge Technologies: Brain Mapping (MRI, fMRI, PET, Brain Mapping, EEG, EMG, QEEG, FNIRS)
Presentation Type: Oral

Nero-linguistic basis of verbal suggestibility: An EEG study

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Background and Aim : Verbal suggestibility is a linguistic-cognitive trait referring to individualstendency to respond to interrogative prompts with a bias. It has been extensively researched for the last century, mostly by forensic psychologists, and several instruments for its assessment have been developed. However, little is known about the neural bases of verbal suggestibility

Methods : In the present study electroencephalographic (EEG) recordings were obtained from electrode placements over the left and right frontal and parietal lobes of the brain in in 23 monolingual Persian speakers answering to a 9-item verbal suggestibility scale.

Results : Analysis of the EEG data revealed a wide range of left hemispheric participation in responding to various items. The findings are directionally consistent with the results of language assessment studies.

Conclusion : Besides, it implies that linguistic difficulties of suggestibility prompts may exist on a neuro-linguistic level, such that the process of responding to open-ended questions is different from that of answering forced-choice and yes/no questions.

Keywords : verbal suggestibity, EEG, questions, neuro-linguistic

Count: 259
Abstract ID: 401
subject: Novel and Cutting-Edge Technologies: Brain Mapping (MRI, fMRI, PET, Brain Mapping, EEG, EMG, QEEG, FNIRS)
Presentation Type: Poster

Investigating the quantitative effect of electroencephalography on emotional intelligence

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Background and Aim : Emotional Intelligence (EI) is a set of competencies that enable you to maximize your performance, the performance of others, and the performance of your organization. Relatively little attention, however, has been directed towards the use of electroencephalography (EEG) and emotional intelligence measures even though there are emerging theoretical models from disparate areas that posit a possible contribution of brain-based measures of emotion and emotional intelligence to the origins and maintenance of externalizing-related behaviors. So, the aim of this study is to Investigating the quantitative effect of electroencephalography on emotional intelligence.

Methods : This review article was carried out by searching for studies in PubMed, Embase, and Scopus and Cochrane library (from Jan 2008 to Mar 2018), by using the search terms “Emotional Intelligence” “electroencephalography” and “EEG”. The search was limited to articles published in English. In this review, 310 articles that are associated with the subject, were found and of these, 32 articles were applied.

Results : According to studies have provided converging evidence that frontal asymmetries were one of the determinants of emotion dispositions and behaviors, and as observations on individuals with a high level of emotional intelligence parallel those on people with a left-sided frontal cortical asymmetry in nearly every respect. The level of emotional intelligence was associated with differential frontal activation. The pattern of resting electroencephalographic (EEG) activation recorded in the frontal areas was significantly associated with emotional intelligence. Individuals with higher trait EI evidence greater resting left frontal activation. But on the other hand, few of the studies show that no relation between emotional intelligence and the pattern of resting frontal EEG activity in children.

Conclusion : Based on the results, it seems that the construct of trait emotional intelligence might be particularly well-suited to capture the socio-emotional dispositions affected by frontal EEG asymmetries. This is all the more remarkable as trait EI is measured via self-reports, which some have claimed to constitute unreliable measures of EI. These results are of interest to both EI and frontal EEG asymmetries fields.

Keywords : Emotional Intelligence; electroencephalography; EEG;

Count: 260
Abstract ID: 413
subject: Novel and Cutting-Edge Technologies: Brain Mapping (MRI, fMRI, PET, Brain Mapping, EEG, EMG, QEEG, FNIRS)
Presentation Type: Poster

Alzheimer's disease and declined default mode network functional connectivity: when memory-related subsystems of DMN orchestra are out of tune

Submission Author: Bahman Sadeghi

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Background and Aim : Functional magnetic resonance imaging (fMRI) of default mode network (DMN) brain activity in rest may be a noninvasive biomarker in Alzheimer's disease (AD) diagnosis. Although brain activation was majorly investigated by task fMRI, task-induced decreases in brain activity occurring in DMN, called deactivations, recently gained attention in parallel with DMN baseline activity and rsfMRI of DMN functional connectivity (FC).

Methods : Independent component analysis (ICA) was used to identify DMN components, and multivariate Granger causality analysis (mGCA) was employed to scrutinize an effective connectivity pattern. Strength and number of FCs in DMN intra- and inter-subsystems were also estimated.

Results : Results show a diminished DMN FC and task-induced DMN deactivations in continuum from normal aging to mild cognitive impairment, and to AD. Those at risk for developing AD, either in terms of having amyloid plaques or carrying ApoE ε4 allele, indicated significant disruptions in DMN. In nondemented subjects, no marked differences in activity within DMN could be detected comparing ApoE ε4 carriers against noncarriers. In addition to previous studies, FC strength and number in AD were reduced in right inferior temporal cortex, medial temporal lobe (MTL), posterior cingulated cortex (PCC), and partially in dorsal medial prefrontal cortex (dMPFC).

Conclusion : Posterior inferior parietal lobule had a decreased FC with hippocampus, parahippocampal cortex (PHC) and ventral MPFC indicating significant disruption in memory-associated subsystems of DMN. Hippocampal formation and PHC also demonstrated decreased FC with dMPFC and PCC. In conclusion, predominant reduction in intrinsic FC can be associated with MTL and dMPFC subsystems of DMN in AD subjects.

Keywords : Alzheimer's disease; Default mode network; Functional magnetic resonance imaging; Functional connectivity; medial temporal lobe; dorsal medial prefrontal cortex

Count: 261
Abstract ID: 649
subject: Novel and Cutting-Edge Technologies: Brain Mapping (MRI, fMRI, PET, Brain Mapping, EEG, EMG, QEEG, FNIRS)
Presentation Type: Poster

Investigating the latency and amplitude N1 and LPP components in the moral judgment of difficult and easy dilemmas

Submission Author: Seyedeh Khojasteh Seyedbagheri

Seyedeh Khojasteh Seyedbagheri[1], Farnaz Ghassemi[2]

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Background and Aim : Among all cultures, morality is an incarnation of human nature. This social structure is meaningless regardless of brain functions. Moral judgment can be defined by assessing one's performance with respect to the norms and values of the community. The difficulty level of a moral judgment has been studied by Green et al. and he had introduced some prototypes for easy and difficult dilemmas. Recently, Event Related Potentials (ERPs) have been used as a tool for studying cognitive processes such as ethical decision making. Yoder et al (2014), Zhan et al (2018), Keshvari et al (2016), Sarlo et al(2012), Tang et al(2015), Gan et al(2016), Pletti et al(2015) and West et al(2014) have shown that N1 and LPP components are evoked when one is involved in a moral judgment. N1 and LPP components are mostly seen in the time ranges of 80-180 ms and 250-400 ms respectively. The goal of this study is to investigate the difference of these components` features in moral dilemmas with different levels of difficulty.

Methods : Dilemmas are selected from Green's studies and divided into difficult and easy groups. Within One week prior to the main experiment, participants were familiarized with the moral dilemmas which were prepared in a PowerPoint file. Each slide is devoted to a dilemma, which includes its name, story, and the image that is related to. The judgment of the person is not involved in this meeting. In the main experiment, the subjects are asked to honestly judge the dilemmas while they are assured that there is no correct answer to moral dilemmas. Nine Subject (female) were participated in this study. The EEG signals of these subjects were recorded during the before mentioned task in Iran National Brain Mapping Centre. Then ERPs were calculated in Fz, Cz and Pz channels for two groups of difficult and easy dilemmas. The amplitudes and latencies of N1 and LPP components were extracted. After examining the features distribution normality and its lack of proof, the Wilcoxon signed-rank test was used to investigate the differences of N1 and LPP amplitudes and latencies between the difficult and easy dilemmas.

Results : Based on the results, there is no significant difference in the latency and amplitude of N1 and LPP components between difficult and easy dilemmas in any of the studied channels. For example mean latency and amplitude for N1 component in Fz channel in difficult and easy dilemmas are: 120.660 ms, -5.164 uv and 111.980 ms and -6.192 uv respectively.

Conclusion : According to the results of this study, no significant difference was observed in the amplitude and latency of the components N1 and LPP between difficult and easy moral dilemmas in the Midline electrodes. In study Zhan et al (2018), a similar result has been reported for component N1, although there are differences between the tasks of two studies.

Keywords : Moral judgment; EEG signal; Event related potentials

Count: 262
Abstract ID: 356
subject: Novel and Cutting-Edge Technologies: Brain Stimulation Methods (ECT, rTMS, TDCS, DBS)
Presentation Type: Poster

Evaluate the effect of Transcranial direct current stimulation on children

Submission Author: Mitra Abdolvand

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Background and Aim : Transcranial direct current stimulation (TDCS) is a non-invasive neuromodulation technique that has been used to improve cognitive functions such as memory, language, and attention. Its impact has been proven in adults, But in children, information is available sparse. So, the aim of this study is to collect and evaluate the effect of TDCS on children.

Methods : This review article was carried out by searching for studies in PubMed, Embase, and Scopus and Cochrane library (from Jan 2000 to Mar 2018), by using the search terms “Transcranial direct current stimulation” “TDCS” and “children”. The search was limited to articles published in English. In this review, 310 articles that are associated with the subject, were found and of these, 32 articles were applied.

Results : Based on studies, TDCS in children is used to treat diseases, such as attention-deficit/hyperactivity disorder (ADHD), epilepsy, cerebral palsy and treatment-resistant, and non-treatment-resistant depression. In term of doses in children, the 0.5 mA cathodal TDCS decreases corticospinal excitability. Children will be exposed to higher peak electrical fields for a given applied current intensity than adults (similar to adults with smaller head size). In articles, the group that treated with TDCS exhibited better results in comparison to the control group. It appears to improve cognitive performance and TDCS has been reportedly associated with no serious adverse effects with the most frequent adverse effects being headaches, itchiness, and redness at the site of stimulation.

Conclusion : According to results, transcranial direct current stimulation (TDCS) at a higher dose than adults is effective in children with neurologic problems. And it doesn’t have serious adverse events.

Keywords : TDCS, children, Transcranial direct current stimulation

Count: 263
Abstract ID: 390
subject: Novel and Cutting-Edge Technologies: Brain Stimulation Methods (ECT, rTMS, TDCS, DBS)
Presentation Type: Poster

Evaluate the effect of repetitive transcranial magnetic stimulation on treating the spectrum of depression

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Background and Aim : Repetitive transcranial magnetic stimulation (rTMS) is a noninvasive form of neurostimulation in which rapidly changing magnetic fields are applied to the surface of the scalp through a copper wire coil connected to a magnetic stimulator. Some preliminary studies suggest a beneficial effect of rTMS on depression. However, adequately controlled studies have not been conducted. So, the aim of this study is to evaluate the effect of rTMS on treating the spectrum of depression.

Methods : This review article was carried out by searching for studies in PubMed, Embase, and Scopus and Cochrane library (from Jan 2008 to Mar 2018), by using the search terms “repetitive transcranial magnetic stimulation” “rTMS” and “depression”. The search was limited to articles published in English. In this review, 310 articles that are associated with the subject, were found and of these, 32 articles were applied.

Results : Depression has been associated with low brain-derived neurotrophic factor (BDNF) serum levels, and according to studies showed that repetitive transcranial magnetic stimulation can decreased serum BDNF and depression symptomatology. Also, the antidepressant mechanism of add-on rTMS can be reflected as suppression of hyperactivity in the left temporal cortex and fusiform gyrus, perhaps through enhancing the function of the medial prefrontal cortex and anterior cingulum. And clinical articles showed that Scores on the Hamilton Depression Rating Scale (HDRS) showed a statistically significant time×group interaction with a reduction after rTMS.

Conclusion : The findings emphasize that rTMS might become a safe, non-convulsive alternative to electroconvulsive treatment in depression. So, rTMS has demonstrable beneficial effects in depression.

Keywords : repetitive transcranial magnetic stimulation; rTMS; depression;

Count: 264
Abstract ID: 627
subject: Novel and Cutting-Edge Technologies: Brain Stimulation Methods (ECT, rTMS, TDCS, DBS)
Presentation Type: Oral

A new method for magnetic stimulation of brain and Assessment of its effects on attention

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Background and Aim : The brain uses a number of specific frequency bands to process information and perform various activities. Using a magnetic coil with low magnetic field strength (LMFS), the polarization and depolarization frequencies of the brain neurons is affected. This device uses a new design to stimulate cerebral neurons to change the activity of various brain regions. This kind of stimulation, unlike previous technologies, is presented in the form of a small, portable device with impressive protocols using a very low magnetic field strength. After stimulation, the cells tend to be active in the frequency domain.

Methods : To evaluate the effects of this device on the attention and concentration of 19 subjects, an experimental research design was used. At the same time, the test of d2 was used for parallel examination of the effects of this device on attention. In the final phase, quantitative electroencephalography (QEEG) was used to monitor the cortical and subcortex stimulation changes.

Results : The results of the comparison of attention scores in the pre-test D2 and its post-test after the stimulation by the paired t-test showed a significant increase in the score of attention ($n = 19$, $t = 7.887210$, $p < 0.05$). In the study of brain function, index of Theta/beta (attention index) improved in 89.47% of the statistical sample with improvement (decrease).

Conclusion : The BWR-Beta1 device seems to be effective in the attention and focus and changing of the brain Activity.

Keywords : magnetic stimulation, BWR-Beta1, attention and concentration, brain activity

Count: 265
Abstract ID: 432
subject: Novel and Cutting-Edge Technologies: Brain Stimulation Methods (ECT, rTMS, TDCS, DBS)
Presentation Type: Poster

The effect of transcranial direct current stimulation (tDCS) on emotional intelligence – a systematic review

Submission Author: Pegah Yabande

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Background and Aim : Emotional Intelligence (EI) is a set of competencies that enable us to maximize our performance, the performance of others and the performance of our organization. Transcranial direct current stimulation (tDCS) is a non-invasive neuromodulation technique that has been used to improve cognitive functions such as memory, language, and attention. The aim of this review is to evaluate the effect of tDCS on emotional intelligence.

Methods : Emotional Intelligence (EI) is a set of competencies that enable us to maximize our performance, the performance of others and the performance of our organization. Transcranial direct current stimulation (tDCS) is a non-invasive neuromodulation technique that has been used to improve cognitive functions such as memory, language, and attention. The aim of this review is to evaluate the effect of tDCS on emotional intelligence.

Results : The studies showed that TDCS decreased resting blood perfusion in orbitofrontal cortex and the right caudate and increased task-related activity in the right dorsolateral prefrontal cortex (DLPFC) and anterior cingulate cortex (ACC) in response to losses but not wins or increasing risk. The ventral part of the ACC is connected to the amygdala, nucleus accumbens, hypothalamus, hippocampus and anterior insula, and is involved in assessing the salience of emotion and motivational information. On the other side, amygdala nuclei is the center of behavioral excitement at the half-consciousness level and it is the regulatory center in emotional intelligence that is referred as the emotional brain.

Conclusion : Based on the results, transcranial direct current stimulation increased activity in the anterior cingulate cortex (ACC). ACC controls emotional intelligence by affecting on amygdala. As a result, the hypothesis is considered to be correct.

Keywords : transcranial direct current stimulation; emotional intelligence; tDCS

Count: 266
Abstract ID: 652
subject: Novel and Cutting-Edge Technologies: Brain Machine Interface and Neuroengineering
Presentation Type: Poster

Adding Tactile Stimuli In Order To Achieve Accurate BCI Tasks, Based on Detection of Error-Related-Potential

Submission Author: Bahareh Ahkami

Bahareh Ahkami[1], Farnaz Ghassemi[2]

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Background and Aim : Brain Computer Interface (BCI) systems are emerging today but are not yet accurate and robust enough to find their place in sensitive applications, such as aiding disabled people. In many scenarios, the shortcomings of BCI systems outweigh their benefits. Techniques to improve the accuracy of BCIs are proposed, which include monitoring of human user's brain activities, mainly by Electroencephalogram, to extract signatures of error awareness in one's mind called Error-Related-Potentials – ErRP, which indicate erroneous acts of the BCI and allow for correction of the act. Interactive ErRP is a signal component in brain EEG when the system makes an erroneous response, despite the correct order of the user, caused by weak signal classification, as well as bad signal. Detection of the ErRP could allow for correction or cancellation of wrongly recognized commands. We aim to investigate factors affecting the ErRP, including the nature of the stimuli which triggers error awareness. We propose an assumption, whether tactile stimuli can trigger ErRP with better detectability.

Methods : In this research, we simulated a task in which user should move an on-screen cursor to a certain position as a means of commanding the move of a wheelchair. Previous researches have demonstrated the use of a visual stimuli, the movement of the cursor, to announce the recognized command of the user, and to trigger ErRP if the command is falsely understood. For this research, we have compared the effect of visual and tactile stimuli on the shape and magnitude of the ErRP, as well as the accuracy of detecting the ErRP from single trial, within the aforementioned task. For tactile stimuli, instead of a visually on-screen moving cursor, we have implemented two vibrating objects that indicate the recognized command by vibration, which realize the tactile stimuli, while this kind of stimuli can be more efficient in terms of interaction with disabled people. We have also verified the result of applying dual stimuli, which consist of applying visual and tactile stimuli at once, instead of separately. Each of the three experiments are done 70 times, on 19 different healthy subjects.

Results : The shape of ErRP for every individual has been extracted from the erroneous trials by averaging. Then, a classification in order to detect the ErRP in every single trial has been implemented using various popular and common classification techniques, such as SVM, using different common sets of feature sets, including time and spectrum series and statistics. The results, in general, indicate that classification accuracy can be increased by 8% by introduction of tactile stimuli, and by 14% by using dual stimuli instead of only the visual stimuli.

Conclusion : ErRP detection accuracy is our basis for comparing of different stimuli. Results verify that by adding simple vibrating motors, which can be simply and effectively integrated in various BCI systems, we are able to detect and correct wrongly perceived user commands, enhancing overall accuracy.

Keywords : Electroencephalogram ; Error Related Potential ; Tactile Stimuli

Count: 267
Abstract ID: 463
subject: Novel and Cutting-Edge Technologies: Brain Machine Interface and Neuroengineering
Presentation Type: Poster

An Online Unsupervised Spike Sorting Approach Based on Self Organizing Map

Submission Author: Mobin Allahdini Hasaroueiye

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Background and Aim : Decoding of neural signals has an important role in implantable Brain Machine Interfaces (BCIs). To calculate the firing rate of neurons as the input of decoding algorithms, it is essential to perform spike sorting. In this process the spikes are assigned to their individuals. In this paper we propose an online unsupervised spike sorting approach based on Self Organizing Map (SOM).

Methods : Spike Sorting consists of two steps including feature extraction and clustering. In this work we consider the area under curve of positive and negative portions of the spike as extracted features which are given to the clustering process. The negative and positive portions of spikes are determined correctly by calculation of spike zero crossing points and the changes of spike gradient. After extraction the features, the SOM classifier assigns the spikes to their associated cluster based on nearest cluster center to the spike. In training phase, if a spike is far from all of the cluster centers, a new cluster is created and this spike is considered as the center of the cluster. In the next step, the winner cluster updates its center weight, and neighbor's centers are updated according to their distance to the winner cluster. Finally, clusters with few spikes will be removed.

Results : The proposed approach was evaluated on synthesized data with different Signal-to Noise Ratio (SNR). The simulation results confirm that when the SNR is changed in the range of 2.39dB to 15.61dB the average of spike sorting accuracy is 88.42%.

Conclusion : The SOM based spike sorting algorithm is an online and unsupervised approach with acceptable accuracy and low computation complexity which is translated to low hardware cost.

Keywords : Spike sorting; Self-organizing map; Zero crossing; Spike gradient

Count: 268
Abstract ID: 478
subject: Novel and Cutting-Edge Technologies: Brain Machine Interface and Neuroengineering
Presentation Type: Poster

Prediction of Two dimensional Movements by Decoding of Motor Cortex Neural Signals Using Kalman Filter

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Background and Aim : As our understanding of human brain functions grows, human science fiction approaches reality. One of these dreams was to read the thoughts of the people. Now it is possible to control a device with thought using Brain Machine Interfaces (BMIs) which establish a direct communication path between the brain and the controlled devices. Here, our goal is to retrieve the position and speed of movement of the monkey's hands in two dimensions, by decoding the neural signals generated from neurons associated with the motor cortex.

Methods : In this system firstly, the neural raw signals is received from four electrodes and is preconditioned and digitized. Secondly, the spike detection algorithm is applied to neural signal to discriminate the spikes from the background noise. Thirdly, the spikes are assigned to their individual neurons by performing spike sorting process. It is assumed every electrode records the neural activity of four neurons from the motor cortex. Fourthly, the firing rate of each neuron is calculated as the input of the decoding algorithm. Finally, by using the Kalman filter algorithm, a measurement model indicating the relationship between neuron activities (firing rates) and state variables is developed.

Results : In this work the state variables are including two dimensional position and velocity of hand movement. The confirmation of the proposed method is illustrated through simulation and hardware implementation. The simulation results show that the position and speed of movement are successfully predicted with the accuracy of 98%. In addition the hardware implementation of the proposed approach was done as an ASIC chip. The power consumption and silicon area of the chip are about 6 µWatts and 0.38 mm2 respectively.

Conclusion : In this work an efficient approach for motor cortex neural signal decoding is proposed. According to the results, this method presents acceptable accuracy with low hardware costs in terms of power consumption and silicon area. Since the proposed approach has low power consumption and small silicon area, it is promising for implantable BMI applications.

Keywords : BCI , Neural Decoding, motor cortex

Count: 269
Abstract ID: 414
subject: Novel and Cutting-Edge Technologies: Brain Machine Interface and Neuroengineering
Presentation Type: Oral

Four-Class EEG Classification method for Motor Imagery and motor Execution inputs in the brain-computer-interface based on Deep Learning principals

Submission Author: Jafar Zamani

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Background and Aim : Motor system hierarchy, from mental rehearsal settings in the higher brain areas to the final functioning unit in the periphery have undergone a wide variety of computational analysis. Due to substantial relevance to the cognitive neuroscience and neuro-rehabilitation, motor imagery and execution associated processes have been considered as the essential inputs in the diverse fields of investigations, in particular, Brain-computer interface (BCI). BCI has been one of the recent pioneering approaches which are along to other diverse applications, regarded as a way for patients to communicate with the outside world through providing a non-muscular channel between the brain and the bionics. Motor imagery BCI can provide a direct channel for communication to those who are suffering from neurologically disabling disorders, by the imagination of different motor tasks e.g. left-right hand and foot movements. Motor execution as the more explicit phase of the movement phenomenon comprises different levels and encompasses various brain areas mainly the supplementary motor area, premotor area (PMA) and primary sensorimotor area (M1/ S1). Scalp-recorded electroencephalogram (EEG) based BCI systems are widely used because of the safety and being economically justifiable. The BCI researches mainly aimed to improve the accuracy and robustness of classifying the features of the input data acquired from EEG signals, such as electrode positions and frequency bands. Despite everyday progress, there is a need for novel strategies to improve signal classification efficacy.

Methods : The aim of the current study was to introduce an EEG signal processing methodology in BCI system in order to translate raw EEG signals into the one specific class of these signals using deep learning (auto encoder) and transform learning procedures. Preprocessing the band-pass filter of frequency range 0.5-35 Hz has been used to filter the EEG signal so that mu-beta rhythms can be preserved in dataset moreover notch filter was utilized to remove artifacts-noise following signal digitalization. Extracting features are able to show relevant information about different brain states, power spectrogram features were used in this work for giving better classification accuracy. We used the Data Set of the 1st Iranian BCI Competition (iBCIC) 2017 of National Brain Mapping Lab. The data consists of 64 channels of 2400 Hz sample rate recorded EEG signal for 15 healthy test subjects. During

each task and using a cue paced mode of operation, test subjects were asked to imagine and Execute movement of one out of four different motions (left -right hand, feet) for 3 s.

Results : Final classification results were obtained after primary analysis and subsequent auto encoder parameter fine-tuning step. Auto encoder training parameters, initial learning rate, momentum, batch size and the number of epochs are selected with best performance. The results showed that proposed method could provide us with the high classification accuracy of 65% for the four class motor imagery and Motor Execution problem with less complicated feature extraction techniques.

Conclusion : Experiments show that spectrogram Techniques are enough to reach the state of the art classification accuracy for common auto encoder feature.

Keywords : Deep Learning ;electroencephalogram (EEG) ;Motor imagery ;Brain computer interface (BCI)

Count: 270
Abstract ID: 362
subject: Novel and Cutting-Edge Technologies: Molecular, Biochemical, and Genetic Techniques & Gene . Therapy
Presentation Type: Oral

Methamphetamine induces differential gene expression accompanied with cerebellar atrophy

Submission Author: Aysan Khatmi

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Background and Aim : Methamphetamine (METH) is a known psychostimulant that profoundly aimed at monoamine system of the brain through over-stimulation of dopamine transmission. In spite of the leading role of cerebellum in sensorimotor control coupled with augmented locomotor activity under the influence of METH, there are few studies examining the effect of METH administration on gene expression profiling and related structural consequences in cerebellar region.

Methods : Thus, we sought to investigate genome-wide mRNA expression using high throughput RNA-seq technology, accompanied by stereological analysis of cerebellar layers and immunohistochemistry following METH exposure. According to our RNA-seq data, 473 unique DEG were detected upon METH injections, in which a large number of them engaged basically in biological regulations and metabolic processes, chiefly located in nucleus and membrane.

Results : Further, METH induced reductions in volumes of cerebellar layers (molecular, granular and Purkinje) as well as a decrease in volume of the white matter.

Conclusion : In conclusion, our findings suggested given cerebellar structural alterations following administration of METH, scores of biochemical pathways including growth, cell death, immune response, neurotransmission, synaptic plasticity and autophagy were markedly disturbed.

Keywords : Cerebellum, Methamphetamine, RNA-seq, differential gene expression.

Count: 271
Abstract ID: 595
subject: Novel and Cutting-Edge Technologies: Molecular, Biochemical, and Genetic Techniques & Gene . Therapy
Presentation Type: Poster

Effect of miRNA on Eye Affection Syndrome in rainbow trout (Onchorhynchus mykiss) infected with viral hemorrhagic septicemia

Submission Author: Nooshin Zamannejad

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5. Advisor

Background and Aim : Among the various viral diseases in fish, viral hemorrhagic septicemia virus (VHSV) could be mentioned as the most significant viral infection which has now been identified for its worldwide devastating effects on trout. In the present investigation, the influence of the miRNA on Eye Affection Syndrome with exophthalmos (pop-eye) of VHSV in rainbow trout (O. mykiss) is examined.

Methods : In current clinical trials, fishes (20± 1) g were examined to determine the possibility of treatment VHS disease by miRNA in four main groups, including negative control without any injection, vehicle that received saline, positive control that were infected by VHSV (IP), and experimental treated group that were received miRNA. On the first day of the experiment, miRNA was injected in the experimental treated group, then 48 hours later pre-treatment, VHSV was injected. Carbonic anhydrase (CA) activity plays an important role in controlling aqueous production in the eye and in regulating intraocular pressure. The rate of carbonic anhydrase and histopathology changes on trout eye were assessed in each group. Each main group subdivided into three subgroups. Our results revealed that all animals in the positive control showed pop-eye, whereas in the negative control, vehicle groups and experimental group were not observed any exophthalmos and there is significant difference between the rate of carbonic anhydrase in the positive control group and other groups. The remarkable histopathology changes were observed in positive control, vacuoles (virus causes), retro-retinal gas bubbles (GBD), whereas there were no remarkable changes in the vehicle, negative control, and experimental groups.

Results : Although more studies are needed to verify the exact mechanisms of miRNA viral inhibition pathway, present results partly proved that miRNA pretreatment can protect rainbow trout against VHSV infection.

Conclusion : More studies on the effect of pre-treatment miRNA on vaccine preparation are necessary in this regard.

Keywords : Viral Hemorrhagic Septicemia, miRNA, exophtalmos, histopathology, carbonic anhydrase

Count: 272
Abstract ID: 554
subject: Novel and Cutting-Edge Technologies: Other
Presentation Type: Poster

Check virtual reality capabilities for stroke rehab

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Background and Aim : Today, technology has been instrumental in treating diseases and helping to improve disease, including: virtual reality, which has recently been used as a therapeutic approach in clinical settings. The main objective of this study was to determine the effectiveness of virtual reality in comparison with alternative interventions or non-intervention in the function and function of upper limbs. Secondary goals of this study were to determine the effectiveness of virtual reality in comparison with alternative interventions or non-intervention in: walking and balance, Activity constraints, limited participation, quality of life, and adverse events.

Methods : The present study was a systematic overview with a comprehensive search of web sites, validated journals, Scopus, SID, Google Scholar, ISC and related articles in this field. The combination of the Rehab, Stroke, and Virtual Reality keywords was used to search the English input and the 2015-2018 period was chosen to select articles. The articles were found in about 124 articles, of which about 82 articles were included in the study, and then these articles were evaluated in terms of title, abstract and full text. After removing repetitive and unrelated, about 47 related articles Was selected by research.

Results : The results of the studies showed that virtual reality has significant effects on walking speed or balance compared with conventional therapeutic approaches. Also, in this study, improvement in function and upper limb activity was found to be due to side effects There was nothing and the reports were relatively mild.

Conclusion : The studies have shown that virtual reality has some advantages over traditional therapies because: It can give people who have stroke an opportunity to do everyday activities that are in the environment Hospitals can not do; in addition, there are several features of virtual reality programs that may mean that patients spend more time treating them; for example, they may be more motivated to perform activities.

Keywords : Rehabilitation, stroke, virtual reality

Count: 273
Abstract ID: 426
subject: Novel and Cutting-Edge Technologies: Other
Presentation Type: Poster

Evaluate comparing Acceptance and commitment therapy versus Cognitive behavioral therapy for depression

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Background and Aim : Cognitive behavioral therapy (CBT) is a systematic approach that addresses dysfunctional emotions, behaviors, and thought processes through goal-oriented psychotherapy. Acceptance and commitment therapy (ACT) is a specific model of human suffering and intervention, linked to a specific theory, basic research program, and philosophy of science. The current study aims to shed some light in this respect by conducting a systematic review of the studies that have compared ACT versus CBT on depression.

Methods : This review article was carried out by searching for studies in PubMed, Embase, and Scopus and Cochrane library (from Jan 2000 to Mar 2018), by using the search terms “Cognitive behavioral therapy” “Acceptance and commitment therapy” and “depression”. The search was limited to articles published in English. In this review, 274 articles that are associated with the subject, were found and of these, 23 articles were applied.

Results : CBT and ACT improved similarly across all outcomes from pre- to post-treatment. A positive trend for the ACT was obtained in depression and quality of life at post-treatment. Likewise, ACT showed a greater impact on its putative processes of change and no differences were found regarding CBT proposed processes. During follow-up, ACT showed steeper linear CSR improvements than CBT; and treatment credibility was higher in CBT.

Conclusion : Overall improvement was similar between ACT and CBT. The ACT seemed to work through its proposed processes of change but CBT did not. So, ACT is a highly viable treatment for depressive disorders.

Keywords : Cognitive behavioral therapy; Acceptance and commitment therapy; depression;

Count: 274
Abstract ID: 43
subject: Novel and Cutting-Edge Technologies: Other
Presentation Type: Poster

Improvement of behavioral, social, and cognitive symptoms of autism spectrum disorder by virtual reality

Submission Author: Raheleh Mollajani

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Background and Aim : Virtual reality (VR) reported to be useful for many types of communicating disorders. Recently it is recommended to use for people with autism spectrum disorder (ASD). VR can simulate actual world conditions in a controlled and safe environment. People with ASD have many difficulties in social and individual communication skills. Unfortunately the different therapeutic strategies have not enough success for ASDs in their communicating problems. VR seems to be helpful for ASDs from two points of view including their interest to the certain games and the natural ability of VR to stimulating their attention in pre-designed targeted scenario. As the use of the VR for people with ASD is almost a young and new field of clinical practice, the usefulness of it is still a question to many researchers. Regarding this, the present review article with focusing on the use of VR for ASD is designed.

Methods : All the articles published in the main database, including PubMed, Web of Science and Scopus in the past 10 years used for this study. Articles with significant methodological errors such as an insufficient patient sample, inadequate sample selection criteria, imprecise definition of the study groups, inadequate description of the analyzed variables, or incomplete and/or inadequate presentation of the results obtained in the study were discarded.

Results : Despite limited research and extensive variables in participant samples, technology used, study design and reporting of results, the evidence showed that VR has suitable therapeutic outcomes for ASDs in communicating skills and cognitive functions. Accordingly, the pre-designed scenario, attractive and very close to reality of the VR environment, stimulating maximum sensory pathways and inducing sensory integration are important factors of the VR effectiveness.

Conclusion : Base on the articles reviewed, we believe that the sooner use of VR the better outcomes expected.

Keywords : Virtual Reality; Autism Spectrum Disorder; Social Symptoms, Cognitive Symptoms

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Abstract ID: 573
subject: Novel and Cutting-Edge Technologies: Other
Presentation Type: Poster

Designing a Smart System to suggest transcranial Direct Current Stimulation Protocols

Submission Author: Seyede faeze Taghavi garmestani

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Background and Aim : Transcranial direct current stimulation (tDCS) is a relatively new therapeutic method that utilizes a low amplitude direct current (≤2mA) to induce changes in the cortical excitability. tDCS has different advantages of such as ease of use, lower cost, and portability. Therefore, this method was widely welcomed as a complementary treatment method. However, the outcome of this approach is heavily dependent on the protocol chosen for any type of disease. The current way to select an appropriate protocol is searching through previous studies, which is time-consuming for a physician. It will be helpful to design a smart system that can suggest appropriate protocols to physicians based on the reported results in previous researches.

Methods : In the current work, we gathered, studied, and analyzed previous studies that used tDCS for different diseases or disorders, including depression, schizophrenia, tinnitus, Parkinson, epilepsy, migraine, chronic pain, Multiple sclerosis (MS) and after stroke rehabilitation. According to the protocols and results of these studies, a database was collected. In this database, for each disease or disorder, important factors such as the location of stimulation and return electrodes, duration of stimulation, the number of stimulation sessions, stimulation intensity, and the final effects were collected. This database was used to design a smart application that can suggest transcranial Direct Current stimulation protocols.

Results : In this designed application, which is based on the Android, the therapist select the name of the diseases or disorders and the application suggests one or two tDCS protocols. This suggestion consists of the location of electrodes, duration, intensity and number of stimulation sessions. In addition, it has a guide for positioning the electrodes according to the international 10/20 EEG-system and more information about the reported results about the effect of tDCS.

Conclusion : This application is user-friendly and not only physicians but also university students or other researchers who have a little information about tDCS can use it. This application can save time for therapists to find out a summary of previous studies on the implementation tDCS for treatment.

Keywords : transcranial direct current stimulation; Protocol of treatment; Android application; Smart system

Count: 276
Abstract ID: 178
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

Making a novel device to tinnitus treatment by measuring the frequency of ear buzz

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Background and Aim : Millions of people around the world straggle with ear buzz. This disorder is a medical indication of neurophysiological injuries of the brain region which makes trouble for patients. The Tinnitus problem dates back to many gears ago. However no comprehensive treatment has proposed so far and the researchers focus more on audio therapy. The sound produced in these people ears has a certain frequency so one can expect that by play a frequency coordinated with buzzing frequency, the ear buzzing decrease. By means of audiometry, the patient can by self statement obtain the approximate frequency of ear buzzing. In fact the audiology obtains the frequency caused by buzzing with test and trial. In this proposal, we dealt with a procedure in which we could obtain the buzzing caused frequency without referring to the expect and by getting signals from brain and analyzing the waves, in order to make an apparatus automaticaly.

Methods : In order to build the desired device, we required designing and performing a test, with EEG and preparing a statistical population including the people suffering from ear buzz. According to the previous articles, we concentrated our focus on forehead to be which relating to the hearing layer. To find the patients, we found the people suffering ear buzz by going to the experts and preparing the questionarity. After determining the statistical population, we designed testing process such that the testeve was retested by our system after determining ear buzz frequency by audiometry, in a manner that in a silent place the frequency is got from the forehead lobe of tester with the closed eyes and using a headphone. A frequency is play in a 100 Hz to 10kHz within 200 seconds for him in a 20 second time intervals.

Results : After analyzing the signals, we found out that a significant decrease is seen in High Alfa and High Beta waves or over several frequencies, these frequencies were very close to the frequency determined by audiometry as the buzzing frequency for testeve. In addition according to the previous articles we found that the ear buzz could be a combination of several different frequencies which can aprove the result obtained by us for having several frequencies.

Conclusion : Due to the importance of treating tinnitus people and the audio therapy method. Our aim was determining if we could make a device able to find automatic his/her buzz frequency without the persons self statement, as the human mistake in measuring frequency could make the treatment ineffective. Thus, by testing people are found that High Beta signals decrease significantly in these persons when play buzz frequency. In the other hand, the resulted frequency can be more exact compared to the frequency obtained by audiometry besides, ear buzz could be combination of several frequencies which the people can't state it clearly but the device make it clear.

Keywords : Tinnitus Treatment, EEG brain waves, ear buzz

Count: 277
Abstract ID: 32
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

Review of some polyphenols' synthetic derivatives to identify beta-amyloid structures among other invitro secondary structures

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Background and Aim : As it was mentioned in our previous report, aurone derivatives originated from polyphenols cluster, and due to its natural features such as neutral load and proper lipophilicity coefficient, there is a good candidate to work on it as a suitable alternative instead of ThT compound which may well be known as amyloid plaques probe. We have already argued about protein misfolding disorders, and also it has been described different reasons and nonfunctional pathways which may lead protein to fold improperly in addition to mutation factors. As a result, we have been confronted with so many pathological conditions which they have been linked to protein and protein's problems. However, in this case, we developed our study to some other aspects of the previous report like antioxidant activities and toxicities plus some newly released data of the last announcement.

Methods : To remind the previous contents, the experiment fundamentally based on purification of proteins and the affinity of synthetic compounds (aurone derivatives) to identify beta structure (Extended Cross-Beta) as accurately as possible among other structures. The proteins which were chosen for this experiment were bovine serum albumin (3V03) as a protein within an alpha/beta combination secondary structure and beta-lactoglobulin (2Q2M) as an all beta secondary structure. The process of protein purification (beta-lactoglobulin) was based on fractionation protocol and inducing different pH parameter and also several various temperature degrees. Spectroscopic studies have been measured in the each compound's wavelengths (1-5 compounds) for both UV and Fluorescence spectroscopes. Furthermore, in this study, we have added antioxidant activates assay in addition to the toxicity of each compounds' data. In the following, we evaluated docking and the interactions data between amyloid protein and attached compounds regarding the standard probe like ThT to promote our study compared with the previous one.

Results : Overall, it has been demonstrated that our synthetic derivates could compete with a benzofuranone compound called ThT in somewhere. It means, UV spectroscopy which was done for each compound (1-5) in three different conditions (amyloid, amorphous and native) among five various concentration of each protein illustrated as same as ThT result. Subsequently, we have been observed and reported in our previous manuscript that compound 4 displayed very similar data compare with a standard probe like ThT. Moreover, in this new report, we assume that whether compound 4 or 3 which both of them originated from trihydroxy benzofuran structure can play a vital role

to detect amyloid aggregation rather than others which were evaluated and also it has been proven by molecular simulation as well.

Conclusion : In conclusion, the previous in-vitro studies have suggested that polyphenolic compounds from food products may be useful in targeting Aβ. Among all of them, flavonoids have been interested due to their antioxidant, anti-inflammation properties, targeting metal-Aβ40 aggregation invitro and diminish cytotoxicity induced by metal-Aβ40. Recently, it was reported that flavonoids including flavones and aurone serve as a useful molecular probe in the development of imaging agents for β-amyloid plaques in the brain. To explore more helpful candidate for amyloid imaging probes, we selected one of the flavonoids, aurone, as a new core structure.

Keywords : Protein disorders, Amyloid aggregation, synthetic compounds, Auron derivatives

Count: 278
Abstract ID: 474
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

Malignant peripheral nerve sheath tumor of the breast: A case report

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Background and Aim : Breast sarcomas may be primary or secondary. Primary sarcoma of the breast is one of the extremely rare cases of breast malignancies whose possibility of occurrence is estimated to be 0.2% - 1.0% of all types of breast cancers. Malignant peripheral nerve sheath tumor (Triton type) is of the breast is one of the very rare malignant tumors of the breast which few cases have been reported so far. Prognosis is poor and the 5-year survival rate for these patients is approximately 38%. In this study, we reported a rare case of a malignant peripheral nerve sheath tumor (Triton type) in 40-year old woman on the based of histopathological and immunohistochemical findings .

Methods : case report

Results : case report

Conclusion : case report

Keywords : : Malignant peripheral nerve sheath tumor, soft tissue sarcoma, malignant spindle cell tumor

Count: 279
Abstract ID: 6
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

Human Chorionic Mesenchymal Stromal Cells (hCMSCs) Transplantation Ameliorates Motor Function and Prevents Cerebellar Atrophy in Rat Model of Cerebellar Ataxia

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Background and Aim : Cerebellar ataxias include a range of neurodegenerative disorders hallmarked by deterioration of cerebellum. Cell replacement therapy (CRT) offers a potential remedy for the diseases associated with central nervous system (CNS). This study was designed to assess the neuro-restorative/protective effects of hCMSCs implantation on rat model of cerebellar ataxia induced by 3-acetylpyridine (3-AP) as a neurotoxin.

Methods : To begin, Chorionic Mesenchymal Stromal Cells (hCMSCs) were extracted, cultured and their mesenchymal abilities proofed. Then, experimental ataxia was induced in twenty four male adult rats by single injection of 3-AP, and bilateral hCMSCs transplantation in cerebellum was performed 7 days after 3-AP administration in seven of them. After assessment of their motor coordination by Rotarod test and electromyography(EMG) changes by its device their cerebellum was sampled. Their Purkinje neuron degeneration was analyzed by Fluoro-Jade staining, then the transcription status of inflammatory, neurotrophic and apoptotic genes assessed by RT-PCR test. We also analyzed the expression level of VEGF and immunohistochemically changes of calbindin.

Results : The findings showed that transplantation of hCMSCs in 3-AP model of ataxia ameliorated motor coordination and muscle activity, increased cerebellar volumes of molecular and granular layers plus white matter, decrease degeneration of purkinje cells, increase transcription of neurotrophic factors and decrease the inflammatory changes and apoptosis. We also observed the increase in expression of VEGF and calbindin.

Conclusion : Taken together, human CMSCs could be considered as a suitable candidate for CRT-based therapies with specific focus on cerebellar ataxia.

Keywords : Mesenchymal stem cells ,Cerebellar ataxia, 3-acetylpyridine (3-AP), neurotrophic factors, motor coordination, neurodegeneration, inflammation, apoptosis

Count: 280
Abstract ID: 136
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

Effects of intraperitoneal mesenchymal stem cells administration on apoptosis of hippocampus and memory impairment that induced by scopolamine in male mice

Submission Author: Nilofar Aldaghi

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Background and Aim : Alzheimer's disease is the most common form of dementia in older people. The aim of this study was to investigate the therapeutic effects of mesenchymal stem cells (MSCs) transplant intraperitoneally in male mice that received Scopolamine.

Methods : In this study, 30 adults' mice were randomly divided into 3 groups: control, scopolamine recipients and scopolamine recipient with MSCs transplanted intraperitoneally. Scopolamine was administered at a dose of 3mg/kg for one week. In third group, mice after one week of scopolamin injection were treated with 1 × 106 MSCs via intraperitoneal for two weeks. The learning and spatial memory parameters were evaluated by Morris water maze test and then the mice were sacrificed and their hippocampi were removed and histopathological evaluation was done by H&E staining and Tunel assay.

Results : Scopolamine injection resulted in memory impairment and increased of apoptotic cells in CA1 region of hippocampus than control group. Intraperitoneal transplantation of MSCs decreased morphological changes and apoptotic cells in the CA1 region of hippocampus in the mice of third group (P<0/05) and also decreased memory impairment that induced by scopolamine (P<0/05).

Conclusion : Our results demonstrate that intraperitoneal mesenchymal stem cells transplantion might have protective effects on neuronal damage of CA1 region of hippocampus and memory impairment that induced by scopolamine.

Keywords : Alzheimer, Memory, Hippocampus, Mesenchymal stem cell

Count: 281
Abstract ID: 363
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

Expression profile of selected microRNAs in the peripheral blood of multiple sclerosis patients: A multivariate statistical analysis with ROC curve to find new biomarkers for Fingolimod

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Background and Aim : Multiple Sclerosis (MS) as a chronic autoimmune disease of the central nervous system (CNS) has been associated with dys-regulation of several genes including miRNAs.

Methods : In the present study, we assessed transcript levels of seven miRNAs (miR-96-5p, miR-211-5p, miR-15a, miR-34a-5p, miR-204-5p, miR-501-5p and miR-524-5p) in peripheral blood of MS patients compared with healthy subjects in association with response to fingolimod treatment.

Results : Expression levels of miR-211-5p and miR-34a-5p were significantly decreased in MS patients compared with healthy subjects (P values of 0.002 and 0.47). While subgroup analysis showed down-regulation of miR-211-5p in both fingolimod responders and non-responders, miR-34a-5p expression was only decreased in responders. Moreover, miR-204-5p was down-regulated in non-responder male patients compared with male controls

Conclusion : The current study underscores the role of miRNAs in determination of response to fingolimod in MS patients.

Keywords : multiple sclerosis, fingolimod, miRNA

Count: 282
Abstract ID: 226
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

Different cellular signal induced by β-cyclodextrin and Apolipoprotein-A1 on main proteins in cholesterol metabolism in astrocytes of newborn C57BL/6 mice

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Background and Aim : Dysregulation of cholesterol metabolism in the brain is amongst main hallmark which is responsible for pathophysiological complication of Alzheimer disease. Recently, synthetic cholesterol-lowering agents such as β-cyclodextrin have been used for the treatment of some neurodegenerative disorders like Niemann-Pick C. It has been reported that apolipoprotein-A1 is one of major proteins that delivers cellular cholesterol for HDL formation. In this study, we have investigated whether β-cyclodextrin and apolipoprotein-A1 regulates the same cellular signal to inhibit cellular cholesterol accumulation. So, we have investigated main proteins involved in cholesterol homeostasis in astrocytes of the brain in response to β-cyclodextrin and apolipoprotein-A1.

Methods : Astrocytes were isolated from the brain of newborn C57BL/6 mice, and cultured in Dulbecco's modified Eagle's medium (DMEM) + 10% fetal bovine serum (FBS). Cells were treated with apolipoprotein-A1 (5 µg/ml) or β-cyclodextrin (5 µM) for 24 hour. Cells were lysed in RIPA buffer with protease inhibitor cocktail and loaded onto the sodium dodecyl sulfate polyacrylamide gel electrophoresis (SDS-PAGE). Protein levels of HMG-CoA reductase as well as ABCA1 were investigated with western-blotting technique.

Results : The results indicate that apolipoprotein-A1 treatment induced a signal that caused a significant increase of both ABCA1 as well as HMG-CoA reductase protein levels but β-cyclodextrin in a different way caused a significant increase in HMG-CoA reductase along with a decrease in ABCA1 levels compare to control group.

Conclusion : These results suggest that although β-cyclodextrin depletes cellular cholesterol but its cellular signal in brain is different from apolipoprotein-A1.

Keywords : β-cyclodextrin; Apolipoprotein-A1; Cholesterol; Metabolism; Brain

Count: 283
Abstract ID: 315
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

Motor symptom recovery in mouse model of Parkinson's disease following intranasal administration of human endometrium-derived stem cells

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Background and Aim : Many common neurological disorders such as Parkinson's disease (PD) are caused by a loss of neurons and glial cells. In recent years, neurons and glia have been generated successfully from stem cells in vitro to develop stem-cell-based transplantation therapies for human patients. The experimental research with intranasal administration of stem cells in PD mouse model can work and in some cases induce major, long-lasting improvement. Adult Human endometrial derived stem cells (HEDSCs), a readily obtainable type of mesenchymal stem-like cell were used to generate dopaminergic cells and for transplantation. This research was done for evaluating effect of intranasal delivery of HEDSCs on Rotational behavior in mouse model of PD.

Methods : In this experimental research, for evaluation therapeutic efficacy of intranasal delivery of HEDSCs in 6-OHDA induced mouse model of PD Disease, 12 male mouse weighting 25-30 g were divided into 2 groups including: intranasal administration of 20µl, phosphate buffered saline (as control group) and 50000 cells (as treatment group). On days 30 and 120 post cell administration, the rotational behavior was measured in a rotometer system. The animal received an intraperitoneal injection of apomorphine (0.5 mg/Kg), and is placed in an opaque cylinder. After a 5 min habituation period, rotations are recorded over a 10 min timeframe. The animals can be safely returned to their housing 30 min after the test.

Results : The result showed Intranasal delivery of HEDSCs were decreased rotational behavioral compared with control group significantly on days 30 and 60 post cell administration in mouse Model of PD.

Conclusion : Our studies strongly suggested cell therapy in mouse PD model can improve rotational behavior in HEDSCs-treated animals. HEDSCs are a highly inducible source of allogenic stem cells that rescue dopamine concentration in PD mouse model.

Keywords : Parkinson's disease, endometrial stem cells, intranasal delivery, cell therapy

Count: 284
Abstract ID: 435
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

Effects of reverse T3 on learning and memory deficits in a rat model of Alzheimer's disease

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Background and Aim : The effect of reverse T3 (rT3) on the learning and memory impairment induced by streptozotocin (STZ) in rats was evaluated.

Methods : An animal model of the Alzheimer's disease (AD) was established by intracerebroventricular injection of STZ (3 mg/kg) in male Wistar rats (250 ± 50 g). After that, the rats were treated for 3 weeks with rT3 (0.5 mg/kg) or normal saline. Passive avoidance (PA) learning and spatial memory were evaluated using shuttle box and Morris water maze (MWM), respectively. Finally, the rats were euthanized, their blood samples were collected for further rT3 assessment.

Results : In the MWM, latency (s) increased in the AD rats compared with the normal control group and it also increased in the rT3 injected AD rats compared with the AD group. In the PA, the latency for entering the dark compartment was lower in the AD group than in the normal control group and it decreased in the rT3 injected AD rats.

Conclusion : Injection of rT3 exacerbated memory deficits in the STZ-induced AD rats.

Keywords : Alzheimer's disease; reverse T3; Learning and Memory; Rat

Count: 285
Abstract ID: 58
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

The Results of Auditory Brainstem Response in patients affected by Definite Multiple Sclerosis

Submission Author: Azadeh Borna

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Background and Aim : Multiple sclerosis (MS) is an autoimmune, chronic, debilitating and degenerative disease of central nervous system. MS occurs when the myelin around the nerve fibers in the brain and spinal cord is damaged. Auditory Brainstem Response (ABR) is one of component of the auditory evoked potentials. ABR waveforms are a sequence of peaks and valleys occurring within the first 10 millisecond following the stimulus. MS is defined as a type of neuropathy and is due to the disruption in neural synchronization. MS affects the nerve and auditory pathways. So, ABR is a useful test for assessing and monitoring the effectiveness of medical treatment and inspection the gradual changes are made to auditory nerve function in MS patients. Aim: The aim of this study was evaluating function of auditory nerves in patient with definite MS by ABR test.

Methods : This study was conducted on twenty definite MS patients and twenty normal subjects. The ABR evoked by 85 dBnHL click signals that were delivered monaural with insert earphones(ER-3A). 2048 stimuli were delivered with low (11.3 click/second) and high (61.1 click/second) rates. The polarity of the stimuli was rarefaction. Analysis time was 10 milliseconds. ABR was recorded with settings of 30 for high pass and 3000 for low pass filters. The time delay of the initiation of waves I, III and V as well as I-III, III-V and I-V inter- peak intervals were measured.

Results : Absolute latency of the Wave V and inter- peak latency of I-III,III-V and I-V were increased in MS patients with 11.3/s and 61.1/s rates

Conclusion : The results of this study suggested that absolute latency of the wave V, inter-peak latency (I-III,III-V and I- V) can be used as complementary tools to confirm the diagnosis and monitoring of MS especially when ABR is performed with a higher click presentation rate protocol.

Keywords : definite multiple sclerosis- auditory brainstem response

Count: 286
Abstract ID: 582
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

The Use of Zonisamide in males and females of rat's models of Parkinson's disease

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Background and Aim : Abstract: Parkinson's disease (PD) is a chronic, progressive neurodegenerative disorder with motor and non-motor impairment. Recent studies have provided data suggesting that Zonisamide has an efficacy in treating symptoms in patients with PD. The aim of this study investigates the use of zonisamide in males and females of rat's models of PD.

Methods : Methods:This experimental study was performed to examine the effect of zonisamide (ZA) administration upon dopamine (DA) in intact striatum and in striatum of rats treated with 6-hydroxydopamine(6-OHDA).6-OHDA was injected the 60 µg by stereotaxic into either medial forebrain bundle (MFB) or striatum of the brain. A total 40 adult male (n=20) and female (n=20) wistar rats were used in this study. All rats were divided into eight groups: Two control groups (male and female/n=5), 6-OHDA+ ZA group (male /n=5), 6-OHDA+ ZA group (female /n=5), 6-OHDA+ saline group (male /n=5), 6-OHDA+ saline group (female /n=5), Two ZA groups (male and female/n=5). Zonisamide was received for 7 days after surgical process. Severity of the Parkinsonism was assessed by apomorphine-induced rotational test, elevated body swing test, Cylinder test and Stepping Test.

Results : Results: In male and female groups, administration of ZA attenuated significantly number of apomorphine induced rotations and improved motor function in other tests. In the comparison of the two sexes, the finding showed only reduced number of rotations numerically, also reduced significantly biased swings in elevated body swing test. The gliosis in the 6-OHDA+ ZA groups of male and female rat was significantly reduced compared with the control (6-OHDA+ saline) group ($p<0.05$). There were apoptosis could be noticed in the untreated group while the treated showed few apoptosis in the regenerating brain tissues.

Conclusion : Conclusion: Our results show that treatment with ZA reduced 6-OHDA-induced dopaminergic neuron death in substantia nigra which is more effective in female than male rat.

Keywords : Keywords: Parkinson's disease (PD), zonisamide, 6-OHDA

Count: 287
Abstract ID: 583
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Oral

Effect of Biochanin A on Improving Memory and Motor Behavior of Male Rat Model of diffuse traumatic brain injury (DTBI) in Acute Phase

Submission Author: Marzieh Darvishi

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Background and Aim : Abstract: Diffuse traumatic brain injury is a major feature of clinical head injury and often leads to severe disability. Neuronal cell death after TBI is caused by both primary and secondary injury mechanisms. Biochanin A classified as phytoestrogen, has been consisted to show anti-oxidation, anti-tumor genesis, and anti-inflammatory properties. Here, we describe the effect of Biochanin A on improving memory and motor behavior of male rat model of diffuse traumatic brain injury (DTBI) in acute phase.

Methods : Materials and Methods: In this study, the test was performed in 4 steps: 1) Development of a diffused type of traumatic brain injury (DTBI); 2) Injection of Biochanin-A in acute phases (1 hour after trauma). 3) Behavioral studies in terms of changes in learning and memory (passive avoidance test), motor examination (BBB test) and sensory and motor sensitivity tests using MNSS test; 4) evaluation of histology in brain section as astroglial, inflammatory cells and dark cells.

Results : Results &Conclusion: Our results show that Biochanin-A acts in the early stages of injury as an anti-inflammatory effect, and, on the other hand, reduces the expression of astrocytes and microglia cells, as it reduces gliosis by reducing nerve repair. Biochanin-A leads to the expression of growth factors and induction of proliferation and growth of endogenous cells

Conclusion : Results &Conclusion: Our results show that Biochanin-A acts in the early stages of injury as an anti-inflammatory effect, and, on the other hand, reduces the expression of astrocytes and microglia cells, as it reduces gliosis by reducing nerve repair. Biochanin-A leads to the expression of growth factors and induction of proliferation and growth of endogenous cells

Keywords : Biochanin-A, DTBI, BBB Behavioral Test, MNSS

Count: 288
Abstract ID: 590
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

Role of mitochondrial function on type 1 diabetic encephalophathy in male rats

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Background and Aim : Diabetic encephalopathy is characterized by cognitive and memory impairments and associated with changes in the hippocampus, but the mechanisms underlying those impairments triggered by diabetes, are still far from being elucidated. Mitochondrial Diabetis (MD) appear fallowing activation of mutant mitochondrial DNA, wich is age dependente .MD is combination of diabetis and cognitive deficit. In this research we showed the correlation of Diabetic encephalopathy, dysfunctional mitochondria and change in expression of axonal transport proteins (kinesin (KIF5b) and Dynein).

Methods : Twenty four Wistar rats were randomly divided into three groups (n=8): 1_Control+saline (Control+sal), 2_ diabetic, 3_diabetic +Insulin (1.5 U,2day/8week). Befor starting the experiments, all animals were checked for glucose levels and animals with blood sugar lower than 150 mg/dl entered the study. Diabetis induction was carried out by STZ (60mg/kg) IP administration. Fasting blood suger and body weight was checked after 1-week and the end of the 8th week. 8 week after diabetes induction behavioral studies (EPM (Elavated Plus Maze) ,Y_maze and PAL (passive avoidance Learning) were performed. At the end of behavioral studies, rats were sacrificed and blood samples (5 ml/rat) were taken to measur Serum insulin levels and glycosylated hemoglobin (HgbA1c) then fresh hippocampal tissue was collected . The mRNA expression of motor proteins was assessed by RT-PCR and mitochondrial membrane potential was assessed by Rhodamine 123.

Results : Our results showed impairment of HgbA1c, serum insulin, fasting blood suger level and body weight in diabetic group ($p<0.05$). Behavioral tests, revealed different degrees of impairment in diabetic rats ($p<0.05$). KIF5B mRNA experession was increased in hippocampus ($p<0.05$) with no change in dynein gene expression level. These changes were associated with abnormal mithochondriaL memberan potential ($p<0.05$).

Conclusion : KIF5B mRNA up-regulation in hippocampal neurons of STZ-diabetic rats is a factor which can be involved in abnormal axonal transport and decreased MMP, leading to impairment of mithochondrial function in diabetes. These manifestation showed that mithochondrial dysfunction on diabetes and has resulted in abnormal bahavioral tests and Diabetic encephalopathy.

Keywords : Diabetic encephalopathy, Mitochondria, kinesin (KIF5b), Dynein

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subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Oral

Levothyroxine increased the expression of the hippocampal alpha7 nicotinic acetylcholine (α7nAChR) and N-methyl-D-aspartate (NMDAR1) receptors and improved long-term potentiation in an animal model of

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Background and Aim : The amyloid beta (Aβ) induced Alzheimer's disease (AD) is associated with formation the amyloid plaques, interruption of hippocampal long term potentiation (LTP) and decline in the number of alpha7 nicotinic acetylcholine (α7nAChR) and N-methyl-D-aspartate (NMDAR1) receptors in brain hippocampus. In the present study, we have evaluated the effect of subcutaneous (S.C.) administration of levothyroxine (L-T4) on expression of α7nAChR and NMDAR1 receptors and the dentate gyrus (DG) electrophysiological activity in AD rats.

Methods : Ninety-six male Wistar rats were divided into six groups with 16 in each (ShO, AD+Veh, AD+L-T4(25), AD+L-T4(50), AD+L-T4(100) and ShO+L-T4. To induction of an animal model of AD, Aβ (10 ng/µl, bilaterally) plus Ibo (0.5µL at 0.6µg/µl) were infused into DG region of the hippocampus. AD rats treated with L-T4 and/or normal saline for 10 days. LTP recording from DG and immunohistochemical procedure were used to evaluate the electrophysiological activity and NMDAR1 and α7nAChR expression, respectively.

Results : Results showed that NMDAR1 and α7nAChR expression was significantly decreased ($p<0.001$) in AD animals compared to ShO and ShO+L-T4 groups while increased significantly in treated AD rats in a dose dependent

manner ($p<0.05$, $p<0.01$, $p<0.001$). The LTP amplitude and fEPSP slope of DG neurons declined in the AD rats significantly ($p<0.001$, $p<0.001$) but improved in AD + L-T4 groups significantly ($p<0.05$, $p<0.01$, $p<0.001$).

Conclusion : Current results indicate that L-T4 improves hippocampal LTP in AD rats likely by decline of neural damage and increasing the expression of NMDAR1 and α7nAChR.

Keywords : Alzheimer's disease; Levothyroxine; Long-term potentiation; Alpha7 nicotinic acetylcholine receptor; N-methyl-D-aspartate receptor.

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subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

The effect of Madopar on apoptosis and neuronal degeneration of the hippocampus and substantia nigra in a Parkinsonian rat

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Background and Aim : Levodopa/benserazide hydrochloride (Madopar) is the primary medication commonly used in the treatment of Parkinson's disease (PD). The administration of Levodopa can cause the increase in the plasma homocysteine. Patients with Parkinson's disease may have hippocampal atrophy and progressive hippocampal volume loss. The goal of this study was to characterize a (1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine) model of PD and the hippocampal degeneration and the substaintia nigra dopaminergic neurons.

Methods : Twenty-eight Male Wistar rats (weighing 200-250 gr), which were induced by MPTP (2 µg/kg intranasally) were divided into four groups (n=7). The control group received only saline. The second group used MPTP toxin and The third group received Levodopa 10mg / kg intraperitoneally and The Fourth group received Madopar intraperitoneally.Injection was daily one week after injection of MPTP for 2 weeks. Motor activity was assessed by pole test. After 4 weeks of follow-up, behavioral activity, Tyrosine Hydroxylase positive neurons (TH) in substantia nigra (SNpc), and neurons in different parts of the hippocampus were analyzed. All data were expressed as mean ± SEM and were analyzed by one-way ANOVA followed by Tukey's post hoc test. A value of $P<0.05$ was considered to be statistically significant

Results : The results showed that Madopar, improved behavioral significantly better than other groups. We confirmed that MPTP toxin led to behavioral deficits, reduction of TH-positive neurons in the substantia nigra. Treatment of the Madopar increased tyrosine hydroxylase positive neurons (TH+) in SNpc and striatum of the PD brain. In this group, the number of TUNEL positive cells significantly decreased.

Conclusion : Madopar protects dopaminergic neurons of the substantia nigra from degeneration and apoptosis process after MPTP injection

Keywords : Parkinson, Madopar, substantia nigra, Hippocampus

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subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

Neuroprotective Effects of CoQ10 and Artemisia siberi and combination on Pc12 Cell Model of Parkinson's Disease

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Background and Aim : Parkinson's disease is a chronic and progressive neurodegenerative disease that primarily affects the extra-pyramidal motor system. The etiology of this disease is unknown and common treatments only relieve the symptoms. Among the methods, the only neuroprotective methods are to preserve the remaining neurons and prevents to progression of the disease. Many studies have been shown to be beneficial herbal antioxidants. Artemisia has been used for centuries in traditional Asian and European medicine for therapeutic purposes. Artemisia has anti-cancer and neuroprotective effects, that can be an alternative to CoQ10 and other antioxidants. CoQ10, also is an antioxidant compound that has proven anti-inflammatory and antioxidant role in recent research. Since oxidative stress and inflammation play a major role in the development of Parkinson's disease, in This study compared the effects of Artemisia and CoQ10 and their combined effects on Parkinson's cell mode were evaluated.

Methods : This study was performed on the PC12 cell line. Cells were cultured and divided into negative control (without treatment), positive control (received 75 µM 6-hydroxydopamine), sham and experimental with different alcoholic extract of Artemisia siberi (200, 400, 600, 800, 1000 µg/ml) and CoQ10 with (75, 100, 150, 200, 250 µM) and their combinations groups at 24 and 48 hours. The vitality of the cells was evaluated by MTT assay and their apoptosis assessed by Hoechst staining and generation of ROS was measured.

Results : The results of the MTT test showed that the ethanolic extract of Artemisia at a dose of 200 ?g/ml showed a significant increase cell viability compared to the control group (P <0.05) and sham. CoQ10 Results showed 75?M increased viability significantly compared to the positive control and sham. Also, this increase was significant in their combination in (75 + 200) and (100 + 400) than the positive control and sham and each one alone was significant. Hoechst staining results showed reduced apoptosis in treated cells compared to control groups and each one alone. The results of the ROS generation also showed that the amount of its production would be reduced by increasing the concentration of Artemisia and CoQ10, and this reduction in combined effects was significantly higher than the effect of each one alone.

Conclusion : It is concluded that the Artemisia extract like CoQ10, could be effective in reducing the effect of 6-hydroxy dopamine apoptosis via reducing the amount of ROS. This protective effect was stronger in the combination of two antioxidants. Therefore, with further research it seems that Artemisia and its combination with CoQ10 has a potential to treat Parkinson's disease.

Keywords : Parkinson's Cell Model, Artemisia, CoQ10, Apoptosis

Count: 292
Abstract ID: 653
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

Effect of fluoxetine on expression of inflammatory factors in Lysolecithin induced demyelination

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Background and Aim : Multiple sclerosis is an inflammatory demyelinating disease that affects the central nervous system and is the main cause of disability in young adults. The most important defect in MS is demyelination. One of the best models of demyelination is the Lysolecithin model. In this study, the effect of fluoxetine treatment on TNF-α and NF-kß genes expression in Lysolecithin model was investigated.

Methods : Local demyelination model was generated using direct injection of lysolecithin (LPC) into the Corpus Callosum of Wistar rats. Rats received fluoxetine via daily injected intraperitoneally with short and long-term in doses of 5 and 10 mg / kg, starting 3 days after demyelination model induction.

Results : In this study, the results of gene expression studies showed that the expression of TNF-? and NF-k? genes in the LPC model showed a significant increase compared to the control group (P <0.0001). The expression levels of TNF-? and NF-k? genes in the LPC-treated group with short and long-term fluoxetine in doses of 5 and 10 mg / kg compared to the LPC model significantly decreased (at least P <0.001) shows.

Conclusion : Results showed that fluoxetine in short and long term treatments at doses of 5 and 10 mg / kg demonstrated beneficial anti-inflammatory effects in the Lysolecithin demyelination model. These data indicate that doses of 5 mg / kg and long-term treatment with fluoxetine, considerable effects. Although supplementary studies are required for the details of its mechanisms.

Keywords : Demyelination, Lysolecithin, Fluoxetine

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subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

β-secretase related miRNA's: diagnostic biomarkers in Alzheimer's disease

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Background and Aim : Amyloid-β (Aβ) as a crucial factor in pathogenesis of Alzheimer's disease (AD) is derived from an abnormal proteolytic processing of amyloid precursor protein (APP) through the function of β-secretase (BACE-1) and γ-secretase. Due to the vital role of BACE1 in Aβ generation, it is an important diagnostic factors in AD. β-secretase is active in most of the cells and tissues. However, greatest activity was reported in neural tissue and neuronal cells. According to existing evidences, miRNAs show a unique pattern of expression in AD. The change in the level of miRNAs is demonstrated in the blood or CSF during AD. So, miRNAs can be considered as potential biomarkers for predict the disease onset or progression. Therefore, in this paper, we reviewed the β-secretase related miRNA's involved in APP cleavage pathways and the formation of Aβ in order to evaluate the potential diagnostic biomarkers in AD.

Methods : Comprehensive articles about Alzheimer's disease, β-secretase, miRNAs, biomarker, diagnosis between 1990 to 2017 were searched in pubmed, sciencedirect, google scholar and proquest. Appropriate articles were selected and reviewed.

Results : increased BACE1 expression raises risk of AD and reduction or absence of specific miRNAs can increase the levels of BACE1 and Aβ in AD.

Conclusion : β-secretase related miRNA's can act as a regulatory factor in AD and can be considered as possible diagnostic biomarkers for AD.

Keywords : Alzheimer's disease, β-secretase, miRNAs, biomarker, diagnosis

Count: 294
Abstract ID: 87
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Oral

Alpha-Lipoic Acid and Coenzyme Q10 combination ameliorates experimental diabetic neuropathy by modulation of oxidative stress and apoptosis pathways leading to the dorsal root ganglion neurons degenera

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Background and Aim : Diabetic neuropathy (DN) is the most common complication of diabetes and it occurs in about 50% of diabetic patients. Against worldwide prevalence estimates of diabetes of 592 million by the year 2035, DN may affect 296 million persons around the world. Given the growing documents for increased oxidative stress, mitochondrial dysfunction, and apoptosis pathways activated in DN and the lack of effective therapy to prevent or treat of DN, it is important to find tools by which one can reduce effects related to these pathways. Hence therapeutic paradigms can shift to target these pathways through the use of alpha lipoic acid (ALA) and coenzyme Q10 (CoQ10) due to their antioxidant nature, anti-apoptotic properties and neuroprotective activities.

Methods : In the present study, we investigated the neuroprotective effects of CoQ10 (10 mg/kg, orally, five weeks) and/or ALA (100 mg/kg, orally, five weeks) in streptozotocin (STZ) (45 mg/kg, i.p.) induced DN in rats to determining the possible mechanisms involved in the usefulness of these agents. After treatments the degree of neuroprotection was determined by measuring motor function in rats and then total antioxidant capacity (TAC), glutathione, lipid per oxidation, reactive oxygen species (ROS) and ATP levels, as well as expression of caspase 3 and UCP2 proteins in dorsal root ganglion (DRG) neurons.

Results : The results demonstrated that these agents in particular ALA and CoQ10 combination protected against DN- induced neurotoxicity by increasing endogenous antioxidant (GSH), preventing lipid per oxidation and ROS, modulation of expression of caspase 3 and UCP2 proteins, inducing ATP, inhibition of DRG neurons death and improving motor function.

Conclusion : This study imply that treatment with CoQ10 or ALA exhibited neuroprotective effect but the maximum neuroprotection was found with combination of CoQ10 and ALA.These effects could be due to CoQ10 and ALA

antioxidant nature, which include anti-apoptotic properties and their neuroprotective activities. Thus, these findings would encourage future clinical trials of these agents in patients with DN to whom coadministration of neuroprotectants is required to prevent neurotoxicity.

Keywords : Alpha-Lipoic Acid, Coenzyme Q10, Diabetic neuropathy, Oxidative stress , Apoptosis, Dorsal root ganglion neurons

Count: 295
Abstract ID: 263
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

The effects of sumac Nano-phytosome on Valproic acid-induced social behavior deficits in an animal model of autism

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Background and Aim : Autism is a spectrum of neurodevelopmental disorders characterized by impairment of communication, social interaction, abnormally restricted and repetitive behavior .Sumac belongs to the genus Rhus of the Anacardiaceae family, which occurs mostly in the tropics and subtropics areas. Phytosomes a complex involving chemical bonds is formed between the polar substances and the polar heads of the phospholipid bilayer.

Methods : The aim of this study was to investigate the effects of sumac nano-phytosome on social behavior deficits in valproic acid-exposed rat offspring. Offspring male rats were segregated into seven groups; Group-1 served as control, received a single intraperitoneal injection of saline maternally on E12.5. Group-2 received sodium valproate (500 mg/kg in 0.9 % saline, i.p) maternally on E12.5 was considered as VPA-exposed group, Group-3 to 4 were VPA-exposed which received sumac and sumac nano-phytosome (40 mg/kg/day, PO) for 4 weeks respectively. Social interaction test were conducted on postnatal day 51 (PND 51).

Results : Our results showed the prenatal valproic acid-exposed rat exhibited poor sociability ($P < 0.001$) and Sumac nano-phytosome treatment improved the behavioral disorder significantly ($p < 0.001$).

Conclusion : In conclusion, Sumac nano-phytosome exerts neuroprotective action in comparison with sumac and could be efficacious for improvement of social behavior in VPA animal model of autism.

Keywords : Sumac Nano-phytosome, Autism, Valproic acid, Social Behavior

Count: 296
Abstract ID: 163
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

Investigating the effects of MAPKs inhibition on hippocampal neurons viability during amyloid beta induced neuroinflammation; considering the role of time in these effects

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Background and Aim : MAPKs are a group of serine-threonine kinases covering three main members including ERK, JNK and P38, which are stress kinases and participate in different pathologies such as Alzheimer's disease. However, their exact role in amyloid Beta (Aβ) toxicity remained uncharacterized. Furthermore, it has been proved that these kinases play a dual role in the cellular fate in a time dependent manner. Therefore, we aimed to investigate if these kinases actively participate in Aβ neurotoxicity and how the duration of inhibition could affect their role in Aβ toxicity.

Methods : using a combination of primary hippocampal cell culture, MTT assay and western blotting we studied how inhibition of MAPKs's members concurrent with or 12 hours after treating cells by Aβ will affect the reduced neural viability induced by Aβ toxicity. For this purpose cells were cultured in 96 or 6 well plates and then divided into two major groups of concurrent or 12 hour later inhibition, in the first group Aβ25-35 and inhibitors of each MAPK members was added at time zero and in 12 hour later group inhibitors were added with a 12 hour delay. After 24 hour, the cell viability was checked by MTT test and the caspase-3 cleavage was evaluated by Western blotting.

Results : while our results revealed that P38 and ERK inhibition simultaneous with A? treatment did not bring about any changes in neural viability and inhibition of JNK even exacerbated the A? neurotoxicity. When the inhibition of MAPK members was postponed for 12 hours no change was seen in the effects of ERK inhibition but a slight improvement was seen by P38 inhibition. In addition, the exacerbating effects of JNK inhibition was removed and a slight improvement was induced when JNK inhibition was delayed for 12 hours. these results were confirmed by the extent of caspase-3 cleavage detected in Western blotting.

Conclusion : these results showed that none of MAPK family members are the single determinants in Aβ neurotoxicity. Additionally seems that time span plays a critical role in determining the role of MAPKs in stress. We showed that although inhibition of JNK and P38 simultaneous with Aβ toxicity induction may not improve neural viability but inhibiting them some time after that would be beneficial for cells.

Keywords : MAPKs; Amyloid beta; Inflammation; Time span

Count: 297
Abstract ID: 578
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Oral

The effect of ethanolic extract of Matricaria chamomilla on prefrontal cortex of cerebral hemispheres and passive avoidance memory in male rats exposed to formaldehyde

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Background and Aim : Formaldehyde (HCHO) is a widely used chemical substance in science industry and home use. Studies have shown that this material, with the ability to cross the blood brain barrier and increase the endogenic formaldehyde, phosphorylation and deposition of Tao protein, increase apoptosis in prefrontal cortex cells and causes memory impairment. In this study, the effect of chamomile ethanolic extract on histopathological changes of prefrontal cortex in rats and their passive avoidance learning was investigated.

Methods : In this study, 48 male Wistar rats weighing 200-250 g and approximately 8-10 weeks old were divided into six groups: Control group (C), which received daily 10 mg / kg body weight normal saline Intraperitoneal injection (IP) received; formaldehyde (F) treated groups receiving 10 mg / kg body weight formaldehyde daily (IP); treatment groups (F200, F500) in addition to formaldehyde, ethanolic extract of chamomile At a rate of 200 and 500 mg / kg at the same time; control groups with only chamomile (IP) 200 and 500 mg / kg of body weight. After one month of injection and evaluation of behavioral tests, the rats were sacrificed and their brain was excised and their prefrontal cortex was evaluated to evaluate the cell death of neurons using the TUNEL and Acridine orange technique.

Results : The findings of this study showed that intraperitoneal injection of formaldehyde at a dose of 10 mg/kg body weight increased cell death with $p<0.001$ in the formaldehyde group compared with other groups by TUNEL assay and acridine orange staining and $p<0.001$ in the formaldehyde group with other group except F200 group, and with $p<0.05$ in the formaldehyde group, compared to the F200 group, it also increased the amount of time spent in the dark room with $p<0.01$ in the formaldehyde group compared with other groups. The ethanolic extract of Matricaria Chamomilla was administered with doses 200 and 500 mg/kg body weight could improve symptoms in treated groups with its compared to formaldehyde group.

Conclusion : According to the results of this study, it is possible that the ethanolic extract of chamomile can improve the memory loss caused by formaldehyde by decreasing the cell death rate in the prefrontal cortex.

Keywords : Formaldehyde, prefrontal cortex, Matricaria chamomilla, passive avoidance learning

Count: 298
Abstract ID: 451
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Oral

Environmental enrichment modulates the effects of sensory deprivation of barrel cortex on the morphology of rat hippocampal neurons

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Background and Aim : The maturation of neuronal circuits is strongly dependent on experience and activity. The rodent barrel cortex offers an excellent model system to investigate such experience-dependent changes in cortical development. In this work, modulatory effects of environmental enrichment on the morphological changes caused by the long-term postnatal sensory were studied in the CA1 pyramidal neurons of adult rats.

Methods : Wistar rats belonging to the experimental group had their whiskers trimmed bilaterally every other day to the length of <1 mm from postnatal day 3(PND3) to PND59. A group of animals were kept in standard cage, and the other group were kept in the enriched cage during PD 24 to PD 65. The enriched cage provides an environment with more social interactions, more cognitive challenges and increased volunteer motor activity. On PND 100, morphological changes of the hippocampal pyramidal neurons were studied using Golgi-Cox method.

Results : Morphological comparison of pyramidal neurons in the CA3 hippocampal region showed that in rats from enriched group, number of branch points and distance from soma significantly increased compared to standard group. There was no statistically significant difference in the distance from soma and the number of branch points of neurons in the CA1 hippocampal region and also the mean length of the branches and the number of terminal points in the neurons of both CA1 and CA3 regions.

Conclusion : Considering the direct correlation of dendritic complexity of neurons with synaptic plasticity, increased dendritic branches of CA3 neurons in the enriched environment may contribute to the earlier reported enhancing cognitive ability of sensory-deprived rats that raised in this environment.

Keywords : Sensory deprivation of barrel cortex, Environmental enrichment, Hippocampus, Neuronal morphology

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subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

Investigating the Functional Brain Connectivity of MS Patients using Graph Theory and EEG data

Submission Author: Mojtaba Jozizadeh

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Background and Aim : Understanding the relation between the structure and the function of the brain is one of the basic question of neuroscience. Neuroimaging of the human's brain with MRI, fMRI, EEG and MEG demonstrates the structural and functional features of complex networks. Analysis of complex brain networks based on the graph theory is a powerful method for extracting the functional connectivity of the brain regions. In graph theory the brain regions or recording electrode locations on the scalp is presented as nodes, and functional and anatomical connectivity between regions of the brain, is presented as links (Edges). Some graph features (like Clustering Coefficient, Diameter, Betweenness Centrality, Small World Propensity, etc.) can compute between patients and normal groups. Multiple sclerosis (MS) is an inflammatory demyelinating disease of the central nervous system (CNS). The cause of MS is unknown, however, it is well known that interactions between the immune system and the CNS play a central role in MS pathogenesis. In this study we investigate the statistical difference between Patients and Normal groups using EEG.

Methods : EEG were recorded with 19-channel acquisition system using the international 10-20 System of electrode placement, with Linked-Ear montage and 256 Hz sampling rate For 38 MS patients and 60 Normal people with no history of mental illness or currently using any brain related drugs. The recording time was 5 minutes in Eye-Closed and 5 minutes in Eyes-Open resting-state condition. The data filtered and noiseless parts of the data was selected for analysis. Absolute Power, Relative Power, and Peak Frequency of the data was generated using the Neuroguide software. For analyzing the brain connectivity with graph theory, the adjacency matrices were generated using LORETA. This software extends the 19-channel EEG data to 84 Brodmann areas by inverse solution method to localize the electrical activity sources. Then the 3D brain map of the current density of the cortex was exported by the LORETA.

Results : The Absolute Power and the Relative Power show some significant differences between these two groups in some frequency bands for different regions of the brain. Also some graph features for MS patients were significantly different from the Normal people. The details of the result of these analysis will be presented later.

Conclusion : By computing the graph features of the EEG of the MS patients, we found that it's possible to suggest a diagnostic method for recognizing the MS patients and also evaluate the treatment of these patients.

Keywords : Multiple Sclerosis; Complex Network; Graph Theory; Clustering Coefficient; Betweenness Centrality

Count: 300
Abstract ID: 389
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Oral

Identification of causative genes for ALS, BVVL, Fazio Londe, CMT2 and HMSN-P disorders

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Background and Aim : Neurodegenerative diseases are debilitating and often incurable conditions. Amyotrophic lateral sclerosis (ALS), is the most prevalent neuromuscular disorder and BVVL, Fazio Londe, Charcot-Marie-Tooth Type 2 (CMT2) and HMSN-P are four disorders whose symptoms are related to and sometimes overlap with ALS. Although causative genes for all the disorders are known, mutations in these do not account for diseases in most affected individuals. Our goal was to identify causative genes for these related neurodegenerative diseases in Iranian patients.

Methods : The most common causative genes were screened for mutations in the probands of 125 families. Subsequently, whole-genome exome sequencing was performed for 30 members of 13 families without mutations in said genes. Novel candidate causative genes were identified and segregation analysis, and screenings of ethnically matched control individuals were performed.

Results : Twenty probands had mutations in known causative genes. Exome sequencing identified six novel genes in ALS, BVVL and Fazio Londe families. Also, we found SPG11 mutations in two juvenile ALS families. All mutations segregated with diseases status and mutations in the novel genes were not observed in 1000 control individuals. Genetic analysis is ongoing in some of the families without mutations in known genes.

Conclusion : Six candidate new genes for neurodegenerative diseases were identified, three of which have roles in apoptosis. Identification of these will enhanced our understanding the etiology of the diseases. Our findings

substantiate the contribution of SPG11 to ARJALS and emphasizes potential commonalities among the etiologies of the five neurodegenerative disorders.

Keywords : Amyotrophic Lateral Sclerosis; BVVL; Fazio Londe; HMSN-P; Charcot-Marie-Tooth Type 2; Exome sequencing

Count: 301
Abstract ID: 418
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

Genetic Analysis of the ZNF512B, SLC41A1, and ALDH2 Polymorphisms in Parkinson's Disease in the Iranian Population

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Background and Aim : Aims: Parkinson's disease (PD) is one of the most common neurodegenerative disorders; its etiologically includes both genetic and environmental factors and their interactions. The ZNF512B, SLC41A1, and ALDH2 genes have recently been identified as contributing to PD. In this study we investigated the association of these genes with PD in the Iranian population.

Methods : In a case–control study, rs2275294, rs11240569, and rs4767944, three single nucleotide polymorphisms in ZNF512B, SLC41A1, and ALDH2 genes, respectively, were genotyped in 490 PD patients and 490 controls. The genotype and allele frequencies were compared between the two groups using chi-square and logistic regression tests.

Results : A significant association between the rs11240569 polymorphism and a reduced risk of PD was found ($p = 0.014$, OR = 0.76, 95% CI: 0.60–0.94 for allele frequencies). We did not find any associations between PD and the rs2275294 and rs4767944 polymorphisms.

Conclusion : The association of rs11240569 polymorphism in SLC41A1 gene with reduced risk of PD was replicated in our population.

Keywords : Parkinson's disease;ZNF512B; SLC41A; ALDH2; polymorphism; association.

Count: 302
Abstract ID: 608
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

Gonadotropin Releasing hormone can ameliorate cognitive Letrozole effects through inducing Estradiol synthesis

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Background and Aim : Estradiol plays essential protective roles in brain cognitive control areas including hippocampal formation. Studies prove that it can induce synapse and cell morphology modulation in addition to the signaling and excitability alternation. On the other hand, prescribing potent aromatase inhibitors such as Letrozole for postmenopausal women with breast cancer suppress the normal levels of circulating estradiol, suggesting a serious relationship between estradiol and cognition. In addition, there are several reports supporting cognitive function alternation hypothesis in these patients. According to the studies remarking Gonadotropin Releasing hormone (GnRH) as a modulator factor in inducing aromatase activity and enhancing estradiol synthesis, we examine the impact of GnRH on hippocampal estradiol level and cognitive behavioral tests in Letrozole administrated rats.

Methods : Female wistar rats were implanted bilaterally with cannula into intra-CA1 region through stereotaxic surgery. Firstly, one week after surgery, to detect the least effective Letrozole dose, three doses of Letrozole (0.1, 0.2 and 0.4 µg/µl) were injected via cannulas for 14 times once a day. Afterwards, to investigate GnRH effect, Letrozole and GnRH (1ng/ µl) were simultaneously administrated through implanted cannulas for the similar time period. To assess drug intervention effects on short term memory, recognition and anxiety, Y-maze, Object Recognition Test and Elevated Plus Maze test were carried out, respectively, on diesturs phase of estrus cycle. Hippocampal and serum estradiol concentration were measured by ELISA method.

Results : Letrozole administration results in significant cognitive and estradiol decline in associative measuring tests. GnRH co-administration played significant role in inducing aromatase activity and enhancing estradiol level in addition to improving cognitive behavioral test results.

Conclusion : Our results potentially mention that memory deficits in endocrine treatment of breast cancer with letrozole must be considered while introduce GnRH as an effective molecule in estradiol synthesis.

Keywords : Letrozole;Estradiol;GnRH;Cognition

Count: 303
Abstract ID: 526
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

Antidepressant effect of myricitrin in the rat model of temporal lobe epilepsy

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Background and Aim : Background: Depression is caused after temporal lobe epilepsy (TLE) by neurological damages. Regarding the anti-inflammatory and antioxidant effects of myricitrin (MYC), the present study was conducted in order to investigate the antidepressant effects of MYC in kainic acid (KA) induced- TLE experimental model.

Methods : Materials and methods: Forty male Wistar rats were divided into five groups: 1: Sham, 2: MYC, 3: TLE (epileptic group), 4: VA + TLE (valproic acid and KA recipient), and 5: MYC + TLE (MYC and KA recipient). Induction of epilepsy was made by intrahippocampal KA. 5 mg/kg of MYC was administered intraperitoneally from one week before surgery to one hour prior to KA injection. Forced swimming test was used to investigate depression behaviors. All of the behavior scorings were done by a single rater, who was blind to the treatment condition.

Results : Results: Intrahippocampal KA led to the elevation of the severity of seizure score (SS), immobility and reduction of active swimming. Climbing behavior is decreased in TLE rats. Administration of MYC attenuated the severity of SS, immobility and active swimming significantly. The Climbing behavior is increased significantly in the KA + MYC.

Conclusion : Conclusion: The results of this study indicate that TLE causes depression due to neuronal damages, and pretreatment with MYC prevents KA-induced TLE maybe through its antioxidant and anti-inflammatory activity.

Keywords : Temporal lobe epilepsy, Myricitrin, Depression, Kainic acid, Rat.

Count: 304
Abstract ID: 584
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Oral

The histological and behavioral effect of treatment of Depakine (HDAC inhibitor) on deficits in Model of Demyelination (Multiple sclerosis) in C57BL/6 mice

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Background and Aim : Introduction: Multiple sclerosis (MS) is an inflammatory demyelinating disease that leads to neuronal cell loss, axonal damage and gliosis. Depakine (DEP) is a histone deacetylase inhibitor and has potent anti-inflammatory properties. The purpose of this investigation is to evaluate optimum dose of depakine on gliosis sought to functional recovery formation in model of demyelination (Multiple sclerosis) in C57BL/6 mice

Methods : Material & method: C57BL/6J mice receiving daily intraperitoneal injections of 3 different doses (100, 200, and 300 mg/kg body weight), during the last 7 days of 5-week cuprizone treatment. Demyelination was induced by 0.2% cuprizone by daily oral gavage for 5weeks. Mouse was divided into five groups: saline groups (n=5), DEP100 groups (n=5), DEP200 groups (n=5), DEP300 groups (n=5), cuprizone groups (n=5). After treatment with DEP was examined behavioral test for evaluation of motor and sensory function. Both luxol fast blue (LFB) staining and immunohistochemial studies have been used to evaluate the degree of deand remyelination in the cuprizone model. Expression of glial fibrillary acid protein (GFAP) assessed by immunohistochemical technique.

Results : Result: Mice fed cuprizone exhibit weight loss. The immunohistochemical studies were done with immune fluorescent and immune peroxidase techniques. Our results demonstrate that the expression of GFAP in the untreated controls had the highest immune -fluoresence while it was significantly decreased in the DEP group with 200 mg/kg delivered at 7 days ($p<0.05$).Animals were examined by open-field test for distance moved and movement velocity. Cuprizone significantly decreased distance moved and movement velocity compared to control group while DEP (200mg/kg) enhanced distance and movement velocity of animal compared to cuprizone group ($p<0.05$). Also LFB staining was show the severity of demyelination in the corpus callosum in Cuprizone groups that significantly enhanced myelin loss compared to DEP groups.

Conclusion : Conclusion: Quantitative analysis showed that there is a dose dependent decrease in the relative intensity of the GFAP fluorescent at 200 mg/kg.

Keywords : Multiple sclerosis (MS), inflammation, Depakine, HDAC inhibitor, glial scar

Count: 305
Abstract ID: 445
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

Apigenin restores spatial memory impairment induced by Aβ 25-35 through inhibition of mitochondrial cytochrome c release

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Background and Aim : Cognitive dysfunction is the most common problem of patients with Alzheimer's disease (AD). The pathological mechanism of cognitive impairment in the AD may be contributed to neuronal loss as well as synaptic dysfunction and alteration in receptor neurotransmitters. Mitochondrial synapses dysfunction due to the accumulation of amyloid beta, is among early pathological features of AD. Apigenin has been reported to play some protective role in AD through the anti-oxidative and anti-inflammatory properties. In this study, the effects of apigenin on Morris water maze spatial memory and neural protection by inhibition of mitochondrial cytochrome c release are investigated.

Methods : Intracerebroventricular (ICV) microinjection of amyloid beta 25-35 was used for AD modeling. Spatial memory was assessed twenty-one days later, by Morris water maze test. Neuronal loss was detected in Hippocampus by Nissl and Fluoro-jade B staining while immunohistochemistry was used to show cytochrome c positive cells and caspase 9.

Results : Our results revealed that apigenin restored spatial memory deficit induced by Amyloid beta significantly. It also significantly reduced the number of degenerative neurons in Hippocampus. Apigenin almost completely blocked the release of cytochrome c and caspase 9 in Hilus.

Conclusion : We concluded that apigenin may improve the spatial working memory deficits and neuronal degeneration through amelioration of mitochondrial apoptosis pathway.

Keywords : Alzheimer's disease, Hippocampus, Apigenin, cytochrome c.

Count: 306
Abstract ID: 249
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

Study of Association of G/A (rs2230806) polymorphism in ABCA1 gene with Alzheimer's disease in the Iranian population.

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Background and Aim : Alzheimer's disease (AD) is a neurodegenerative disorder of the elderly, which is the most common cause of dementia. One of the most important topics of study in this field related to cholesterol metabolism and genetic risk factors associated with it. ABCA1 is associated with Alzheimer's disease by transport of cholesterol across cellular membranes in the brain , the purpose of this study was to assess the association between polymorphisms of G/A (rs2230806) in ABCA1 gene with sporadic Alzheimer's disease in Iranian.

Methods : Genotypes were determined by the PCR–restriction fragment length polymorphism (PCR–RFLP) technique in two groups including 100 sporadic AD patients and 80 healthy subjects

Results : In this study when groups were stratified by age and sex, Results shows that In the control group with less than 75 years the risk of developing Alzheimer's is Significantly lower than subjects who are older than 75 years (Pvalue=0.019, OR=0.46, 95% CI=0.24–0.88), Significantly difference were observed in the risk of AD between patients and controls in women older than 75 years (Pvalue=0.028). The findings of the ABCA1 G/A (rs2230806) polymorphism revealed that there was no significant difference between AD patients and controls.

Conclusion : The results of this study conform that aging is an important risk factor for Alzheimer's disease and conform that AD is more in women than men. However, our results do not support a genetic risk factor of G/A (rs2230806) polymorphism of ABCA1 gene for developing AD in the Iranian population.

Keywords : Alzheimer's disease, ABCA1 gene, Single nucleotide polymorphism, G/A (rs2230806), Iran.

Count: 307
Abstract ID: 159
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

The effect of 24-hydroxy cholesterol on protein level of Bax as a pro- apoptotic protein in astrocytes of newborn C57BL/6 mice

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Background and Aim : Alzheimer's disease is a neurodegenerative disorder that characterized by the accumulation of beta-amyloid plaques outside the cells and intracellular hyperphosphorylation of tau protein. Amyloid beta is involved in both the cholesterol homeostasis of Alzheimer's disease. the accumulation of beta-amyloid cause's disturbances in the production of ATP, and the metabolism of cholesterol. As a result, the accumulation of cholesterol increases oxidative stress results in ultimately leading to neuronal death in the cells. Since 24-hydroxycholesterol (24-OHCho) as a polar metabolite can eliminate excess cholesterol in the brain, we investigated the regulatory role of 24-OHC on protein level of Bax as a pro-apoptotic element induced by amyloid beta.

Methods : Astrocytes were isolated from the brain of newborn C57BL/6 mice and cultured in Dulbecco's modified Eagle's Medium (DMEM) + 10% fetal bovine serum (FBS). Cells were treated with amyloid beta (1µM) and 24s-OHC (5µM) for 24 hours. Cells were lysed in RIPA buffer with protease inhibitor cocktail and loaded onto the sodium dodecyl sulfate-polyacrylamide gel electrophoresis (SDS-PAGE). Protein levels of Bax were investigated with western-blotting technique.

Results : Our results indicated that protein levels of Bax was significantly reduced by 24s-OHC treatment in mouse astrocytes. ($P< 0.05$) Although the level of Bax protein in astrocyte cells treated with 24-hydroxy-cholesterol has decreased compared to the control group, but when the cells simultaneously treated with beta-amyloid and beta amyloid+24-hydroxy cholesterol, no significant change was observed in the reduction of Bax protein.

Conclusion : Our results indicated that protein levels of Bax were significantly reduced by 24s-OHC treatment in mouse astrocytes. this results demonstrate a biological function for Aβ1-42 and 24s-OHC and also a mechanism for the link that has been observed between cholesterol homeostasis and Alzheimer's disease (AD).

Keywords : Alzheimer; Amyloid beta; Bax; 24-hydroxy cholesterol; Reactive oxygen species

Count: 308
Abstract ID: 617
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Oral

Involvement of NLRC4 inflammasome contributes to memory impairment in an experimental model of Alzheimer's like disease

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Background and Aim : Inflammatory response through interleukin-1β (IL-1β) plays a key role in the pathogenesis of Alzheimer's disease (AD). However, the molecular mechanism of pro-IL-1β processing in AD is not clearly defined, the current study was designed to investigate which of the inflammasome complexes pave the way of IL-1β production in AD.

Methods : An experimental model for Alzheimer like disease was induced in male Wistar rats and Morris Water Maze was used to evaluate learning and memory. The expression of genes involved in inflammasome complex including NLRP1, NLRP3, NLRC4, AIM2, ASC, IL18, IL-1β and caspase-1 was determined via Real-time PCR. Hematoxylin and Eosin (H&E) staining was applied to assess inflammatory parameters. Furthermore, using immunofluorescence staining technique we analyzed caspase-1, IL-1β and phosphorylated tau (p-Tau) protein expressing cells in the lesion area.

Results : : The behavioral study revealed that STZ injection significantly impaired learning and memory function. Additionally, the presence of inflammatory response confirmed in the hippocampus region of STZ treated animals. Here, we identified a significant increase in NLRC4 inflammasome, ASC and IL-1β expression in STZ treated animals. In contrast, a significant difference was not demonstrated in components of the inflammasome including NLRP1, NLRP3, AIM2, IL18 and caspase-1 in STZ treated group compared with the control group. Moreover, the number of caspase-1, IL-1β and p-Tau protein positive cells were remarkably increased in STZ treated animals.

Conclusion : Based on the obtained results, it can be concluded that increased production of IL-1β, caspase-1 and p-Tau through association with NLRC4 inflammasome may be involved in neuroinflammation and memory impairment in AD, which creates a new horizon in this regard. Hence, strategies targeting NLRC4 inflammasome could be beneficial for the treatment of AD.

Keywords : Alzheimer; interleukin-1β; caspase 1; NLRC4; neuroinflamation; memory impairment.

Count: 309
Abstract ID: 419
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Oral

Crocin attenuated blood-brain barrier interruption and brain edema by reduction of IL-6 and MMP-9 expression following cerebral ischemia/reperfusion injury in rat

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Background and Aim : Blood brain barrier damage and brain edema are serious complications of cerebral ischemia/reperfusion (I/R). Recent studies have shown that IL-6 and MMP-9 are the main role in the blood brain barrier damage and brain edema following ischemia / reperfusion of the brain. Recently, Crocin has been shown to produce neuroprotective effects in rats after cerebral ischemia reperfusion. Crocin also inhibited matrix metalloproteinase 9 (MMP9) expression by inhibiting oxidative / nitrosative stress. It is unclear whether crocin could alleviate this brain edema injury through regulation of the expression of IL-6 and MMP-9 after cerebral I/R.

Methods : There were four experimental groups (n=12): sham, control ischemia and treated ischemia groups. Brain ischemia was induced by 80 min middle cerebral artery occlusion (MCAO). Crocin (50 and 80 mg/kg), Crocin were injected intraperitoneally (IP) at the onset of induction of ischemia. Neurologic outcome (NDS scale), brain edema (Wet/Dry method), BBB permeability (Evans Blue extravasation technique), Immunohistochemistry assay and histopathological changes were assessed 24 hours after reperfusion.

Results : Crocin administration significantly meliorate the neurological deficit of ischemic rats. Crocin, 50 and 80 mg/kg, also decreased the brain edema of the ischemic hemisphere (by 22.5% and 56.5% respectively (, compared to control ischemic group. The Evans blue content of the injured hemisphere of the ischemic group decreased significantly after crocin administration. According to histological assessment, crocin reduced subleptomeningeal and perivascular edema dose dependently. Immunostaining assay showed expression of IL-6 and MMP-9 proteins diminished significantly in treated groups (50 and 80mg/kg), compared with I/R group.The ultrastructural changes were observed after I/R including swelling astrocyte terminals, mitochondrial swollen, decreased density of inner membrane crista (vacuolation) while there was no alteration in the sham group. Administration of crocin at doses 80 alleviated ultrastructural injuries compared to I/R group.

Conclusion : It is concluded crocin is able to improve stroke destructive and critical outcomes such as brain edema and neurological deficits as well as vascular permeability and BBB integrity.

Keywords : Crocin, Blood-brain barrier, vascular permeability, brain edema.

Count: 310
Abstract ID: 412
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

Evaluation of MLTA1 gene expression in patients affected by multiple sclerosis

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Background and Aim : Multiple sclerosis (MS) is a complex inflammatory disease of the central nervous system (CNS) resulting in neurological impairment and disability. It is estimated that 2.1 million people have MS worldwide. MS is the most common neurodegenerative disorder of Caucasian 25 to 35-year-old adults. Women are affected three times more often than men. The aetiology of MS is complex and involves both genetic and environmental factors. In fact, not one but several genes are believed to lead to the disease. The majority of the MS-associated gene variants are located in genetic regions with importance for T-cell differentiation. Mucosa-associated lymphoid tissue lymphoma translocation protein 1 is a protein that in humans is encoded by the MALT1 gene Paracaspase has been shown to have proteolytic activity through its caspase-like domain in T lymphocytes. Background The paracaspase mucosa-associated lymphoid tissue lymphoma translocation protein 1 (MALT1) is crucial for lymphocyte activation through signaling to the transcription factor NF-κB. Besides functioning as a scaffold signaling protein, MALT1 also acts as a cysteine protease that specifically cleaves a number of substrates and contributes to specific T cell receptor-induced gene expression. Recently, small molecule inhibitors of MALT1 proteolytic activity were identified and shown to have promising anticancer properties in subtypes of B cell lymphoma. However, information on the therapeutic potential of small compound inhibitors that target MALT1 protease activity in autoimmunity is still lacking. MALT1 protease inhibitors are also useful in the treatment of lymphocyte-mediated autoimmune pathologies such as multiple sclerosis (MS).

Methods : Human lymphocyte cells derived from whole blood by negative selection were isolated in a set of 64 relapsing-remitting MS patients and 65 controls matched by age and gender. mRNA MALT1 gene levels were measured by RT-qPCR to assess changes in MALT1 expression between patients and controls.

Results : The expression of malt1 gene expression in the patient sample has decreased compared to control samples

Conclusion : : Reducing MALT1 expression in patients with MS can affect the NFkB pathway and cause disease.

Keywords : MALT1, multiple sclerosis, RT-qPCR

Count: 311
Abstract ID: 536
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

Assessment of metabolic pattern of urine in children with neurometabolic disease in children with Glutaric aciduria type 1 by 500 MHz HNMR spectroscopy

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Background and Aim : Nervous metabolic disorders are a group of inherited metabolic diseases that mainly affect brain function and cause various symptoms at different ages. Since the brain at the beginning of the birth has not yet fully developed, it is very vulnerable to inherited metabolic diseases. Glutaric Acidemia Type I is a type of heritable metabolic disorder in children, a disorder associated with organic acids, and is indicated by the GA-1 abbreviation. There is currently no definitive cure for a significant percentage of these diseases. But in the event of timely diagnosis, therapies are used to reduce the abnormal symptoms of the patient such as Neurodegenerative disorders and to improve the quality of life of the child.

Methods : In order to evaluate the performance of the NMR method in diagnosing neurometabolic disease, Glutaric Acidemia in the first stage, the precise location of Glutaric acid peaks is determined on the basis of pure Glutaric acid powder spectroscopy using Oxford's 500 MHz NMR. In the second stage, spectroscopy is done from urine specimens of the patients with neurometabolic disease and the control group (to differentiate between the two groups of patients and healthy subjects). In this study, in order to detect the efficiency of NMR differentiation in the diagnosis of neurometabolic disease GA1 patients, two groups of 5 healthy subjects and patients were examined.

Results : The results of the in vitro study were similar to those of the studies, The Glutaric acid peaks were observed at concentrations of 1/6 and 2/1 ppm. Regarding the abnormal distribution of the obtained data, data from the Mann-Whitney test showed that there was a significant difference in GA concentration in patients with GA1 than in healthy subjects ($P < 0.02$).

Conclusion : The results showed that using the NMR spectroscopy method, in the neurometabolic disease like Glutaric aciduria can be studied and used as a diagnostic test in clinical cases to prevent from neurodegeneration in adolescence

Keywords : Glutaric Acidemia Disease; NMR Spectrometry; Metabolic; neuroMetabolic Disease; neurodegenerative disorder

Count: 312
Abstract ID: 59
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

The Results of Oculomotor tests in patients affected by Definite Multiple Sclerosis

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Background and Aim : Multiple sclerosis (MS) is an autoimmune and demyelinating disease that can affect myelin, the lining of neural tissue in the central nervous system. Disrupted myelin affects the conduction velocity and integrity of neural signals. Patients with MS are at increased risk for developing vertigo due to interactions with neural pathways. A large number of MS patients complain of dizziness and these Symptoms of dizziness can result from lesions in the central neural pathway. Thence, Oculomotor tests can be useful in early diagnosis of MS patient. Aim: The present paper aims to evaluate central vestibular system in Definite Multiple Sclerosis.

Methods : Twenty definite MS and twenty normal subjects participated in this study. Oculomoter tests include gaze, saccade, smooth pursuit tracking and optokinetic was done.

Results : The most frequent disorders include in slow velocities and prolonged latencies in saccade testing.

Conclusion : The results of this study suggested that oculomotor tests can be used as complementary method to confirm the diagnosis of MS with other conventional methods as MRI and clinical examination

Keywords : central vestbular system, oculomotor test, definite multiple sclerosis

Count: 313
Abstract ID: 453
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

Study of the association between serum level of Glucose and behavioral symptoms of 6-hydroxydopamine – induced Parkinsonism in rat

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Background and Aim : Parkinson's disease (PD) is the second most common neurodegenerative disease after Alzheimer's disease which is caused by progressive death of the dopaminergic (DA) neurons in substantia nigra pars compacta (SNc). Symptoms of PD are appeared after the death of more than 70% of DA neurons in SNc. Therefore recognizing non clinical factors such as biological indicators may be helpful. A large body of data indicate that both of diabetes mellitus and PD share similar pathological pathways. To investigate more the association between PD and diabetes, we evaluated the serum levels of Glucose in the 6- hydroxydopamine (6- OHDA) rat model.

Methods : The 6-OHDA was injected into the medial forebrain bundle and behavioral, immunohistofluorescence and biochemical studies were carried out to evaluate the severity of 6-OHDA- induced Parkinsonism. Apomorphine induced rotational tests were carried out fifth weeks after the toxin. The blood samples were collected and serum level of glucose was measured sixth week after the toxin.

Results : In contrast to control group, 6-OHDA treated rats showed significant rotations contralateral to the injection side. Based on the severity of rotations, 6-OHDA treated rats were divided to severe and mild groups. 6- OHDA treated rats showed significant neuronal death in substantia nigra but the survival of TH- positive neurons in severe group was remarkably less than that in mild group. Serum level of glucose in 6- OHDA treated rats group was significantly higher than that in control group. Also, Serum level of glucose in severe group was significantly higher than that in mild group.

Conclusion : Our data show that there is a significant association between serum level of glucose and severity of 6-OHDA- induced Parkinsonism in rats. Since the death of dopaminergic neurons and decrease in dopamine are common in both the 6-OHDA model and PD in humans, serum level of glucose can predict DA degeneration in SNc.

Keywords : Parkinson Disease; Glucose; 6- hydroxydopamine; apomorphine induced rotational test; stereotaxic surgery

Count: 314
Abstract ID: 317
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

Evaluation of monoamine oxidase inhibitory effect of seven medicinal plant extracts from Iran

Submission Author: Mohsen Shamsi

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Background and Aim : Monoamine oxidase)MAO(which is a Flavin containing enzyme, exist at the outer mitochondrial membrane in the central nervous system and peripheral tissue. They catalyze the oxidative deamination of monoamine neurotransmitters and play an important role in neurological disorder and psychiatric condition. A variety of plants with MAO inhibitory activity are being used in various CNS disease .the objective of this study was to evaluate MAO-A and MAO-B inhibitory effect of seven methanolic extracts of Iranian medicinal plants included: Alhagi pseudalhagi ،Cerasus microcarpa ،Amygdalus¬¬ scoparia ،Stachys pilifera ،Sanguisorba minor ،Ferulago angulate and Rosa canina

Methods : The aerial parts of plants were dried and extracted with methanol by maceration method. The inhibitory effects of this extracts on MAO A and B enzymes in rat brain mitochondria were measured by fluorimetric method by using kynuramine as substrate.

Results : The result of this study illustrated that MAO-A enzyme was inhibited by all extracts but best activity was observed with S. minor and F angulate extract by IC50 value of 7.133 and 62.2 µg/ml،respectively. Among the extracts, C. microcarpa strongly inhibited the MAO-B activity by IC50 value of 49.53 µg/ml. A.pseudalhagi and S. minor extracts had no inhibitory effect on MAO-B then are selective MAO-A inhibitors. Also A. scoparia and S.pilifera with IC50 MAO-A/MAO-B ratio of 0.54 and 0.36 respectively had greater affinity for MAO-A inhibition. C. microcarpa and R. canina with IC50 MAO-A/MAO-B ratio of 2.73 and 1.53 selectively inhibited MAO-B enzyme. F. angulata was the nonspecific inhibitor of MAO enzyme

Conclusion : Our study showed that these extracts has different MAO-A and MAO-B activity. According to their selective activity on MAO-A and MAO-B, they can be used for treatment of neuropsychiatric diseases such as depression and neurodegenerative disorders such as Alzheimer's and Parkinson's disease

Keywords : MAO-A ،MAO-B ،mitochondria ،medicinal plant

Count: 315
Abstract ID: 354
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

Polymorphisms in the angiotensin I converting enzyme (ACE) gene are associated with multiple sclerosis risk and response to Interferon-β treatment

Submission Author: Mohammad Taheri

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Background and Aim : Multiple sclerosis (MS) as a chronic autoimmune demyelinating disorder of the central nervous system has been associated with numerous genetic and environmental factors among them are functional variants within the angiotensin I converting enzyme (ACE) gene.

Methods : In the present study, we genotyped the rs4359 (C/T) and rs1799752 (Insertion (I)/Deletion (D)) of this gene in 391 MS patients and 380 age- and sex-matched controls.

Results : We found significant overrepresentation of the I allele of the rs1799752 in MS patients compared with healthy subjects (Adjusted P value = 0.03, OR (95% CI) = 1.28 (1.05-1.57). The same allele was associated with MS risk in co-dominant and dominant models (Adjusted P values of 0.007 and 0.002 respectively). The allele and genotype frequencies of the rs4359 were not significantly different between cases and controls. Moreover, the I allele of the rs1799752 was significantly overrepresented in MS patients who were irresponsive to IFN-β compared with healthy subjects (Adjusted P value = 0.04, OR (95% CI) = 1.57 (1.08-2.29)). The same allele was associated with irresponsiveness to IFN-β in dominant model (Adjusted P value = 0.02, OR (95% CI) = 2.32 (1.22-4.42)).

Conclusion : The present study provides further evidences for the role of ACE in MS risk or response of patients to IFN-β treatment.

Keywords : Angiotensin I converting enzyme; Multiple sclerosis; Polymorphism

Count: 316
Abstract ID: 343
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

Ameliorating tremor in a Parkinsonian patient using transcranial electrical stimulation

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Background and Aim : Over recent two decades of research on Parkinson's disease (PD), an emerging body of evidence has documented that deep brain stimulation (DBS) espacially in subthalamic nucleus (STN) would increase high-beta band oscillatory activity in STN resulting in a subsequent oscillatory coherence between the prefrontal cortex and STN. As such, it seems that modulating these oscillations at cortical level using noninvasive methods including transcranial electrical stimulation (tES) rather that invaisive methods (i.e. DBS) may potentially be effective in improving motor symptoms in parkinsonian patients.

Methods : In this case study, a 60 years-old male, known case of PD with suboptimal response to medication therapy referred with bilateral resting hand tremor, bradykinesia, rigidity and history of traumatic brain injury 40 years ago. Quantitative electroencephalography was performedbased on which the oscillatoy patterns of regions of interest were identified to define tES protocol. Based on clinical discretion of a panel of experts, transcranial 2 mA alternating current stimulation was applied on FCz and right supraorbital regions (18 Hz, offset=0, duration 40 min), also on C3 and C4 regions (6 HZ, 1.5 mA, offset= 0.5, duration 40 min) for 12 sessions every other day. Mirror tracing and V-Pearon tasks were used to quantitatively assess the extent of tremors over each session. Session 1 and session 12 (pre- and post-intervention) behavioral assessment results were compared.

Results : The total number of pre-intervention mirror tracing errors (104, and 102 in right and left hand, respectively) were reduced to 28 errors in both of hands. Likewise, in the V-Pearon test, the number of erorrs declined from 98 to 10 in the right hand and from78 to 9 errors in the left hand following 12 sessions of tES intervention.

Conclusion : tES may reduce tremor a case of PD examined here. Further systematic sham-conrolled studies would be required to establish the clinical application of tES besides the mainstay of theray in PD.

Keywords : : Parkinson's disease, Tremor, tES, Behavioral assessment

Count: 317
Abstract ID: 30
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

The electrical activity of hippocampal pyramidal neurons in the rat model of Alzheimer's disease

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Background and Aim : Alzheimer's disease (AD) is associated with cognitive impairments and a decline in the spontaneous neuronal discharge. Hippocampus, as a major component of the limbic system in the brain, plays important roles in learning and memory, cognition, and so on, especially in the consolidation of information from short-term memory to long term memory. In this study, we evaluated the effects of bilaterally lesion of Nucleus Basalis Magnocellularis (NBM) on the neuronal firing evoked in vivo on the CA1 hippocampal neurons.

Methods : Thirty eight male rats were randomly allocated into three groups: Control+Saline group, Lesion+Saline group (received bilaterally lesion of NBM with electrically-induced: 0.5mA, 3s to create Alzheimer’s model), Sham+Saline group (entering the electrode in the NBM without lesion). One week later, In vivo single-unit recording were performed in urethane anesthetized rats. After 15 min of baseline recording from pyramidal neuron within the CA1 region of the dorsal hippocampus, intraperitoneally (I.P) injection of saline were performed, and the spontaneous firing were continued to be recorded for another 105 min.

Results : The results of this study showed that the mean frequency of pyramidal neurons in CA1 region of the hippocampus after saline injection has a significant difference in the lesion+saline group with the control+saline and sham+saline groups ($P<0.001$). It was also demonstrated that after saline injection, no significant difference was found in the mean frequency of the pyramidal neurons between the control+saline and sham+saline groups. This indicates that the surgical procedures, including anesthesia and the entry of the electrode into the NBM nucleus without induction of electrical current has no effect on the mean frequency of the pyramidal neurons in CA1 region of the hippocampus.

Conclusion : The results of this study suggest that the mean frequency of the pyramidal neurons in the CA1 region of the hippocampus in adult male rats reduces following the bilateral NBM lesion.

Keywords : hippocampus; CA1 neurons; single-unit recording; Nucleus basalis of magnocellularis; Alzheimer’s disease

Count: 318
Abstract ID: 63
subject: Neural Injuries and Neurodegenerative Disorders: Neurodegenerative Disorders
Presentation Type: Poster

Naringenin ameliorates Neuroinflammation impairment following systemic lipopolysaccharide challenge in the rat.

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Background and Aim : Systemic inflammation as a result of an infection is usually related with long-term complications. Neuroinflammation is also main hallmark of several neurological conditions. Naringenin is a citrus flavanone with anti-inflammatory, neuroprotective, and antioxidant potential. In this study, the protective effect of naringenin for reducing inflammatory factors was quite noticeable.

Methods : LPS was daily injected at a dose of 167 µg/kg for 1 week and naringenin was administered p.o. at doses of 25, 50, or 100 mg/kg/day.

Results : Treatment of LPS-injected rats with naringenin dosedependently lowered hippocampal nuclear factor-kappaB (NF-?B), toll-like receptor 4 (TLR4), tumor necrosis factor ? (TNF?).

Conclusion : Taken together naringenin was able to lower LPS_induced Neuroinflammation.

Keywords : Naringenin; lipopolysaccharide; Neuroinflammation

Count: 319
Abstract ID: 160
subject: Neural Injuries and Neurodegenerative Disorders: Dementia
Presentation Type: Poster

All-trans retinoic acid in Alzheimer's disease

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Background and Aim : Alzheimer's disease (AD) is a complicated neurodegenerative disorder. It is characterized by the pathological accumulation of β-amyloid peptides (Aβs) and neurofibrillary tangles within the brain, which leads to severe cognitive damage. Studies indicate that retinoid signaling in the brain might have crucial impacts on pathogenesis of AD. All-trans retinoic acid (ATRA) is an active metabolite of vitamin A in the brain and has been argued to have beneficial effects in AD.

Methods : Latest findings on the potential prophylactic and therapeutic effects of retinoid signaling on AD will be described based on the papers in the literature. Meanwhile, developing insights into possible mechanisms by which retinoic signaling in the brain modulate aspects of AD will be discussed.

Results : Retinoids are capable of acting upon multiple AD-associated targets including Aβ and Tau lowering, acetylcholine activation, and anti-inflammation.

Conclusion : It appears that retinoid signaling have crucial prophylactic, as well as therapeutic effects on AD. As, AD is a multifactorial disease, targeted therapeutic agents lead to relatively modest benefits. However, retinoids appear to compromise a practical solution as a single drug with numerous targets to treat multifactorial AD.

Keywords : Alzheimer's disease; All-trans retinoic acid; Dementia

Count: 320
Abstract ID: 241
subject: Neural Injuries and Neurodegenerative Disorders: Dementia
Presentation Type: Poster

The effect of nobiletin on hippocampal inflammatory factors in amyloid beta-induced model of Alzheimer's disease in the rat

Submission Author: Reihane Ghasemi tarei

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Background and Aim : Alzheimer's disease (AD) is the most common cause of dementia. Inflammation increases in amyloid beta induced model of AD. Nobiletin from citrus peels as a natural compound possesses anti-dementia activity. In addition, nobiletin could ameliorate oxidative stress and inflammation. Therefore, this study was conducted to assess the effect of nobiletin on hippocampal inflammatory factors in amyloid beta-induced model of AD in the rat.

Methods : In this study, 32 male Wistar rats were randomly divided into four groups, including: group A (sham), group B (sham+nobiletin), group C (amyloid beta) and group D (amyloid beta+ nobiletin). Rats were injected bilaterally with amyloid beta into the CA1 region of the hippocampus through stereotaxic surgery. Nobiletin was administered 10 mg/kg daily one hour after surgery for one week via gavage feeding. To assess inflammatory markers, hippocampal level of NF-κB, Nrf2, TNF, and TLR4 were measured two weeks after the surgery using ELISA method.

Results : : The results indicated that intrahippocampal injection of Aβ causes significant increase of NF-κB, TNF, and TLR4 as compared to sham group. In addition, treatment of group c with nobiletin reduced inflammatory markers. Meanwhile, Nrf2 had no significant change in treated groups.

Conclusion : According to the findings of this study, we can say that treatment with nobiletin reduces inflammation and can suppress neuroinflammation in amyloid beta induced model of AD.

Keywords : Alzheimer's disease, Amyloid beta, Nobiletin, Inflammatory factors

Count: 321
Abstract ID: 308
subject: Neural Injuries and Neurodegenerative Disorders: Dementia
Presentation Type: Oral

Spatial search strategies in rats by activation of median raphe 5HT1A receptors: effect of selective cholinergic denervation

Submission Author: Soheila Hosseinzadeh

Soheila Hosseinzadeh[1]

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Background and Aim : 5-HT1A receptor is a target for novel therapeutic advances in several neuropsychiatric disorders characterized by various cognitive deficits. Based on studies in rodents the stimulation of 5-HT1A receptors generally produces learning impairments by interfering with memory-encoding mechanisms. Median raphe nucleus (MR), which are the main sources of serotonergic innervation of the forebrain mainly innervate the dorsal hippocampus and the medial septum/diagonal band of Broca nuclei. Several lines of evidence indicate that serotonergic neurons exert inhibitory modulations of basal forebrain cholinergic neurons.

Methods : The activation of MR somatodendritic 5-HT1A autoreceptors by 5-HT1A receptor agonist, 8-hydroxy-2-(di-n-propyl-amino)-tetralin (8-OH-DPAT; 4 µg/0.5 µl saline), have markedly impaired behavioral performance in the Morris water maze relative to intra-raphe 8-OH-DPAT administrated littermates with selective cholinergic denervation by administration of the immunotoxin 192 IgG-saporin (1µl/each ventricle).Here, we have analyzed swimming paths of the animals during acquisition training which categorized according to three main search strategies; spatial, non-spatial systematic or repetitive looping.

Results : On the first day of hidden platform training sham (PBS)-lesioned and 192 IgG saporin-lesioned animals used a mixture of strategies. As the improvement in performance over the 3 days of training in the PBS/Saline and 192 IgG/8OH rats appeared to be associated only with weak spatial memory, as assessed by the probe trial, we analyzed the ability of the rats for better use one or more of the individual strategies over the 3 days of training, and the extent to which shifts in search strategy use contributed to overall performance. The strategy choices made by 192 IgG/Saline rats predicted an impairment of 33% compared with the strategy choices made by PBS/Saline rats. The observed impairment from the actual data was 31%. There was no effect of 8-OH-DPAT alone on learning, as performance appeared to impair over days (predicted impairment 26% compared with PBS/Saline rats), but the strategy choices made by 192 IgG/8OH rats predicted a 12% better performance (observed improvement, 11%) as compared with the strategy choices made by 192 IgG/Saline rats.

Conclusion : A concomitant 8-OHDPAT-induced hyperpolarisation of cholinergic and/or GABAergic and/or glutamatergic neurons, might be necessary to obliterate task acquisition and cholinergic septohippocampal neurons

might be more important than non-cholinergic ones in serotonin induced modulation of hippocampus-dependent memory processing.

Keywords : 192 IgG-saporin; 5-HT1A; Memory; Search Strategies

Count: 322
Abstract ID: 555
subject: Neural Injuries and Neurodegenerative Disorders: Dementia
Presentation Type: Oral

Evaluation of anti-inflammatory effects of seminal vesicle fluid in animal model of Alzheimer's disease

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Background and Aim : Alzheimer's disease is the most common cause of dimentia and there is a growing concern about its prevalence. The disease is characterized by impairment of neurons and synapses which ultimately lead to cognitive impairment. The formation of plaque associated with aging resulting from the precipitation and accumulation of β-amyloid and the highly phosphorylated strands of "Tau" in the neurons is the pathological index of the brain of Alzheimer's disease. In addition to beta-amyloid plaques, the inflammatory process with the key role of of microglia cells and astrocytes plays an essential role in the pathogenesis of the disease. In fact, these cells activate in response to the production and deposition of β-amyloid plaques and cause chronic inflammation. During this chronic inflammation, astrocytes and active microglial cells produce inflammatory mediators that cause the destruction of adjacent neurons. Previous studies have shown that seminal vesicle secretions (SVFs) have anti-inflammatory properties in the nervous system. Given the inflammation in Alzheimer's, this study examined the anti-inflammatory power of SVF in the brain and its effects on the brain in the Alzheimer's animal model.

Methods : Alzheimer's disease was induced using intrahippocampal injection of beta-amyloid. Seven days after the disease induction, SVF was intracerebroventricularly was injected. Then Morris water maze and molecular examination for neural apoptosis, beta-amyloid plaque burden, Iba-1, GFAP, MHC II, CD86, and regulatory T cell level was determined.

Results : Intracerebroventricular administration of SVF significantly improved the cognitive function, assessed by the Morris Water Maze test, and the study of the brain also showed that the amount of apoptotic cells and beta-amyloid plaques significantly decreased. The expression of MHC II and CD86, which are markers of inflammatory microglia, were significantly reduced. Immunotherapy using SVF did not significantly change the level of Treg (Treg) and GFAP as an indicator of astrocytes, but significantly reduced the expression of the Iba-1 molecule as an indicator of microglia cells.

Conclusion : Although, SVF could improve the cognitive function and some of the molecular features but it was ineffective on some other parameters. Given the effects of the SVF, it can be used in conjunction with other materials to complement SVF effects by building a multi-component/cocktail package. The study suggests SVF as one of the candidates in the development of an effective immunotherapeutic cocktail.

Keywords : Seminal Vesicle Fluid, Alzheimer’s disease, β-Amyloid, Apoptosis, MHC II, CD86, Treg

Count: 323
Abstract ID: 309
subject: Neural Injuries and Neurodegenerative Disorders: Dementia
Presentation Type: Oral

EVEROLIMUS, A MAMMALIAN TARGET OF RAPAMYCIN INHIBITOR, AMELIORATED STREPTOZOTOCIN-INDUCED LEARNING AND MEMORY DEFICITS VIA NEUROCHEMICAL ALTERATIONS IN MALE RATS

Submission Author: Hamid Reza Sadeghnia

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Background and Aim : Everolimus (EVR), as a rapamycin analog, is a selective inhibitor of the mammalian target of rapamycin (mTOR) kinase and its associated signaling pathway. mTOR is a serine/threonine protein kinase and its hyperactivity is involved in the pathophysiology of Alzheimer's disease (AD) and associated cognitive deficits. The present study evaluated the impact of EVR, on cognitive functions, hippocampal cell loss, and neurochemical parameters in the intracerebroventricular streptozotocin (icv-STZ) model of AD rats.

Methods : EVR (1 and 5 mg/kg) was administered for 21 days following the single administration of STZ (3 mg/kg, icv) or for 7 days on days 21-28 post-STZ injection after establishment of cognitive dysfunction. Cognitive deficits (passive avoidance and spatial memory), oxidative stress parameters, acetylcholinesterase (AChE) activity, and percentage of cell loss were evaluated in the hippocampus.

Results : Chronic administration (1 and 5 mg/kg for 21 days from the day of surgery and icv-STZ infusion) or acute injection (5 mg/kg for 7 days after establishment of cognitive impairment) of EVR significantly attenuated cognitive dysfunction, neuronal loss, oxidative stress and AChE activity in the hippocampus of STZ-AD rats.

Conclusion : In conclusion, our study showed that EVR could prevent or improve deteriorations in behavioral, biochemical and histopathological features of the icv-STZ rat model of AD. Therefore, inhibition of the hyperactivated mTOR may be an important therapeutic target for AD.

Keywords : Everolimus; mTOR; Alzheimer's disease (AD); oxidative stress; acetylcholinesterase; streptozotocin

Count: 324
Abstract ID: 656
subject: Neural Injuries and Neurodegenerative Disorders: Traumatic Brain Injury
Presentation Type: Oral

The Progesterone Improve Spatial Memory Impairments at Delayed Time Intervals Following Traumatic Brain Injury: Classic progesterone receptor

Submission Author: Ladan AMIRKHOSRAVI

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Background and Aim : Traumatic brain injury (TBI) affects millions worldwide and can result in profound, long-term functional deficits, including personality changes, motor incoordination, and neuropsychiatric and cognitive issues. In previous studies, the neuroprotective effect of progestrone in diffuse traumatic brain injury has been shown. This study used mifepristone (RU-486), a potent progesterone receptor antagonist, to evaluate role of p4 and classic p4 receptor in long term memory after TBI.

Methods : The ovariectomized rats were divided into 6 groups: sham+ovx, TBI, TBI+OIL, TBI+P4, TBI+DMSO+P4, TBI+RU-486+P4. Brain injury was induced by Marmarou's method. Progesterone was injected 30 minutes after traumatic brain injury, and RU-486 was injected before traumatic brain injury and also before progesterone treatment. The animals 3 days were trained prior to sham injury or TBI and subjected to the memory test (probe trial) at 72 h post-injury. Also we performed spatial learning and memory at two different time points over days (21–24) post-injury.

Results : In probe trials 3 days after TBI, TBI rats spent significantly less time in the target quadrant in comparison to before TBI and than sham operated group. progesterone treatment increased the time spent in the target quadrant in comparison to before TBI and vehicle group. RU-486 injection decreased the time spent in the target quadrant in comparison to before TBI and vehicle group. TBI rats had longer escape latencies throughout the training days than sham. Learning Trials at post-injury days 21–24 in the MWM show that TBI rats had longer escape latencies throughout the training days than sham. Treatment with p4 significantly shortened this prolongation of mean latency at the 21, 22 and 23th days of training as compared with vehicle group. RU-486 injection was not significantly different with that of vehicle group in any time.

Conclusion : Progesterone can enhance spatial learning and memory in the short and long term after traumatic brain injury. Likely, classic p4 receptor is Mediator for short term effects.

Keywords : Traumatic brain injury, p4, p4 receptors, spatial learning and memory

Count: 325
Abstract ID: 34
subject: Neural Injuries and Neurodegenerative Disorders: Traumatic Brain Injury
Presentation Type: Poster

Enteral Nutrition Initiation in Children Admitted to Pediatric Intensive Care Units After Traumatic Brain Injury.

Submission Author: Seyed ehsan Asadi

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Background and Aim : BACKGROUND: Traumatic brain injury (TBI) is the leading cause of death and long-term disability among injured children. Early feeding has been shown to improve outcomes in adults, with some similar evidence in children with severe TBI. We aimed to examine the current practice of initiation of enteral nutrition in children with TBI and to evaluate the risk factors associated with delayed initiation of enteral nutrition.

Methods : This retrospective, multicenter study used the Pediatric Trauma Assessment and Management Database including all children with head trauma discharged from five pediatric intensive care units (PICU) at isfahan pediatric trauma centers between January 1, 2016 and December 31, 2017. We compared demographics, injury and procedure data, time to initiation of nutrition, and injury and illness severity scores between patients who received enteral nutrition early (≤ 48 h) and late (> 48 h). Fisher's exact and Mann-Whitney U tests compared discrete and continuous variables. Univariate and multivariable analyses evaluated variables associated with delayed initiation of feeding. Outcomes of interest included mortality, complications, ventilator days, hospital and ICU length of stay, and functional status at ICU discharge.

Results : In the 625 patients in the study, the overall mortality was 3.9%. The majority of patients (88%; range 72-89% between five sites, p?=?0.0006) received enteral nutrition within 48 h of PICU admission. Lower Glasgow Coma Scale scores and higher Injury Severity Score (ISS) were independently associated with delayed initiation of enteral nutrition. Delayed enteral nutrition was independently associated with worse functional status at PICU discharge (p?=?0.03) but was not associated with mortality or increased length of stay.

Conclusion : Children with severe TBI and higher ISS were more likely to have delayed initiation of enteral nutrition. Delayed enteral nutrition was an independent risk factor for worse functional status at ICU discharge for the entire cohort, but not for the severe TBI group.

Keywords : Children; Enteral nutrition; Outcomes; Pediatric; Pediatric intensive care; Trauma; Traumatic brain injury

Count: 326
Abstract ID: 121
subject: Neural Injuries and Neurodegenerative Disorders: Traumatic Brain Injury
Presentation Type: Poster

Mild traumatic brain injury among the soldiers: a systematic review

Submission Author: Mahdi Easazadeh

Mahdi Easazadeh[1], Mahdi Isazadeh[2]

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Background and Aim : Mild traumatic brain injury (mTBI) is common in returning service members yet limited definitive evidence exists on its prognosis. Mild traumatic brain injury (mTBI) is a growing importance for both civilian and military populations because of its elevated treatment costs and potential long-term effects.This research describes the effects of mild traumatic brain injury in soldiers.

Methods : This is a systematic review and relevant articles were identified through searches of “google scholar”, “pubmed”, “sciencedirect” since 2008 until 2018. The search words was “soldiers”, “mild traumatic brain injury”, “military personnel”, “mTBI”. 42 articles was found related to the search words and 13 articles were selected based on the availability of the full text.

Results : In returning soldiers the most commonly reported symptoms were sleep problems, forgetfulness, irritability and headaches. Among United States Army Soldiers results indicate that soldiers with previous mTBI have a higher risk for post traumatic stress disease (PTSD) and mental health disorders (MHD).

Conclusion : It seems that mild traumatic brain injury can produce important mental and physical damages for soldiers and it is essential to formulate a comprehensive program to control and treatment of the soldiers suffering from an injury and also new methods for detecting this damages should be applied.

Keywords : mTBI; soldiers; military

Count: 327
Abstract ID: 38
subject: Neural Injuries and Neurodegenerative Disorders: Traumatic Brain Injury
Presentation Type: Poster

Imaging Methodologies of Traumatic Brain Injury

Submission Author: Ramin Ghasemi Shayan

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Background and Aim : Traumatic brain injury (TBI) is a major cause of morbidity and mortality worldwide. Imaging plays an important role in the evaluation, diagnosis, and triage of patients with TBI. Recent studies suggest that it will also help predict patient outcomes. TBI consists of multiple pathoanatomical entities.A brain imaging method could be defined as any experimental technique that allows human (or animal) brain structure or function to be studied, preferably in vivo in the current context. Such a method should ideally produce accurate timing (in the case of functional imaging) and spatial localization (for both structural and functional imaging) of cerebral function, structure, or changes in these properties of the brain. The method should be minimally invasive and repeatable (to facilitate use in treatment monitoring and development of therapeutic strategies).In recent years, many researchers have emphasized the role of various forms of brain injury in producing neurocognitive deficits and neurobehavioral abnormalities. As a result, increased attention has turned to imaging evaluation of the head trauma patient.

Methods : A hand-search of articles published in the past 5 years (2005–2009) that contain information of interest to the radiologist interpreting CT and MR findings of head trauma patients will be discussed using PubMed and Google Scholar.

Results : In subacute and chronic stages of head injuries, MR is more sensitive than CT for detecting brain contusions. T2-weighted spin-echo images are best for demonstrating the abnormalities. CT is better than MR for showing hemorrhagic components during the acute phase of trauma. Hemorrhages are displayed on MR as high signal intensity on Ti -weighted images and as either low or high signal on T2- weighted images, depending on the age of the hemorrhage. The approximate age of hemorrhagic contusions is often suggested by the signal characteristics and appearance on Ti - and T2-weighted images. The improved detection and anatomic localization of brain contusions by MR provides new opportunities to correlate brain structure with function, and should also allow more accurate assessment of brain injuries and prediction of outcome. CT will likely retain an important role in evaluating acute head injuries to exclude life-threatening intracranial hemorrhage or cerebral swelling. Definition of the role of MR in evaluating acute head trauma requires further investigation.

Conclusion : This review has outlined a variety of aspects of head trauma imaging in the recent medical literature. It is worth summarizing both the imaging advances and some issues that remain to be addressed. First, it is clear that MRI is much more sensitive than CT for detection of small trauma-related brain abnormalities .Furthermore, some

MRI sequences are particularly sensitive to detection of specific forms of brain injury. However, the actual clinical relevance of this increased sensitivity is relatively unclear. Although articles reporting correlation of imaging findings and clinical outcome have some value, more information is needed regarding how the increased sensitivity of MRI techniques affects physician decision making.

Keywords : Neuroimaging,CT Scan,MRI,Trauma,Brain

Count: 328
Abstract ID: 551
subject: Neural Injuries and Neurodegenerative Disorders: Traumatic Brain Injury
Presentation Type: Oral

Voltage-Gated Potassium Currents of Hippocampal CA1 Neurons in a Rat Model of Traumatic Brain Injury

Submission Author: Seyed Asaad Karimi

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Background and Aim : Traumatic brain injury (TBI) is associated with cognitive dysfunction, excitotoxicity, epileptiform activity and neuronal loss in the hippocampus; however, the underlying mechanisms have not been fully determined. In this context, hyperpolarization-activated cation current (Ih) and A-type potassium channel (IA) may play a critical role in modulating the intrinsic membrane excitability of hippocampal neurons. The present study investigated the changes of Ih and IA currents in the hippocampus of rat at 1 week following controlled cortical impact (CCI) injury

Methods : CCI model was used to induce TBI. The electrophysiological properties of CA1 pyramidal neurons were examined one week after induction of TBI in rats. Whole-cell patch clamp recordings were performed on visually identified CA1 pyramidal neurons in hippocampal slice preparations obtained from control and TBI animals, under current-clamp and voltage-clamp conditions, in the presence of fast synaptic blockers. The Ih and IA currents were recorded under voltage-clamp condition.

Results : Findings showed that induction of TBI was associated with changes in the intrinsic excitability of hippocampal CA1 pyramidal neurons, as was evidenced by a significant increase ($P<0.05$) in the intrinsic firing frequency and a significant decrease in the rheobase current required to evoke action potential ($P < 0.05$). The evoked firing rate and the action potential (AP) time to peak were significantly increased and decreased ($P < 0.05$, respectively) following TBI induction. In TBI group, both the instantaneous (Iinst) and steady-state (ISS) Ih current amplitudes were significantly smaller than those in the control group ($P < 0.05$). In addition, pyramidal neurons in slices obtained from TBI rats exhibited a significant decrease in Ih current density ($P < 0.001$) and an increase in the time constant of Ih activation ($P < 0.05$). In TBI group, the instantaneous (Iinst) IA current amplitude was significantly smaller than those in the control group ($P < 0.05$). The midpoint potential of the IA activation curve shifted toward more depolarized potentials after TBI.

Conclusion : Our findings indicated that TBI lead to the intrinsic hyperexcitability in CA1 pyramidal neurons and changes in Ih and IA currents could be, in part, one of the underlying mechanisms involved in TBI-induced neuronal hyperexcitability.

Keywords : Traumatic brain injury, CA1 pyramidal neurons, Neuronal Excitability, Ih Current, IA Current, Rat

Count: 329
Abstract ID: 396
subject: Neural Injuries and Neurodegenerative Disorders: Traumatic Brain Injury
Presentation Type: Poster

Neuroprotective effects of metformin on traumatic brain injury in rats associated with AMPK signaling pathway

Submission Author: Siavash Rahimi

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Background and Aim : Traumatic brain injury (TBI) triggers a complex sequence of deleterious responses that contribute to secondary neuronal injury. Evidence shows that transient increase in cerebral glucose uptake/metabolism and in lactate/pyruvate ratio during acute phase of TBI, prolonged hypoglycemia and decreased glucose metabolism in the chronic phase of TBI are associated with increased mortality and poor outcome irrespective of initial TBI severity and brain lesion volume. TBI can induce considerable firing of neurons and ionic gradient disturbance across the neuronal cell membrane through mechanical force and ligand-gated ion channels that causes substantial potassium release into the extracellular space. In order to reestablish the disrupted balance of ions and to eliminate demised cell debris, brain ATP could be depleted rapidly due to over-activated high energy-demanding ATP-dependent pumping mechanisms. Meanwhile, effective ATP production from mitochondrial could be significantly impaired due to direct mitochondria damage and TBI-induced ischemia. Other factors including cerebral blood flow, hypoxia, cortical spreading depression, inflammation, microglia activation, glutamate–glutamine recycling and glutamate detoxification pathways may also be affected by dysfunctional energy metabolism in TBI. Metformin an AMP-activated protein kinase (AMPK) is a serine/threonine kinase which is activated under low-energy environments, following its activation phosphorylates vital substrates in energy metabolism that lead to attenuation of energy consuming processes and augmentation of ATP-producing pathways. The aim of this study is to investigate the potential neuroprotective effects of metformin through reestablishment of energy balance in acute severe brain injury after TBI and explore the underlying mechanisms.

Methods : Male N-Mari rats were divided into eight groups (each group containing eight rats): intact, sham, saline, TBI, TBI + metformin (100mg/kg i.p), TBI + metformin (200mg/kg i.p), TBI + metformin (400mg/kg i.p), TBI + metformin (200mg/kg i.p) + Compound C. A weight-dropping Marmarou model was employed to induce TBI in rats. Veternary coma scale (VCS) were employed to assess the short-term neurological deficits. Blood-Brain barrier disruption were evaluated with Evans Blue method 6 hours post TBI. Vestibulomotor function were evaluated by beam walk and beam balance prior, shortly after and daily for three days. Brain water content and brain tissue phosphorylated and total AMPK were assessed by wet-dry method and enzyme-linked immunosorbent assay (ELISA) respectively.

Results : The presented results shows that traumatic brain injury led to significant brain edema and disrupt of blood brain- barrier and neurological defect and vestibulomotor dysfunction and decrease AMPK in the rat brain. Metformin (100, 200 mg/kg i.p) attenuated brain edema, improved BBB and vestibulomotor dysfunction compared to TBI control group ($P<0.001$). P-AMPK/AMPK ratio also were increased by metformin administration compare to TBI group ($p<0.0001$). Inhibition of AMPK by compound C abolished Metformin neuroprotection effects ($P>0.05$).

Conclusion : This study suggests that metformin administration inhibits TBI mediated secondary injury via phosphorylation of AMPK and improves neurobehavioral function following TBI, which provide a potential therapeutic benefit in treating brain injury.

Keywords : Metformin, TBI, Neuroprotective, AMPK, Rat, Compound C

Count: 330
Abstract ID: 393
subject: Neural Injuries and Neurodegenerative Disorders: Traumatic Brain Injury
Presentation Type: Oral

Therapeutical effects of chrysin in a rat model of traumatic brain injury: behavioral, biochemical and histological studies

Submission Author: Masome Rashno

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Background and Aim : Traumatic brain injury (TBI) affects over 1.7 millions people in the United States alone and poses many clinical challenges due to the variability of the injuries and complexity of biochemical mechanisms involved. Thus far, there is still no effective therapy for TBI. In the present study, the neuroprotective effects of chrysin, a natural flavonoid compound, on neurological score, behavioral functions, oxidative status, blood-brain barrier (BBB) permeability, brain oedema, neuronal viability, and apoptotic index after TBI were evaluated.

Methods : TBI was induced using a modified weight-drop method. Chrysin (25, 50 or 100 mg/kg) or vehicle was administrated orally once daily for 14 days consecutive after TBI induction. Neurological functions, memory performance and motor coordination were evaluated by employing standard neurobehavioral paradigms. At the end of treatment course, BBB permeability and brain oedema were assessed. Additionally, oxidative status, neuronal viability, and apoptotic index were evaluated in both cerebral cortex and hippocampi of the rats.

Results : Our results showed that animals subjected to TBI exhibited worsened neurological scores, brain oedema and also BBB permeability. These changes were accompanied by increasing of oxidative stress, apoptotic index and also neuronal loss in the cerebral cortex and hippocampus of animals. Interestingly, chrysin treatment improved all the mentioned deficits related to TBI. Moreover, ameliorated motor coordination and cognition deficits induced by TBI.

Conclusion : Our data confirm that chrysin could potentially serve as a novel, promising, and accessible protective agent against TBI-associated neurobehavioral deficits, owing to its antioxidant and anti-apoptotic properties.

Keywords : Traumatic brain injury; Chrysin; Oxidative stress; Neurobehavioral; Neuronal survival; Apoptotic index.

Count: 331
Abstract ID: 431
subject: Neural Injuries and Neurodegenerative Disorders: Traumatic Brain Injury
Presentation Type: Poster

Therapeutical effects of chrysin in a rat model of traumatic brain injury: behavioral and biochemical studies

Submission Author: Masome Rashno

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Background and Aim : Traumatic brain injury (TBI) affects over 1.7 millions people in the United States alone and poses many clinical challenges due to the variability of the injuries and complexity of biochemical mechanisms involved. Thus far, there is still no effective therapy for TBI. In the present study, the neuroprotective effects of chrysin, a natural flavonoid compound, on neurological score, behavioral functions, oxidative status, blood-brain barrier (BBB) permeability and brain edema were evaluated after TBI.

Methods : TBI was induced using a modified weight-drop method. Chrysin (25, 50 or 100 mg/kg) or vehicle was administrated orally once daily for 14 days consecutive after TBI induction. Neurological functions, memory performance and motor coordination were evaluated by employing standard neurobehavioral paradigms. At the end of treatment course, BBB permeability and brain edema were assessed. Additionally, oxidative status was evaluated in both cerebral cortex and hippocampi of the rats.

Results : Our results showed that animals subjected to TBI exhibited worsened neurological scores, brain edema and also BBB permeability. These changes were accompanied by increasing of oxidative stress in the cerebral cortex and hippocampus of animals. Interestingly, chrysin treatment improved all the mentioned deficits related to TBI. Moreover, ameliorated motor coordination and cognition deficits induced by TBI.

Conclusion : Our data confirm that chrysin could potentially serve as a novel, promising, and accessible protective agent against TBI-associated neurobehavioral deficits, owing to its antioxidant properties.

Keywords : Traumatic brain injury; Chrysin; Oxidative stress; Neurobehavioral.

Count: 332
Abstract ID: 347
subject: Neural Injuries and Neurodegenerative Disorders: Traumatic Brain Injury
Presentation Type: Poster

The effect of Boswellia serrata extract and AKBA (Acetyl-11-keto-β-boswellic acid) on the neurological scores, brain edema and brain -blood barrier after severe traumatic brain injury in male rats: th

Submission Author: Rezvan Rezaei nezhad

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Background and Aim : Gladiolus plant is a tree from the family of Khorrasa. Boswellia serrata reduces glutamate-induced peritomerial edema. It also has potent antioxidant properties and immunosuppression, and anti-apoptosis in the central nervous system, and can be used to treat neurodegenerative diseases such as Alzheimer's disease, Huntington's disease, Parkinson's disease and dementia. However, its precise mechanism is still unknown. In this study, we investigated the effects of neural protection of the condor plant after induction of cerebral inflammation in rats.

Methods : The male Albino wistar rats received different doses of Boswellia serrata (125, 250, 500 mg/kg, i.p.).All animals were intubated before surgery. In the TBI groups, diffuse TBI was induced by Marmarou method using a TBI induction device. The severe TBI was induced using a weight 450 gr.In the sham groups, all stages of induction of TBI were performed except dropping weight on the head. The disruption of Blood brain- barrier (BBB) was evaluated 6 h post- TBI. The neurologic score(VCS) and brain water content, the beam-walk –balance task (WB) were determined before trauma(Pre), on trauma time(D0), and 1 hours (D1) and 4 hours (D2) and (D3) hours post-TBI. 24 hours After TBI anaesthetized animals were sacrificed and the brain was removed for IL10 and IL-1B Elisa assay.

Results : Our results showed that traumatic brain injury led to significant brain edema and disrupt of blood brain-barrier and neurological defect and vestibulomotor dysfunction in the rat brain and decrease IL1B and increase IL-10 in brain tissue. Boswellia serrata (250, 500 mg/ kg) could attenuated brain edema, improved BBB and vestibulomotor dysfunction in compare with TBI control group ($P<0.001$) but in 500 dose results were better.

Conclusion : These findings showed that Boswellia serrata has a prominent role in TBI outcome's and perhaps protect neurons through modulating inflammatory and antioxidant pathways

Keywords : Boswellia serrata ; TBI; neuroprotective; IL; rat

Count: 333
Abstract ID: 427
subject: Neural Injuries and Neurodegenerative Disorders: Traumatic Brain Injury
Presentation Type: Oral

Therapeutic effects of three natural substances on animal model of traumatic brain injury. (Behavioral, Electrophysiological and Biochemical evaluations)

Submission Author: Alireza Sarkaki

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Background and Aim : Traumatic brain injury (TBI) with different forms (as car accident, Falling hard objects on the head and other cases) occur in various events, involving a large number of people around the world. It poses many clinical challenges due to the variability of the injuries and complexity of behavioral, electrophysiological and biochemical mechanisms involved. Thus far, there is still no effective meditational therapy for TBI. In the present study, the neuroprotective effects of some natural substances with potent antioxidive and anti-inflammatory properties includes gallic acid, ellagic acid and chrysin that used during last three years on neurological score, behavioral functions, brain hippocampus electrophysiology, oxidative stress, blood-brain barrier (BBB) permeability, brain tissue edema, brain tissue interleukins after TBI induction were evaluated.

Methods : TBI was induced using a modified weight-drop method. Natural substances, GA, EA and chrysin or vehicles were administrated orally once daily for 7 or 14 consecutive days after TBI induction. Neurological signs, memory performance, long-term potentiation (LTP) recording from brain hippocampus were done by employing standard paradigms. After then BBB permeability and brain tissue edema were assessed. Additionally, oxidative status and inflammatory indexes were evaluated in both cerebral cortex and hippocampi of the rats. Data were analyzed with one-way ANOVA followed by Tukey's post hoc test. P value less than 0.05 assigned as significant different.

Results : The animals subjected to TBI exhibited worsened neurological scores, memory, brain LTP deficiencies, brain tissue edema and BBB permeability significantly. These changes were accompanied by increasing of lipid per-oxidation, pro-inflammatory cytokines in brain while decrease the antioxidative enzymes activity and anti-inflammatory cytokines. Interestingly, treatment with GA, EA and chrysin improved all the mentioned deficits related to TBI significantly.

Conclusion : Our findings confirm that all chosen natural substances could potentially serve as a novel, promising, and accessible protective agents against TBI-associated neural disorders, owing to their antioxidant and anti-apoptotic properties. We are investigating on the effects of cocktail of these substances for more evaluation on complications due to TBI.

Keywords : Traumatic brain injury; Gallic acid: Ellagic acid; Chrysin; Electrophysiology; Rat.

Count: 334
Abstract ID: 346
subject: Neural Injuries and Neurodegenerative Disorders: Traumatic Brain Injury
Presentation Type: Oral

The role of tamoxifen (a selective estrogen receptor modulator) on neurological score, blood-brain barrier and brain edema after traumatic brain injury in male rat: the role of matrix metalloproteinase

Submission Author: Ali Siahposht khachaki

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Background and Aim : Introduction: Tamoxifen is an oral medication that is used for the treatment of breast cancer, and it acts on an estrogen receptor for agonist or antagonistic activity (effects) due to its effects on the environment. The metalloproteinase matrix is an enzyme that is produced by endothelial cells, microglia and astrocytes, and When the expression of the metalloproteinase-9 matrix will be progressed by an increased mucosal-permeability, it will be resulted in edema and nerve damage (the increased expression of the metalloproteinase-9 matrix results in an increased mucosal-permeability to edema and nerve damage). Therefore, in this study, we evaluated the effects of tamoxifen neuronal protection after induction of cerebral infarction in rats.

Methods : Materials and methods: Wistar rats received different doses of tamoxifen (2.5, 5 and 10 mg / kg) intraperitoneally after induction of brain injury. Of course, animals were anesthetized and inserted into the chip before brain stroke induction. A brain stroke was made by marmarou method and drug will be injected half an hour after the brain stroke. VCS of the animal was recorded at 0, 1, 4, and 24 hours after the traumatic brain injury. Beam Walk and Beam Balance tests were taken from an animal at this time (Beam Walk and Beam Balance). The level of permeability of the blood-brain barrier was elevated (monitored) by the Evans colored substance. After 24 hours, the animal is killed and its head is cut of, and the brain is fixed in nitrogen to be used for ELISA tests.

Results : Results: The results showed that brain damage reduced neurological scores, but tamoxifen 5mg / kg on the third day after trauma caused minimal difference with Sham or Intact groups ($p < 0.001$). The brain edema and Evans blue content were significantly lower in the tamoxifen 5 mg / kg group than in the group receiving tamoxifen (2.5 mg / kg) ($P < 0.0001$). Traversal time (BW) in the tamoxifen group 5 mg / kg did not have a significant difference

with the Sham or Intact group on the second and third day after the trauma. In addition, tamoxifen injection (5 mg / kg) also reduces the secretion of metalloproteinase-9 matrix.

Conclusion : Conclusion: According to the findings of this study, it can be concluded that administration of tamoxifen (5 and a little 1 mg / kg) in rats reduce the consequences of brain trauma and It can be considered as a neuroprotective drug for the treatment of neurodegenerative diseases.

Keywords : Key word: Tamoxifen, Brain trauma, Metalloproteinase-9 matrix, Cerebral-edema

Count: 335
Abstract ID: 335
subject: Neural Injuries and Neurodegenerative Disorders: Spinal Cord Injury
Presentation Type: Poster

The Effect Short- term Treatment with Dimethyl Sulfoxide on Spinal Cord Ischemic/Reperfusion Injury in Male Rats

Submission Author: Masumeh Mohammadpour

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Background and Aim : Background and Aim: Spinal cord injury (SCI) is an injury that leads to varying degrees of motor and sensory deficits. This complication has been attributed to temporary or permanent. The purpose of this experimental study was the effect short term treatment with Dimethyl Sulfoxide (DMSO) in paraplegia of the hind limbs on ischemic/Reperfusion (I/R) of spinal cord injury in rats.

Methods : Methods : Eighteen adult male Sprague-Dawley rats (weighing 250 to 300 g) were randomized into 3 groups: (1) Sham Surgery, (2) I/R(the abdominal aorta was done clamp) ,(3) I/R + DMSO (the abdominal aorta was done I/R and inject DMSO. The abdominal aorta was clamped for 60 minutes with mini aneurysm clamps followed by reperfusion for 72 h. All animals evaluated by Mean Motor Deficit Index (MDI) analysis, biochemical and histological test as 72 hour after ischemia.

Results : Results: The mean of MDI scores were in the right hind limb 0.16 ± 0.08 , 2.5± 1.22, 3.6 ±1.23 and the left hind limb 0.33 ± 0.012, 2.14 ± 1.13, 3 ± 2.11 in sham, I/R+DMSO and I/R groups respectively. There were statically significant differences in the mean of MDI between I/R+ DMSO and I/R groups ($p < 0.05$). In the I/R group the plasma level of Malondialdehyde (MDA)increased than the I/R + DMSO group ($p=0.001$). The plasma level of Total Antioxidative Capacity (TAC) was increased in I/R + DMSO group compared I/R group ($p=0.001$). The mean number of normal motor neurons in the I/R+ DMSO group was significantly greater than in the I/R group ($p<0.05$).

Conclusion : Conclusion : The result showed that DMSO may decrease paraplegia in I/R spinal cord injury in rats.

Keywords : Keywords: DMSO, Ischemic/Reperfusion, spinal cord injury, rat.

Count: 336
Abstract ID: 145
subject: Neural Injuries and Neurodegenerative Disorders: Spinal Cord Injury
Presentation Type: Oral

Coenzyme Q10 Influences on the Levels of TNF-α and IL-10 and the Ratio of Bax/Bcl2 in a Menopausal Rat Model Following Lumbar Spinal Cord Injury

Submission Author: Maryam Soleimani

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Background and Aim : The roles of the immune response and apoptosis as potential mediators of secondary damage in spinal cord injury (SCI) are being investigated. Research is also being done to determine the effects of female gonadal steroids, which decrease during menopause, and antioxidants, such as coenzyme Q10 (CoQ10) on SCI. We hypothesized that in the absence of female gonadal steroids, which provide protection following an SCI, CoQ10 could modulate the expression of cytokines, such as tumor necrosis factor (TNF)-αand interleukin (IL)-10, besides aquaporin-4 (AQP4) water channels in the CNS, which participate in neuroinflammation, as wellas the Bax and Bcl2 proteins that are involved in apoptosis at the site of injury.

Methods : The spinal cord was compressed at the level of the T10 vertebrae and rats were treated by 10 mg/kg/day CoQ10 for 3 weeks after surgery. The TNF-α and IL-10 expressions were studied using an ELISA. Western blot was used to investigate the Bax/Bcl-2 ratio, AQP4.

Results : The level of TNF-α significantly decreased following the administration of CoQ10 compared with the level of IL-10. When the treatment group was compared with the OVX-SCI group, the ratio of Bax/Bcl2 significantly decreased in the groups ($P < 0.01$).

Conclusion : Based on our findings, CoQ10could be used to compensate for the absence of the neuroprotection effects provided by female gonadal steroids via reducing the inappropriate effects of the two main pathways of secondary damage in SCI apoptosis.

Keywords : Coenzyme Q10, TNF-α, IL-10, Ovariectomy, Spinal cord injury

Count: 337
Abstract ID: 404
subject: Neural Injuries and Neurodegenerative Disorders: Spinal Cord Injury
Presentation Type: Poster

Creation of a novel and controllable spinal cord injury model in mouse

Submission Author: Zahra Zeraatpisheh

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Background and Aim : Spinal cord injury (SCI) is one of the leading causes of morbidity and disability all over the world. Several motor, sensory and autonomic dysfunctions arise from SCI because of its function as the connecting pathway for most neuronal systems. What is clear is that injury to the spinal cord is created not only by primary mechanical damage but also by secondary mechanisms. Despite the advance efforts by scientists, there is still no definite treatment for this progressive medical problem. In this way, animal models can be helpful in terms of understanding the molecular pathways involved in secondary damage as well as evaluating novel treatment strategies. The purpose of this study was to modify the weight model with use of a simple and inexpensive device that can create reproducible injury with less variation. The novelty of our design was creation of a device that can fix spines to prevent excess injury to spinal cord

Methods : Fifteen adult male mice were used to create compression spinal cord injury with 8g weight for 5, 10 and 15 min and behavioral and histological assessment were evaluated

Results : Placing the weight on spinal cord for 5 min could cause mild hindlimb paralysis. Complete hindlimb paralysis was created by placing the weight on spinal cord for 10 and 15 minutes at day 1 post-injury. The recovery process was accelerated in the 10-minute group from 7 day post-injury compare to 15 min group. The cavity volume was significantly larger in 15 min group and 10 min group compared to the 5 min group. The existence of dark neuron around the injury site was significantly more in 15 min group and 10 min group compared to the 5 min group.

Conclusion : The results of the present study indicated that it is possible to induce reproducible spinal cord injury from mild to severe condition with this simple and inexpensive device.

Keywords : Spinal Cord Injury, Hindlimb Paralysis, Cavity Volume

Count: 338
Abstract ID: 116
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Oral

Characterization of the CA1 pyramidal neurons in rat model of hepatic cirrhosis: insights into their electrophysiological properties

Submission Author: Iraj Aghaei

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Background and Aim : Although the key contributors of altering neurological function in hepatic encephalopathy are relatively well known, the electrophysiological mechanism of CA1 damage, a key vulnerable area during hyperammonemia, have not yet been defined. Therefore, here we focus on the electrophysiological mechanisms of cognitive impairments following bile duct ligation (BDL).

Methods : We performed patch-clamp recordings from the CA1 pyramidal neurons in hippocampus of male Wistar rats, which underwent sham or BDL surgery. A striking electrophysiological change of hippocampal neurons in experimental model of BDL was observed in the present study.

Results : Spontaneous firing frequency and rate of action potential (AP) rebound was decreased and afterhyperpolarization amplitude (AHP) was increased significantly in hippocampalcells of BDL animals compared to sham group

Conclusion : Together, the results suggest that altered intrinsic properties of the hippocampal neurons may contribute to the cognitive abnormalities during hepatic encephalopathy (HE), highlighting the electrophysiological mechanisms for providing new treatments against HE.

Keywords : Hepatic cirrhosis ; Bile duct ligation ; Electrophysiology ; Firing properties

Count: 339
Abstract ID: 45
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Poster

Sertoli Cells Avert Neuroinflammation-Induced Cell Death and Improve Motor Function and Striatal Atrophy in Rat Model of Huntington Disease

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Background and Aim : Huntington's disease (HD) is a genetically heritable disorder, linked with continuing cell loss and degeneration mostly in the striatum. Currently, cell therapy approaches in HD have essentially been focused on replenishing or shielding cells lost over the period of the disease

Methods : we sought to explore the in vitro and in vivo efficacy of primary rat Sertoli cells (SCs) and their paracrine effect against oxidative stress with emphasis on HD. Initially, SCs were isolated and immunophenotypically characterized by positive expression of GATA4. Besides, synthesis of neurotrophic factors of glial cell-derived neurotrophic factor and VEGF by SCs were proved. Next, PC12 cells were exposed to hydrogen peroxide in the presence of conditioned media (CM) collected from SC (SC-CM) and cell viability and neuritogenesis were determined. Bilateral striatal implantation of SC in 3- nitropropionic acid (3-NP)-lesioned rat models was performed, and 1 month later, post-graft analysis was don

Results : According to our in vitro results, the CM of SC protected PC12 cells against oxidative stress and remarkably augmented cell viability and neurite outgrowth. Moreover, grafted SCs survived, exhibited decreases in both gliosis and inflammatory cytokine levels, and ameliorated motor coordination and muscle activity, together with an increase in striatal volume as well as in dendritic length of the striatum in HD rats

Conclusion : In conclusion, our results indicate that SCs provide a supportive environment, with potential therapeutic benefits aimed at HD.

Keywords : Transplantation . Huntington . Striatum . Sertoli cells . Neuroprotection

Count: 340
Abstract ID: 47
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Oral

Dark Neuron Formation: A mode of death or a protective mechanism? A possible quantum vibration of glycocalyxl

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Background and Aim : The term dark neuron is often known as the dead or degenerating neuron while in contrast more than 90-99 percent of dark neurons recover after a short period of time. The aim of this review is to give a possible explanation between glutamate receptor- vibration states of glycocalyx and cytoskeleton in dark neuron formation.

Methods : This review is based on a search of Medline, Scopus Google scholar and citation lists of relevant publications. Subject heading and key words used include dark neuron, neurodegeneration, receptor, cytoskeleton, glycocalyx, glutamate.

Results : Based on the experimental results gel-gel phase transition is a proposed mechanism by which cytoskeletal elements undergo polymerization . Dark neuron formation occurs when vibration state of glycocalyx is being changed in presynaptic and pot synaptic region by the content of glutamate .Adhesion of glucocalyx- β neurexin-neuroligin can influence the cytoskeletons of the two adjacent neurons. β neurexin-neuroligin adhesion, polymerization of actin and transition phase from one neuron can spread and affect neighboring neurons.

Conclusion : Morphological characteristics and self-propagation of dark neurons are physico-mechanical phenomena which are governed by vibration state of glycocalyx on neuronal surface. Such mechanism may involve in neuroprotection and neuroplasticity.

Keywords : Dark neuron, glutamate, glycocalyx, vibration state, neuroligin,neurexin

Count: 341
Abstract ID: 15
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Oral

Evaluation of anti-apoptotic and anti-cytotoxic effect of epicathechine gallate and edarvone on SH-SY5Y neuroblastoma cells

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Background and Aim : Background:Parkinson's disease is the second most common neurodegenerative disorder which affecting the senile population with manifestation of motor disability and cognitive impairment.Epicetechin and Edaravon are compounds which might confer neuroprotective effects most probably according to their anti-oxidative stress activity but a few studies are around their role in Parkinson diseases. Hence this study was aimed to investigate the neuroprotective effect of Epicatechin and Edaravon in a neurotoxin-induced model of parkinson.

Methods : Methods: In vitro model of parkinson disease was generated by exposing SH-SY5Y neuroblastoma cells to neurotoxin: 6-hydroxydopamine (6-OHDA)100µM/well. Cytotprotective effect of Epicetechin and Edaravon in five concentrations on cell viability was tested using MTT assay. Apoptotic assay was done with route of Annexin V-propidium iodide method by flow- cytometry..

Results : Results:According to MTT assay analysis, Epicatechin and Edaravon have shown protective effect against 6-OH DA induced cytotoxicity in SH-SY5Y neuroblastoma cells that this effect with Edaravon is much more significant and the synergistic effect of Epicetechin and Edaravon has been observed relatively.Apoptetic analysis has showed that Edaravone alone could have decreased early and late apoptosis but Epicetechin, although decreased early apoptosis but increased late apoptosis and necrosis and co-treatment of Edaravone and Epicathechin had synergistic effect on decreasing apoptosis and increasing cell viability.

Conclusion : Conclution:Protective effect of Edaravone on apoptosis and cytotoxicity has been demonstrated clearly and Epicathechin could have synergistic effect with Edaravone

Keywords : Epictechin, Edaravon, Apoptosis, SH-SY5Y, 6-OHDA, Neurodegenerative , disorder, Parkinson's disease, Neuroprotection

Count: 342
Abstract ID: 421
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Poster

Everolimus attenuates glutamate-induced oxidative PC12 cells death

Submission Author: Sahar Fanoudi

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Background and Aim : Glutamate plays a key role in neuronal cell death observed in neurodegenerative disorders such as Alzheimer's disease. Some recent studies reported the potential immunomodulatory and neuroprotective properties of inhibitors of serine-threonine kinase, mTOR (mammalian target of rapamycin). However, no study was conducted about the neuroprotective potential of everolimus (EVR), a selective and potent mTOR inhibitor. Therefore, the present study was designed to investigate whether EVR has protective effects against glutamate-induced neuronal injury and elucidate the underlying molecular mechanisms.

Methods : PC12 cells were concurrently treated with EVR (0-40 nM) and glutamate (8 mM) for 24 h. Then, the cells viability, apoptosis rate, and proteins involved in apoptosis (caspase-3, bax and bcl-2) were measured using MTT, annexin V-PI and immunoblotting assays.

Results : Analyzing the protective effect of different concentrations of EVR (0-40 nM) against glutamate-induced cytotoxicity revealed a significant increase in cell viability in co-treatment regimen ($p<0.01$). Also, EVR (40 nM) significantly ($p<0.01$) inhibited glutamate-induced apoptosis through depressing the elevation of bax/bcl-2 ratio and cleaved caspase-3 expression, in a concentration-dependent manner.

Conclusion : The results demonstrated, for the first time, that EVR could protect against glutamate-mediated PC12 cell death via inhibiting apoptosis.

Keywords : Everolimus, Apoptosis, Cytotoxicity, Glutamate, mTOR, PC12 cells

Count: 343
Abstract ID: 88
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Poster

Estradiol increases BDNF mRNA expression and protein levels against acute ethanol induced developing Purkinje cells toxicity

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Background and Aim : Previous studies have shown that estradiol exerts neuroprotective effects against ethanol-induced Purkinje cells toxicity in the neonatal rat cerebellum. Based on our early behavioral and histological studies, several protective mechanisms of estradiol and specific timing of Purkinje cell vulnerability to ethanol (postnatal day 4 and/or 5), we considered the neurotrophin system, as an agent that plays critical role in development, differentiation and survival of neurons. Eventually the interactions between estrogen and BDNF (an essential factor in neuronal survival), lead us to investigate the role of BDNF in neuroprotective effects of estrogen against ethanol toxicity.

Methods : In this study, 17β-estradiol (300, 600 and 900 μg/kg) was injected subcutaneously in postnatal day 4, 30 min prior to intraperitoneal (i.p.) injection of ethanol in rat pups. On the same day, control group received i.p. injection of saline while ethanol group received i.p. injection of ethanol (6 g/kg). Eight hours after ethanol treatment, pups were sacrificed and their cerebella were removed for measurement of BDNF mRNA expression and protein levels using Reverse-transcription polymerase chain reaction (RT-PCR) and ELISA kit, respectively.

Results : Our results indicated that ethanol significantly decreased BDNF mRNA expression and protein levels in comparison to control group. However, pretreatment with estradiol in doses 600 and 900 (μg/kg) significantly increased these two factors in comparison to ethanol group.

Conclusion : Along with the previous behavioral and histological results that were performed in our lab, these data provide evidence on the possible mechanisms of estradiol neuroprotection against ethanol toxicity.

Keywords : Ethanol; Purkinje cell; 17β-estradiol; Neuroprotection; Brain-derived neurotrophic factor (BDNF)

Count: 344
Abstract ID: 350
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Poster

Ellagic acid improves behavioral deficits and neurotoxicity in streptozotocin-induced diabetic rat

Submission Author: Shahab Ghaderi

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Background and Aim : Diabetes mellitus (DM) is associated with neurobehavioral deficits. It has been suggested that ellagic acid (EA) has anti-diabetic, anti-inflammatory, and neuroprotective effects. The present study was designed to determine the effects of EA on behavioral functions, inflammatory status, neurotrophic factors, and neuronal viability in the brain of streptozotocin (STZ)-induced diabetic rats.

Methods : Fifty adult male Wistar rats were randomly divided into five groups: i.e., CON group: normal rats treated with vehicle (4 ml/kg/day; P.O.), EA group: normal rats treated with EA (50 mg/kg/day; P.O.), STZ group: diabetic rats treated with vehicle (4 ml/kg/day; P.O.), STZ+INS group: diabetic rats treated with NPH insulin (6 IU/rat/day; S.C.), STZ+EA group: diabetic rats treated with EA (50 mg/kg/day; P.O.). All the groups were treated for eight weeks. Behavioral functions were evaluated by employing standard behavioral tests. Additionally, pro- and anti-inflammatory cytokines, neurotrophic factors, neuronal viability were assessed in both cerebral cortex and hippocampi of the rats.

Results : The results of behavioral tests showed that diabetes increased anxiety/depression-like behaviors, decreased exploratory and locomotor activities, and impaired cognitive performance. These changes in diabetic rats were

accompanied by increasing of inflammation status, and decreasing levels of neurotrophic factors, and neuronal loss in the cerebral cortex and hippocampus. Interestingly, eight weeks of treatment with EA not only improved all the mentioned deficits related to diabetes, but in some aspects, it was even more effective than insulin.

Conclusion : In conclusion, the results suggest that anti-hyperglycemic, anti-inflammatory, and neurotrophic properties of EA are possible mechanisms that improve behavioral deficits and protect cerebral cortex and hippocampal neurons in diabetic animals.

Keywords : Diabetes; Ellagic acid; Behavioral deficits; Inflammation; Neurotrophic factors; Neuronal survival.

Count: 344
Abstract ID: 351
Presentation Type: Poster

Are there sex difference in inflammatory responses after intracerebral hemorrhage in microglia?

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Hypothesis: Intracerebral hemorrhage (ICH) accounts for 10-15% of stroke cases, and is caused by rupture of blood vessels followed by blood leakage into the brain parenchyma. There are sex differences in both the incidence and outcome of ischemic stroke, but little is known about potential sex differences after ICH. More effective treatments will require a better understanding of factors involved in the secondary injury phase of ICH. Two key features of this prolonged injury phase are inflammation (orchestrated by microglia and infiltrating macrophages) and damage to white matter (axons and their myelin sheaths). The current project is analyzing the expression and roles of several ion channels in adult male and female rat microglia, before and after ICH and assessing Kv1.3 channels as a potential target for controlling microglial activation.

Materials and Methods: Our lab has extensively used a collagenase model of ICH in male rats to characterize the time-dependent evolution of injury and inflammation. We did whole cell patch clamp to show the role of Kv 1.3 potassium currents in activated microglia in neonate and adult rats. In addition immunohistochemistry was done by means of antibodies that label myelin basic protein (MBP) and microglia/macrophages (Ib-1).

Results: Progression of axon and myelin damage is seen from day 1 to 7 which is followed by the appearance of less fragmented, denser myelin bundles at day 14. In addition, activated microglia/macrophage infiltrates the damaged axon bundles in the post-ICH 7 days rat in comparison to the saline control group, where there is no microglia activation. Kv1.3 currents showed significant changes of amplitude in both sex. Interestingly, no sex difference was seen in axon and myelin damage, infiltration of microglia/macrophages and Kv1.3 currents.

Conclusion: We conclude that, there is no sex difference in microglia infiltration. In addition, electrophysiological results showed no sex difference of Kv1.3 expression under different stimulation conditions.

Count: 345
Abstract ID: 3
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Poster

Improvement of pyridoxine-induced peripheral neuropathy by Cichorium intybus hydroalcoholic extract through GABAergic systems

Submission Author: Farkhonde Hasannejad

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Background and Aim : Pyridoxine (vitamin B6) toxicity is well-known model for peripheral neuropathy. GABA and glutamate are two neurotransmitters involved in the neuropathic pain pathways. Cichorium intybus (Chicory) contains glycosides and tripnoids which inhibit glutamatergic system and enhance GABAergic system activity. The present study was aimed to study the effect of Cichorium intybus hydroalcoholic extract on the pyridoxine induced peripheral neuropathy with particular focus on glutamatergic and GABAergic systems

Methods : In this experiment study, high dose of pyridoxine (800 mg/kg, IP) was injected for 14 days to induce neuropathy in male rats. To evaluate the behavioral symptoms of neuropathy, 3 tests including rotarod, hot plate and foot fault tests were used. After the induction of neuropathy, 50 mg/kg Cichorium intybus root extract was injected intraperitoneally for 10 days. Morphologically, the sciatic nerve and the DRG neurons were evaluated in the control, neuropathy and chicory groups by H&E staining. Picrotoxin (1mg/kg) and MK-801 (0.1 mg/kg) were also injected 15 min before the extract administration

Results : Morphological and physiological changes occur in the DRG and sciatic nerve following pyridoxine intoxication. The Chicory extract showed an anti-neuropathic effect on the sciatic nerve and the DRG neurons and decreased reaction time in hot plate($P<0.05$), increased balance time in rotarod ($P<0.001$) and improved foot fault performance($P<0.01$). Administration of picrotoxin, before extract, unlike MK-801, showed a significant difference in all three behavioral tests in comparison with group received extraction alone (with $P<0.001$ for all 3 tests)

Conclusion : Our results showed beneficial effects of Cichorium intybus extract on pyridoxine induced peripheral neuropathy. Modulating of GABAergic system may be involved in anti-neurotoxic effect of Chicory

Keywords : peripheral neuropathy, DRG, sciatic nerve, Chicory, GABA, glutamate

Count: 346
Abstract ID: 635
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Poster

Effect of methamphetamine on rat primary midbrain cells viability and cell death in neuronal and glial cells

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Background and Aim : Methamphetamine (MA), neurotoxic drug of abuse, increases monoamines levels in animal and human central nervous system. It is also known to cause cell death both in vitro and in vivo. The effect of MA on primary midbrain cell culture is less studied. In this study we evaluated the effect of methamphetamine on cell viability, and cell death in neurons and glial cells in rat primary mesencephalon culture

Methods : Primary mesencephalon cells prepared from E14.5 rat embryo were treated with 0.2-5mM MA concentrations for 24, 48, and 72 hours. Morphological changes of the cells were observed under light microscope and cell viability was assessed using MTT assay. MA-induced cell death and changes in expression of neuronal and glial markers were measured using immunocytochemistry and qPCR following 1 and 5mM MA.

Results : Low to moderate MA concentrations elevated cell viability in all time points, while higher concentrations and longer incubation times (48 and 72 hours) decreased it. Sphered cell bodies and neurites degeneration were observed following exposure to high MA concentrations. MA at 5mM concentration decreased the number of β3-tubulin-, GFAP- and Iba1-positive cells, and their corresponding mRNA levels; however, 1mM MA did not change them.

Conclusion : The results indicated that MA effect on cell viability occurs in a dose-dependent manner. While moderate concentrations increased cell viability, the higher ones reduced it and caused cell death. In addition cell death was occurred in both neuronal and glial cells following MA.

Keywords : Methamphetamine; Primary mesencephalon cells; Cell viability.

Count: 347
Abstract ID: 31
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Poster

The long-term exposure of lead acetate to active conditional learning in mice

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Background and Aim : Lead (Pb) is a major pollutant in the environment, which, upon long exposure, can impose a broad range of abnormalities in the structure and function of the brain, especially in the infant. In spite of efforts done, there are conflicts in the findings related to the behavioral effects of lead. In this study, we assessed the effect of chronic exposure to low levels of lead acetate (LA) on active avoidance in the mouse as a laboratory animal model.

Methods : Twenty four male mature mice were classified into 4 groups of 6 each. Drinking water of the animals was polluted with either 0 (control), 0.1, 0.33 or 1 g/L of LA for 28 days. All experiments were done in a semi-dark place. On day 29, all animals were placed separately in the shuttle box device without any stimulation for 10 min in order to adopt to test situation. Tests were done on days 30, 33 and 36, 40 times per animal each time (120 in total) consisting of the following phases: Light for 60 sec (Escape Period = EP), then 5 sec no light, then 10 sec sound stimulus (Active Avoidance Period = AAP), then 5 sec no light – no sound (Alarming Period = AP). The number of times out of 40 that animal leaves the test compartment to the safe one was recorded during the mentioned 3 periods.

Results : In all 3 periods of escape, active avoidance and alarming, 0.1 g/L of LA caused a decrease in learning ability which was statistically significant in EP. With 0.33 g/L at the EP, learning was similar to controls while in AAP and AP, it was slightly weaker than controls. With the highest dose of LA exposure (1 g/L) in AP, learning was rather lower than control group while in the EP it was stronger than the untreated animals; surprisingly, learning was significantly potentiated in the AAP ($P<0.05$).

Conclusion : Lead exposure affects the learning ability of mice causing disorders that depend on the dose of the pollutant.

Keywords : lead acetate; shuttle box; Active Avoidance; Mice

Count: 348
Abstract ID: 476
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Poster

Triggering microglia through toll-like receptor 2 pathway induced interferon β expression in cell and animal model of Alzheimer's disease

Submission Author: Nooshin Heshmati fakhr

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Background and Aim : Synaptic function and memory performance are disrupted by soluble form of β-amyloid (Aβ). In the previous study, we found that early activation of microglia by toll-like receptor 2 (TLR2) attenuated Alzheimer's disease-associated cognitive deficit. This study was designed to investigate whether pretreatment with the TLR2 receptor ligand can regulate microglia to produce interferon β (INFβ) in a rat model of Alzheimer's disease.

Methods : For this purpose, the BV-2 cell line was cultured in a 24-well plate, treated with Pam3Cys (1 μg/ml), and then incubated with oligomeric Aβ for 24 h. The expression of TRIF, IRF3, and INFβ was measured by western blot technique. For in-vivo study, bilateral guide cannulas were streotaxically implanted in the right and left lateral ventricles. Pam3Cys/vehicle was microinjected into the right ventricle every 3 days. Two weeks later, an osmotic pump was inserted into the left ventricle to microinfuse oligomeric Aβ/placebo over 14 days. In the meanwhile, treatment with Pam3Cys was continued every 3 days. Then, expression of TRIF, IRF3, and INFβ was measured in the hippocampus.

Results : The results showed that although oligomeric Aβ could not alter the expression of these proteins at the cell and tissue level, treatment with Pam3Cys resulted in enhanced expression of them at both cell culture and hippocampal tissue following treatment with oligomeric Aβ.

Conclusion : It is concluded that stimulation of microglia through TLR2 pathway induces INFβ expression which may in part mediate neuroprotection against oligomeric Aβ.

Keywords : Alzheimer's disease, β-amyloid, interferon-β, microglia, toll-like receptor 2

Count: 349
Abstract ID: 114
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Oral

Hippocampal BDNF level and its correlation with levels of IL-1β after cholinergic hypofunction in NBM lesiond rats

Submission Author: Nasrin Hosseini

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Background and Aim : Cholinergic neurons in the nucleus basalis magnocellularis (NBM) project to the cerebral cortex and are thought to play an important role in cognitive functions. Ample evidence exists that shows inflammation might be the key contributors to neurodegeneration by counteracting the brain-derived neurotrophic factor (BDNF). The present study was designed to investigate the Nucleus Basalis Magnocellularis (NBM) lesion and its effects on the hippocampal interleukine-1 beta (IL-1β) and BDNF levels.

Methods : For this purpose, eighteen male Wistar rats were randomly assigned to control, sham, and NBM-lesion groups. Lesion was induced by bilateral ibotenic acid injections (5 µg/µl in each side) and BDNF and IL-1β levels in the hippocampus were measured 21 days after the injections

Results : Results showed that BDNF concentration decreased whereas IL-1β level increased in the hippocampus, showing the significant and negative correlations of the hippocampal BDNF levels with IL-1β level.

Conclusion : The neuroinflammation in the cholinergic hypofunction suggests that these factors might play roles in cognitive dysfunction in cholinergic dysfunction; hence, they merit investigation and consideration for designing improved cognition

Keywords : Nucleus Basalis Magnocellularis, Hippocampus, Neurotrophic factor, Cytokine

Count: 350
Abstract ID: 416
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Poster

Neuroprotective effects of piperine on the sciatic nerve crush injury in male rats

Submission Author: Zohreh Jahromi dastjerdi

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Background and Aim : One of the most important traumatic injuries in the world is peripheral nerve damage. This problem lead to severe disabilities and high costs. Nowadays, the use of herbal remedies for the treatment of these injuries has been introduced as a gold standard. One of these drugs is piperine. It has anti-inflammatory, antioxidant, neuroprotective and immunomodulatory properties. We aimed to investigate the effect of piperine on the regeneration of sciatic nerve crush injury in male rats.

Methods : In the rats, the sciatic nerve was crushed and Piperine (50 mg/kg) was injected intraperitoneally to rats for 4 weeks. The Sciatic Functional Index (SFI), gastrocnemius muscles mass and electrophisiological methods were assessed for improvement of motor function. Immunohistochemistry (S100 and NF200 protein) and Histological (hematoxylin and eosin and luxol fast blue staining) assessments were also used.

Results : In rats treated with piperine, this injected dose resulted in an increase in muscle mass ratio, number of axons and schwann cells, diameter of gastrocnemius muscle fibers and content of myelin. As well as, assessment of SFI and electrophysiological methods showed a recovery in nerve repair.

Conclusion : Piperine presented a neuroprotective action, probably a consequence of its anti-inflammatory and antioxidant properties, making the drug a potential candidate for the treatment of peripheral nerve crush injury.

Keywords : piperine, sciatic nerve, crush injury, anti-inflammatory, antioxidant

Count: 351
Abstract ID: 75
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Poster

Carvacrol protects against 6-hydroxydopamine-induced neurotoxicity in in vivo and in vitro model of Parkinson's disease

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Background and Aim : Parkinson's disease (PD) is a progressive neurodegenerative movement disorder characterized by selective loss of dopaminergic neurons that project from the substantia nigra pars compacta to the striatum. Evidence from human and animal studies has suggested that oxidative damage critically contributes to neuronal loss in PD. Carvacrol, a monoterpenic phenol, is the main constituents in the essential oil of many aromatic plants and possesses some properties including anti-inflammatory and antioxidant effects.

Methods : In the present study PC12 and rats were used to examine the therapeutic effect of carvacrol to investigate its potential neuroprotective effects by using in vivo and in vitro models of Parkinson's disease (PD). In in vitro study, the PC12 cells viability, nuclear density, intracellular reactive oxygen species and apoptosis in the presence of 6-hydroxydopamine and/or carvacrol were investigated. In in vivo study, 6-OHDA was administered in to the unilateral striatal injection and carvacrol was administered intra-peritoneally for 14 consecutive days. Behavioral tests including open field, pole test, bar test, rotarod, apomorphine-induced rotation and beam walking were performed. Then the animals were euthanized, the brains were removed and lipid peroxidation and glutathione reduction were investigated.

Results : Post-treatment administration of carvacrol was found to protect rat adrenal phaeochromocytoma PC12 cells from toxicity induced by 6-hydroxydopamine (6-OHDA) administration in a dose-dependent manner by: 1) increasing cell viability, 2) reduction in intracellular reactive oxygen species, intracellular lipid peroxidation and annexin positive cells. Intra-peritoneal administration of carvacrol (15 and 20 mg/kg) was protective against neurodegenerative phenotypes associated with unilateral intra-striatal administration of 6-OHDA in rats. Our results indicated that post-treatment administration of carvacrol for 14 consecutive days improved locomotor activity, catalepsy, akinesia, bradykinesia, motor coordination and reduced the apomorphine-caused rotation in 6-OHDA-

stimulated rats. Increased level of reduced glutathione and decreased level of MDA (malondealdehyde) were observed in the animals' striatum.

Conclusion : These findings suggest that carvacrol exerts protective effects, possibly related to an anti-oxidation mechanism, in in vitro and in vivo models of Parkinson's disease.

Keywords : Carvacrol, Neuroprotection, 6-OHDA, Parkinson's disease, PC12, Rat

Count: 352
Abstract ID: 213
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Poster

A modified protocol for decellularization of peripheral nerve grafts: Acellular bovine nerve in a rat sciatic nerve injury model

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Background and Aim : Peripheral nerve injuries affect a large proportion of the global population, often causing significant morbidity and loss of function. The current "gold" standard for treatment of PNI is the autograft, which poses disadvantages such as high fiscal cost, possible loss of sensation at donor site and the requirement of two surgeries. Allografts have therefore become a valid alternative option. In particular, acellular nerve allografts (ANAs) rather than fresh allografts do not need immunosuppression and appear to be safe and effective based on recent studies. However, the source of allogenic donators is restricted in clinical treatment. To explore sufficient substitutes for acellular nerve allografts (ANA), we investigated the effectiveness of acellular nerve xenografts (ANX) on repairing peripheral nerve injuries. On the hand, there is not a standardized chemical decellularization method widely accepted. The objective of this study was to propose a modified chemical protocol of nerve decellularization.

Methods : The acellular nerves derived from bovine were prepared by modified protocol. After decellularization, efficiency of protocol was tested in vitro by conventional stainings, immunohistochemistry and biochemical assays. Furthermore, a pilot in vivo study was performed; All the grafts were employed to bridge 7mm rat sciatic nerve gaps. At 8-week post-transplantation, electrophysiological and functional tests were performed and the regenerated nerves were assayed morphologically.

Results : The decellularization method proved to be effective in vitro: the treatment removed axons, myelin, and cells, without altering nerve architecture. The in vivo study did not reveal any adverse effect: The functional analysis showed no statistical differences at week 8 in sciatic functional index(SFI) in the autograft group vs the xenograft.The morphological analysis showed regenerated fascicles and bundles and Schwann cells in xenograft were comparable versus autograft.

Conclusion : Based on these results, this decellularization protocol offers a reliable approach for repairing peripheral nerve defects and is encouraging and deserves deeper investigations with further preclinical and clinical studies.

Keywords : sciatic nerve, bovine, detergent, Rat, xenograft, acellular scaffold

Count: 353
Abstract ID: 181
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Poster

Effect of topical application of brown Propolis and Gum Arabic plate as an implant near peripheral nerve in rat

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Background and Aim : Propolis is a resinous substance which is produced by worker bee from buds, flowers, leaves, barks and latex of plants. Propolis is brown, green, red, black or white in color and sticky or brittle in structure. Propolis has many biologic properties such as anti-inflammatory, anti-viral, anti-tumor and anti-oxidant effects. Because of these properties it has used to cure cold, rheumatism, heart diseases, gastric ulcer, and some other diseases. It also has been used in oral form for regeneration of sciatic nerve. Previous studies shows that extract of red and green Propolis has also angiogenesis effect. Gum Arabic (GA) is a gummy exudates from Acacia Senegal tree. In folk medicine, GA has been used internally for the treatment of inflammation of the intestinal mucosa. GA has biological properties such as strong anti-oxidant, immune modulating, and cytoprotective activity. It has been used to protect against experimental hepatic, renal and cardiac toxicities in rats. The aim of this study is to study the angiogenesis effect of brown Propolis + Gum Arabic by implanting inside the body, near the sciatic nerve and also to understand that if the allergic reaction, infectious or inflammation would be appeared.

Methods : First a plate from Propolis and GA was made. Then 16 Adult male rats were randomly divided into two groups as sham surgery and Propolis+Gum Arabic groups. Under general anesthesia exposed the gluteus maximus muscle, and implanted the mentioned plate under the gluteus maximus muscle near the sciatic nerve. In sham surgery group just exposed the gluteus maximus muscle and the sciatic nerve. Then in both groups the muscle and skin were sutured with 4-0 nylon. After three months all animals were checked macroscopic and microscopic (H&E staining).

Results : At the place of implantation of Propolis + Gum Arabic plate, under the gluteus maximus muscle and near the sciatic nerve there were no adhesion, allergic, infectious, and signs of inflammation (redness, swelling and increasing heat). Also there were blood vessels. The mean number of blood vessels in the Propolis +GA and sham group was respectively 4±1 and 0±0. There was statistically different between groups ($p<0.001$). On the implant near the sciatic nerve, there were blood vessels (diameter: 0.48±0.12mm, length: 4.87±2.23mm). The vessels around the area formed a plexus of vessels.

Conclusion : These findings demonstrated that Propolis + Gum Arabic plate can be used inside the body as an implant because it has no allergic and infectious and inflammation reaction. Also Propolis + Gum Arabic cause angiogenesis that may be used in tissue engineering concepts for regeneration of peripheral nerves.

Keywords : Propolis; Gum Arabic; angiogenesis; peripheral nerve

Count: 354
Abstract ID: 169
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Poster

Investigation the protective effect of Thymol in 6-hydroxydopamine Hemi-Parkinsonian rat model

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Background and Aim : Parkinson's disease (PD) is a neurological disorder with loss of dopaminergic neurons in the dense black body substantia nigra pars compacta (SNpc). Although the cause of PD has not been fully recognized, major biochemical processes, such as oxidative stress and neuronal apoptosis are largely involved. The use of herbal polyphenols, such as thymol can be effective in inhibiting these trends.

Methods : The aim of this study was to investigate the potential neuroprotective effect of thymol on Parkinson's 6-OHDA animal model. For this purpose, the intra-peritoneal injection of 20, 30 and 40 mg/kg of thymol were administered to 6-OHDA treated rats. Neuronal protection was determined with decreased cataplasia and rotational movement.

Results : In the open field test, doses of 20 and 30 mg/kg thymol showed a significant difference with the induction control group (6-OHDA) ($p<0.001$). In bar test and total beam walking test, there was a significant difference in 30 mg/kg treatment with induction control group ($p <0.01$). In the pole test, doses of 30 and 40 mg/kg showed a significant difference with the induction control group ($p <0.01$). There was no significant difference in apomorphine test with other groups.

Conclusion : The results of this study showed that thymol can be used as an antioxidant to reduce symptoms in Parkinson's disease induced rat. Further studies may indicate that thymol is important for the treatment of Parkinson's patients.

Keywords : Behavioral Tests; Glutathione Recovery; Neuroprotective; Parkinson's Animal Model; Thymol

Count: 355
Abstract ID: 299
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Poster

Imidaclorid potentiates Glutamate toxicity in cultured mouse cerebellar granule neurons

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Background and Aim : Neonicotinoid insecticides are the most important new class of synthetic insecticides produced in recent years for controlling pests on plants and animals . Iimidacloprid (IMI) was first commercially produced neonicotinoid insecticide. Its effects is mediated by specific binding to the alpha subunits of the nicotinic acetylcholine receptor (nAChR) in the same way as nicotine. Although imidacloprid is considered safe because of low affinity for mammalian nAChR but there is some evidence indicated IMI induced neurotoxicity in mammalian brain .Therefore, further studies are needed to determine the neurotoxicity of IMI.Glutamate is a stimulatory neurotransmitter plays an important role in synaptic flexibility, memory, learning and other cognitive functions, but excessive stimulation of glutamate receptors by glutamate leads to excitotoxicity which is the pathological condition damages and kills the nerve cells. Excitotoxicity is involved in pathophysiology of neurodegenerative diseases such as Alzheimer's disease.Environmental factors that exacerbate the effects of glutamate can contribute to the development of these diseases or to their progression.The aim of this study was to investigate imidacloprid toxicity in cultured mouse cerebellar granule neurons (CGNs) and it’s interaction with glutamate excitotoxicity.

Methods : Cerebellar granule neurons were cultured following standard protocol. The neuronal cells became mature after seven days invitro(DIV7) .The mature neurons were treated with different concentration of imidacloprid (1-1000 μM) for 24 and 48 h and glutamate (10,1000μM) for 48 h. the cell viability was assessed by MTTassay. Also The mature neurons were treated with 100 or 1000μM imidacloprid (sub lethal dose) in combination with different concentration of glutamate for investigating the effect of imidacloprid on glutamate excitotoxicity

Results : Results of study indicated that cell viability was not affected by any concentration of imidacloprid during 24 and 48 h incubation, but imidacloprid at concentrations of 100 and 1000 μM increased the glutamate toxicity and significantly decreased the cell viability($p<0.001$).

Conclusion : Our results indicated that imidacloprid potentiate glutamate toxicity. Because excitotoxicity has pivotal role in pathophysiology of neurodegenerative disease, Imidaclopride as an environmental factor may be contribute to the development or exacerbation of neurodegenerative disease.

Keywords : Imidacloprid, neurotoxicity,glutamate

Count: 356
Abstract ID: 67
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Poster

Treadmill exercise alters ecstasy- induced long- term potentiation disruption in the hippocampus of male rats

Submission Author: Azam Sajadi nasab

Azam Sajadi nasab[1], Sara Soleimani Asl[2]

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2. superviser

Background and Aim : 3, 4-methylenedioxymethamphetamine (MDMA) or ecstasy is a derivative of amphetamine that leads to long term potentiation (LTP) disruption in the hippocampal dentate gyrus (DG). Exercise has been accepted as a treatment for the improvement of neurodegenerative disease.

Methods : the ef- fects of exercise on the MDMA- induced neurotoxicity were assessed. Male Wistar rats received intraperitoneal injection of MDMA (10 mg/kg) and exercised for one month on a tread- mill (Simultaneously or asynchronously with MDMA). LTP and expression of BDNF were assessed using electrophysiol- ogy and western blotting methods

Results : respectively. MDMA at- tenuated the field excitatory post-synaptic potential (fEPSP) slope in comparison with the control group, whereas treadmill exercise increased this parameter when compared to MDMA group. Furthermore, BDNF expression significantly de- creased in MDMA group and treadmill exercise could in- crease that.

Conclusion : In conclusion, results of this study suggest that synchronous exercise is able to improve MDMA-induced LTP changes through increase of BDNF expression in the hippocampus of rats.

Keywords : Ecstasy . Treadmill exercise . LTP . BDNF

Count: 357
Abstract ID: 417
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Poster

Title: The effects of aerobic exercise on 3.4 methylenedioximethamphetamine-induced neurotoxicity in the hippocampus of male rats

Submission Author: Azam Sajadi nasab

Azam Sajadi nasab[1], sara Soleimani Asl[2]

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2. Supervisor

Background and Aim : 3,4-methylenedioxymethamphetamine (MDMA) or ecstasy is an amphetamine drivatives that leads to apoptosis. Exercise has been accepted as a treatment for improvement of neurodegenrative disease. Herein, the effects of exercise on the MDMA- induced neurotoxicity were assessed.

Methods : Male wistar rats received intraperitoneal injection of MDMA (10mg/kg) and exercise for one month. Expression of Caspase3, BDNF, and lipid peroxidasion was assessed using western bloting and TBA test mthods.

Results : The results showed that the Capsace3 expression in MDMA and MDMA +rest groups significantly increased in comparison to the control group. Synchronous exercise group has a significant decrease in Caspace3 expression compared to MDMA group (P<0.001). Asynchronous exercise resulted a significant decrease in Caspace3 expression in comparison with MDMA group (P<0.001). BDNF expression decreased in MDMA, MDMD+rest, synchronous exercise and asynchronous exercise groups when compared to control group (P<0.001 for all group). LOP in the rats that recieved MDMA has a significant increase in comparison with control group.

Conclusion : Asynchronous exercise as a non-medical factor is effective for treatment of neurodegenerative disease and can decrease significantly the effect of the 3,4-methylenedioxymethamphetamine – induced neurotoxicity through decrease of Capsace3 expression and increase of BDNF expression in hippocampus. gher

Keywords : Ecstasy, exercise, Capsace3, BDNF, LPO

Count: 358
Abstract ID: 323
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Poster

What is the best animal models for induction of hepatic encephalopathy? Neurological and pathological changes

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Background and Aim : Liver failure is one of the most important complications of liver injury that results in liver dysfunction, followed by hepatic encephalopathy (HE). HE is a progressive neuropsychiatric disorder with symptoms such as changes in cognition, consciousness and motor functions, coma and death. To study the therapeutic potential and effects of various drugs and interventions existence of animal models of HE that can show the symptoms and characteristics of the disease as it occurs in humans is essential. Different models are used to induction of HE, some of them with acute liver failure and others with chronic liver failure leading to HE.

Methods : Among the animal models used to create acute liver failure it is possible to prescribe azoxymethane (AOM), thioacetamide (TAA), galactosamine and acetaminophen which these substance with hepatotoxicity due to acute liver failure and type A HE. Some models of acute liver failure are surgical models and or part of the liver is removed or portocaval anastomosis (PCA) is created. In the PCA the portal vein attaches to the lower inferior vena cava and as a result the blood around the gastrointestinal tract enters the systemic circulation without entering the liver directly. Other models such as carbon tetrachloride administration and bile duct ligation (BDL) lead to chronic liver failure and type B and possibly C HE.

Results : Usually all of these animal models with impaired liver function ultimately increased levels of ammonia in the systemic circulation and increase its entry to the CNS. Among the signs and symptoms seen in these patients can be pointed out cognitive impairment, somnolence and personality changes. In mice receiving only one dose of AOM, brain edema is seen to be acceptable as well as brain levels of ammonia and proinflammatory cytokines increase in these animals and progressive neurological defects from lethargy to ataxia and loss of righting ability creates. In models that receive TAA, it is usually necessary to inject several doses of this substance to induce brain edema. Of course the level of ammonia and pre-inflammatory cytokines in the brain of these animals is higher than the recent group. In this model the neurological score also increases and the activity index decreases. In the rats 48 hours after galactosamine injection cerebral edema and astrocytic swelling are induced. In this model cellular swelling is more intense in gray matter and the white matter does not change. Also 14 hours after acetaminophen injection in rats, ammonia and brain water content increase and when this model is associated with the partial portal vein ligation, plasma ammonia increases further. In PCA rats and hepatectomize rats the amount of cerebral edema also increases

and create intracranial hypertension. In the bile duct ligation model, systemic and neuroinflammation with Alzheimer's type 2 astrocytes is also evident. Also the ability to learn and spatial memory is reduced in CBDL mice.

Conclusion : Therefore, several models for induction of HE are available which, according to the aim of the study can be used.

Keywords : Hepatic encephalopathy; thioacetamide; galactosamine; acetaminophen; ammonia.

Count: 359
Abstract ID: 364
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Poster

Molecular mechanisms of cytotoxic edema in hyperammonaemic condition

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Background and Aim : Hepatic encephalopathy (HE) is a neuropsychiatric syndrome that is seen in patients with acute or chronic liver failure. One of the most important reasons for the manifestation of this disease is cerebral edema. The general view is that the ammonia is produced in the intestine when it enters the circulation that cannot be eliminated by the dysfunctional liver. As a result, in these patients, the levels of the plasma and brain ammonia rise sharply and create condition that are called hyperammonaemia.

Methods : In the brain, astrocytes are the only cells that are responsible for ammonia detoxification. Astrocytes are dynamic cells with special phenotypic properties that enable them to respond to small changes in their environment around the brain. Because these cells form a large part of the glia in the brain tissue, any pathological changes in these cells may cause neurological problems such as hepatic encephalopathy.

Results : Cytotoxic edema is the main cause of cerebral edema in acute and chronic hepatic failure. Cerebral edema may cause brain herniation and death by increasing intracranial pressure.

Conclusion : Various factors may be involved in cytotoxic edema. However, the exact molecular mechanism of cytotoxic edema is not fully understood. This review article explains the possible mechanisms of cytotoxic edema caused by ammonia and some other factors. This includes investigation the possible roles of inflammation, oxidative stress, mitochondrial permeability transition (MPT), aquaporin channel 4, ATP depletion, glial fibrillary acidic protein (GFAP), endothelial cells, glutamate and manganese in the development of cytotoxic edema in hyperammonaemia.

Keywords : Cytotoxic edema;hepatic encephalopathy;ammonia;inflammation; oxidative stress.

Count: 360
Abstract ID: 507
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Poster

Dopaminergic induction of human adipose-derived mesenchymal stem cells is accompanied by transcriptional activation of autophagy.

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Background and Aim : Neural differentiation involves drastic morphological alterations, essentially performed by a cell-homeostasis maintaining process known as autophagy

Methods : we used the cocktail of choroid plexus epithelial cell-conditioned medium (CPEC-CM) and 15% knockout serum (KS) to induce human adipose-derived mesenchymal stem cells (hASCs) into tyrosine hydroxylase (TH)-positive neuron like cells.

Results : We showed that upon this induction, autophagy pathway was transcriptionally triggered. The expression levels of autophagy markers mTOR, BECN1, and MAP1LC3 were evidently changed throughout the dopaminergic (DAergic) differentiation of hASCs, highlighting the critical role of autophagy in this process at the level of transcription.

Conclusion : our study showed that autophagy is transcriptionally triggered during differentiation of hASCs to TH-positive neuron-like cells in vitro. We demonstrated that the transcriptional levels of different autophagy markers including mTOR, BECN1 and MAP1LC3 were altered during DAergic induction of hASCs, implying the pivotal role of autophagy throughout the differentiation.

Keywords : Autophagy; Dopaminergic; Differentiation; Adipose-Derived Stem Cells

Count: 361
Abstract ID: 623
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Oral

Effect of methamphetamine on mitochondrial biogenesis and alpha-synuclein in rat primary dopaminergic neurons

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Background and Aim : Methamphetamine (MA), a highly addictive psychostimulant, increases monoamines levels, especially dopamine, in the central nervous system of animal and human. It is also known to cause cell death via several mechanisms such as mitochondrial dysfunction. In this study the effect of MA on mitochondrial biogenesis-involved factors was evaluated in rat primary midbrain cells culture. Tyrosine hydroxylase (TH)- and α-synuclein-positive neurons and gene expression of TH, α-synuclein and glial derived neurotrophic factor (GDNF) were also assessed following MA treatment.

Methods : Primary mesencephalon cells prepared from E14.5 rat embryo were treated with 1 and 5mM MA concentrations for 72 hours. Gene expression of factors involved in mitochondrial biogenesis (PGC1α, NRF1 and TFAM), TH, α-synuclein and GDNF were measured using qPCR. TH- and α-synuclein-positive neurons were evaluated by immunocytochemistry 72 hours following MA treatment.

Results : Although MA at 1mM concentration did not change the number and morphology of TH+ neurons, but sphered cell bodies, neurites degeneration and decreased TH mRNA level were observed following exposure to 5mM MA. Decreased mRNA and increased protein levels of α-synuclein were observed after both MA concentrations. Unexpectedly, the mRNA levels of all genes involved in mitochondrial biogenesis were increased in response to 5mM MA, with no changes following 1mM MA. MA treatment at both concentrations did not change GDNF gene expression.

Conclusion : These results indicated that the effect of MA on dopaminergic neurons occur in a dose-dependent manner. While low concentration did not affect dopaminergic neurons survival, the high concentration caused cell death and increased α-synuclein protein. Although mitochondrial biogenesis were activated as a compensatory mechanism in order to cellular protection, but neuronal cell death were occurred following high MA concentration.

Keywords : Methamphetamine; Primary dopaminergic neurons; Alpha-synuclein; Mitochondrial biogenesis.

Count: 362
Abstract ID: 27
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Oral

Low dose TLR4 agonists promotes interferon beta expression in a rat model of Alzheimer's disease

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Background and Aim : Soluble beta amyloid (Aβ) is the most common form of Aβ in the early stage of Alzheimer's disease (AD). These forms are highly toxic to the synaptic function but they fail to activate microglial cells as evidenced by lacking apparent neuroinflammation in the early stage of AD. Microglia develop two distinct state, classic and alternative. Tuning of microglia to the alternative state in order to produce anti-inflammatory cytokines is a major of interest. This study was conducted to assess if pre-stimulating of microglia with TLR4 agonists induces expression of interferon beta (IFNβ) in AD.

Methods : Microglial BV-2 cells were cultured and twenty four h later treated with 1 µg/ml lipopolysaccharides (LPS), Monophosphoryl lipid A (MPL) or vehicles, and then incubated in Aβ oligomer. After twenty four h, cell pellets were harvested and molecular level of TRIF, IRF3, and IFN-β was determined using western blotting technique. In the animal study, guide cannulas were bilaterally secured on the right and left ventricles of male Wistar rats under stereotaxic surgery. Every three days, ligands/vehicle was microinjected into the right ventricle. Two weeks later, an osmotic pump filled with oligomeric Aβ/vehicle was implanted in the left ventricle. After two weeks microinfusion of Aβ, the molecular level of TRIF, IRF3 and IFN-β was measured in the hippocampal tissue.

Results : The results demonstrate that oligomeric A? did not change the level of the proteins involved in IFN-? both at the cell culture and hippocampal tissue. However, treatment with oligomeric A? following LPS and MPL increased the level of these proteins.

Conclusion : In conclusion, pretreatment with the low dose TLR4 agonists could tune microglia to produce neuroprotective cytokines including IFN-β which may be considered as a potential strategy to combat neuronal degeneration in AD.

Keywords : Alzheimer's disease; LPS; TLR4; interferon-β; microglia; beta amyloid

Count: 363
Abstract ID: 275
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Poster

Thymol protects against 6-OHDA toxicity in a PC12 inducible cell model for Parkinsonism

Submission Author: Sanaz Yousefi

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Background and Aim : Parkinson's disease (PD) is a progressive neurodegenerative movement disorder characterized by selective loss of dopaminergic neurons and the presence of Lewy bodies in substantia nigra. Treatment for PD that prevents neuronal death in the dopaminergic system and abnormal protein deposition in the brain is not yet available. Evidence from human and animal studies has suggested that oxidative damage critically contributes to neuronal loss in PD. Thymol, a naturally occurring monoterpenic phenol, has been shown to have neuroprotective activities.This study aimed to evaluate the potential neuroprotective effects of thymol on PC12 cells treated with 6-OHDA, a cellular model of Parkinson's disease.

Methods : : Cell viability, fluorescence microscopy and Hoechst coloring 33258, lipid peroxidation and reactive oxygen species level were used to determine the occurrence of cell death and to detect apoptosis as cell death.

Results : We found that thymol protects against 6-OHDA induced PC12 cell death in a dose dependent manner. Neuroprotection was found to coincide with increasing cell viability and reductions in intracellular reactive oxygen species, lipid peroxidation and annexin test.

Conclusion : This study demonstrate that thymol protected against 6-OHDA induced cell death via inhibition of oxidative stress, suggesting that thymol may be a candidate neuroprotective agent for 6-OHDA induced Parkinsonism, and possibly for other genetic or sporadic forms of PD.

Keywords : neuroprotective, Parkinson's disease, PC12, thymol

Count: 364
Abstract ID: 279
subject: Neural Injuries and Neurodegenerative Disorders: Neurotoxicity, Neuroprotection, Inflammation
Presentation Type: Poster

Thymol protects against 6-OHDA toxicity in a PC12 inducible cell model for Parkinsonism

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Background and Aim : Parkinson's disease (PD) is a progressive neurodegenerative movement disorder characterized by selective loss of dopaminergic neurons and the presence of Lewy bodies in substantia nigra. Treatment for PD that prevents neuronal death in the dopaminergic system and abnormal protein deposition in the brain is not yet available. Evidence from human and animal studies has suggested that oxidative damage critically contributes to neuronal loss in PD. Thymol, a naturally occurring monoterpenic phenol, has been shown to have neuroprotective activities.This study aimed to evaluate the potential neuroprotective effects of thymol on PC12 cells treated with 6-OHDA, a cellular model of Parkinson's disease.

Methods : Cell viability, fluorescence microscopy and Hoechst coloring 33258, lipid peroxidation and reactive oxygen species level were used to determine the occurrence of cell death and to detect apoptosis as cell death.

Results : We found that thymol protects against 6-OHDA induced PC12 cell death in a dose dependent manner. Neuroprotection was found to coincide with increasing cell viability and reductions in intracellular reactive oxygen species, lipid peroxidation and annexin test.

Conclusion : This study demonstrate that thymol protected against 6-OHDA induced cell death via inhibition of oxidative stress, suggesting that thymol may be a candidate neuroprotective agent for 6-OHDA induced Parkinsonism, and possibly for other genetic or sporadic forms of PD.

Keywords : neuroprotective, Parkinson's disease, PC12, thymol

Count: 365
Abstract ID: 398
subject: Neural Injuries and Neurodegenerative Disorders: Ischemia, Stroke, and Neurovascular Disorders
Presentation Type: Poster

Effects of Caffeic acid on the Brain Ischemia

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Background and Aim : : Caffeic Acid Phenethyl Ester (CAPE) is a natural antioxidant compund that has been found in herbs and propolis bee hives, and has biological and medicinal properties such as anti-oxidant , anti-cancer, anti-inflammation. Brain ischemia(BI) is the most common cause of disability and death in the world due to reduced brain blood flow, which causes structural and functional damage to the brain.BI pathophysiology consists of a cascade of complex events, such as inflammation and oxidative stress. The goal of the present review is to highlight the anti inflammatory and anti ROS activities of CAPE, and evaluate its therapeutic effects in BI.

Methods : : In this manuscript., we referred to reliable sites such as pubmed, scopus, etc and reviewed some valid articles about our manuscript.

Results : Khan et al showed that CAPE reduces neurovascular inflammation and protects the mouse brain following transient cerebral ischemia by reducing NF-KappaB and iNOS. It was also shown in another study That CAPE increases glutathione levels and brain blood transfusion and reduces the level of lipid peroxidation. Yang et al. Observed their study that CAPE due to reduction of malondialdehyde, NF-KappaB65 and 5-lipoxygenase and increased superoxide dextrose reduces the damage of hippocampal cells and improves memory and learning. The study of Er qing et al indicated that CAPE improves cell death and neurological dysfunction and reduces stroke volume 24 hours after ischemia. It also reduces brain atrophy and proliferates astrocytes 14 days after ischemia. In addition reduces the production of leukotrinasis 3 hours and 7 days after ischemia.

Conclusion : The most important findings of studies has shown that CAPE, due to its potent antioxidant effects, suppresses pathways Active in oxidative stress and inflammation that can be used to treat ischemic and neurodegenerative disorders.

Keywords : : caffeic acid, brain ischemia, antioxidant

Count: 366
Abstract ID: 9
subject: Neural Injuries and Neurodegenerative Disorders: Ischemia, Stroke, and Neurovascular Disorders
Presentation Type: Poster

Molecular Mechanism Underlying Neuroprotective Effect of central administration of recombinant resistin in Mouse Model of stroke

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Background and Aim : Our recent research showed that resistin has a neuroprotective effect against stroke-induced injury through suppressing apoptosis and oxidative stress. However, the molecular mechanism of neuroprotection of resistin is unclear. This work was designed to examine the effect of mouse recombinant resistin on mRNA expression of Tumor necrosis factor-α (TNF-α), Interleukin-1β (IL-1β), Interleukin-10 (IL-10), Transforming growth factor-β1 (TGF- β1), and Heat shock protein-70 (HSP-70) in a mouse model of stroke.

Methods : Transient focal cerebral ischemia was induced by the middle cerebral artery occlusion (MCAO) in mice. TNF-α, IL-1β, IL-10, TGF-β1 and HSP-70 mRNA were detected at sham (0 h), 3 h, 6 h, 12 h and 24 h after MCAO using the real-time QRT-PCR method. Moreover, animals were treated with resistin at the dose of 400 ng/mouse at the commencement of MCAO, and mRNA expression of the cytokines and HSP-70 was measured 24 h after MCAO.

Results : Tumor necrosis factor-α and IL-1β mRNA expression markedly increased at 12-h time point and then returned to the basal level at 24 h after MCAO, but HSP-70 mRNA expression increased at 24-h time point. Furthermore, resistin (400 ng/mouse) significantly increased TGF-β1 and IL-10 and decreased HSP-70 gene expression at 24 h after MCAO.

Conclusion : Our findings revealed that a molecular mechanism of attenuating ischemic damage by resistin administration probably is increased mRNA expression of anti-inflammatory cytokines. However, applying resistin in the clinical settings for the treatment of stroke deserves further researches in the future.

Keywords : Resistin; Cerebral ischemia; Gene expression; Cytokines; Heat Shock Protein-70; Mice

Count: 367
Abstract ID: 312
subject: Neural Injuries and Neurodegenerative Disorders: Ischemia, Stroke, and Neurovascular Disorders
Presentation Type: Poster

The protective Effect of membrane mesenchymal stem cell derived conditioned medium on focal brain ischemia injury in three phase of acute, hyper acute and chronic

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Background and Aim : The mesenchymal stem cells derived from human amniotic membrane have the ability to secrete and release some factors that can promote the repair of damaged tissues. This secretome contains proteins and factors that reduce apoptosis and increase angiogenesis in the ischemia/reperfusion models. The present study was conducted to determine whether this secretome provides protection in three phase of focal cerebral ischemia.

Methods : A rat model of focal cerebral ischemia was established through middle cerebral artery occlusion (MCAO) for 60 min and reperfusion was performed in three groups of 6,24 and 30 hours. The amniotic mesenchymal stem cells-conditioned medium (AMSC-CM) at the dose of 0.5 µl was injected intracerebroventriculary (ICV) 30 min after reperfusion. Infarct volume, brain edema, neurobehavioral functions, and blood brain barrier (BBB) integrity were assessed 6,24 and 30 h after reperfusion.

Results : ICV administration of AMSC-CM markedly reduced infarct volume, brain edema and the evans blue penetration rate compared with acute and hyper acute phase of ischemia in MCAO group ($P < 0.05$). Additionally, post treatment with AMSC-CM significantly reduced neuronal loss, neurological motor disorders in motor cortex compared with acute and hyper acute MCAO group ($P < 0.05$).

Conclusion : The results of this study indicate that treatment with AMSC-CM improves the pathological effects in the acute and hyper acute phase of cerebral ischemia And does not have significant effects in the chronic phase of cerebral ischemia. These findings establish a substantial foundation for stroke therapy and future research.

Keywords : Ischemia; MCAO;IV;acute; conditioned medium

Count: 368
Abstract ID: 336
subject: Neural Injuries and Neurodegenerative Disorders: Ischemia, Stroke, and Neurovascular Disorders
Presentation Type: Oral

Hypothermy protect brain from apopthosis and cell death in stroked Rat

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Background and Aim : : Stroke is the third leading cause of death. Hypothermia has been recognized as an effective method in reducing brain injury. In the present study, we assessed the effects of hypothermia on apoptosis, behavioral function, infarct volume and cell death in Wistar rat.

Methods : Rats were anesthetized by injecting of chloral hydrate intraperitoneally. Stroke was induced by 60 min intraluminal occlusion of the left middle cerebral artery. Hypothermia, initiated at the time of reperfu¬sion until the brain temperature reaches 32 ºC. The motor behavior was measured using Longa, on postoperative days and animals assigned for the assessments of infarction, Neuronal Apoptptic Index (NAI) and Nissl staining.

Results : Neuronal Apoptosis Index in hypothermia group (1.29) was significantly lower than the control group (1.86). Longa score of the control group (40.31±1.56) was significantly lower than Hypothermia groups. The total infarct volume of Hypothermia group was significantly lower than the control group. The dead cell in the treatment group (33.37 ±1.1) significantly decrease than the control group.

Conclusion : Our major finding is that hypothermic treatment significantly reduced apoptotic Index, cell death and improved neurological function. The results suggest that superficial hypothermia protect brain cortex against cell death in stroke.

Keywords : Stroke, Hypothermia, Apoptosis, cell death

Count: 369
Abstract ID: 195
subject: Neural Injuries and Neurodegenerative Disorders: Ischemia, Stroke, and Neurovascular Disorders
Presentation Type: Poster

The effect of vitamin K2 (Menaquinone-4) on the cognitive impairments and anxiety in transient cerebral global Ischemia

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Background and Aim : Cerebral Ischemia is the second cause of fatality and the first cause of long-term disability in Iran. Based on statistics, every 5 minutes one person will face cerebral ischemia. In practice, stroke refers to a series of conditions caused by the occlusion or haemorrhage of blood vessels supplying the brain, which involves death and dysfunction of brain cells and neurological deficits. Vitamin K is a family of fat-soluble vitamins composed of naphthoquinone ring and a variable aliphatic chain that distinguishes two naturally occurring forms: vitamin K1 (Phylloquinone) and vitaminK2 (Menaquinone). Vit K2 is believed to prevent oxidative stress which is one of the causes of cell death in multiple disorders of the brain including Ischemia. This research is to investigate the effect of intraperitoneal injection of vitamin K2 on object recognition memory and anxiety in ischemic rats.

Methods : The adult Wistar male rats (200-250 gr) were randomly divided into four groups (n=5): Control, Ischemia, Ischemia+solvent (0.1% DMSO) and Ischemia+K2 (1mg/kg).the animals initially were subjected to surgery; the carotid vessels were blocked for 20 minutes. After 20 minutes of occlusion, vitamin K2 was injected during reperfusion followed by a second injection 1 hour later. After seven days of recovery, behavioral tests (NORT; Novel Object Recognition Task, EPM; Elevated plus maze) were taken.

Results : Vitamin K2 could significantly improve the function of object recognition memory tested with NORT in ischemic rats ($p<0.0001$). Vit K2 also significantly decreased the anxiety caused by ischemia induction ($p<0.01$) tested with EPM.

Conclusion : After stroke, the loss of ATP results ionic imbalance and this will cause calcium influx, at the same time release of glutamate will intensify calcium entry which can induce excitotoxicity. Loss of energy sources will also lead to mitochondrial dysfunction and generation of reactive oxygen species (ROS) and reactive nitrogen species (RNS). Excitotoxicity, ionic imbalance and oxidative/ nitrosative stress are believed to be the causes of cell

death.Vitamin K2 is an antioxidant and its activity might affect the redox-homeostasis of cells and tissues and can be considered as a regulatory factor in redox-signaling. Therefore,vitamin K2 probably prevents the oxidative stress in ischemic rats and has positive effects on recognition memory and decreasing anxiety. These assumptions are need to be further investigated.

Keywords : cerebral Ischemia; menaquinone-4; oxidative stress; anxiety; learning and memory

Count: 370
Abstract ID: 539
subject: Neural Injuries and Neurodegenerative Disorders: Ischemia, Stroke, and Neurovascular Disorders
Presentation Type: Poster

Effects of ellagic acid on motor, cognitive and brain electrical activity disorders and lipid per-oxidation due to cerebral ischemia/reperfusion in male rats

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Background and Aim : This aim of this study was evaluation the effects of ellagic acid on motor and cognition, local hippocampal EEG disorders in male rats with cerebral ischemia/reperfusion (I/R).

Methods : Fourty eight male Wistar rats weighing 250- 300 g divided into six groups randomly with 8 in each: 1) Sham: rats submitted to the surgery without the occlusion of carotid arteries, received DMSO/ normal saline (10%) as solvent of ellagic acid, 5 ml / kg three times daily for one week. I/R groups were divided into the following 2 to 5 subgroups: 2) Received DMSO/ normal saline. 3-5) Received 50, 75, and 100 mg / kg ellagic acid, respectively, according to its half-life of 8 hours, three times daily for one week. 6) Positive control, included healthy rats receiving the most effective dose of ellagic acid three times daily for one week. The cerebral I/R injury was induced by separation of the common carotid arteries from other surrounding tissue and gently separated from the vagus nerve, clamping for 20 minutes and then blood flow was established again by removing the clips. Motor coordination was measured in each group by rota rod device, passive avoidance memory was measured by shuttle box device, open field tests used to examine locomotion activity and local electroencephalogram (EEG) was recorded from hippocampus dentate gyrus neurons. Malondialdehyde (MDA) level as lipid per-oxidation index was measured by special ELISA kit in brain tissue.

Results : Cerebral ischemia significantly impaired motor activity, passive avoidance memory, disrupted brain electrical activity and increased oxidative stress damage. Administration of ellagic acid for one week and three times

a day could reverse I/R disturbances on motor activity ((P < 0.01 to P < 0.001).) , memory(p<0.001) , disruption of brain electrical activity (P < 0.05 to P < 0.001) and brain tissue level of MDA significantly (P < 0.01 to P < 0.001).

Conclusion : These findings indicate that ellagic acid can promise as a potent therapeutic natural agent and restore behavioral, brain electrical activity and lipid per-oxidation level in brain tissue after I/R.

Keywords : Ellagic acid; Motor activity; Memory; Local EEG; Oxidative stress; Cerebral Ischemia/Reperfusion.

Count: 371
Abstract ID: 293
subject: Neural Injuries and Neurodegenerative Disorders: Ischemia, Stroke, and Neurovascular Disorders
Presentation Type: Poster

The effect of pre-nutrition of Cinnamon Extracts on the expression of ZO-1 and brain edema in high fat diet rats following Ischemic stroke.

Submission Author: Masoud Hatami marsa

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Background and Aim : Ischemic stroke is a prevalent stroke, second-largest cause of mortality and third most common cause of disability worldwide. Cerebral edema is one of the most important side effects after a stroke. It is believed that oxidative stress is a major mechanism of brain damage in ischemic stroke due to the excessive production of reactive oxygen species (ROS). Cinnamon is a plant with antioxidant effects; therefore it can decrease ROS formation. The aim of this study was to evaluate the effects of cinnamon hydroalcoholic extract on the expression of Zonula occludens-1 (ZO-1) gene and brain edema on cerebral stroke rat models receiving a high-fat diet.

Methods : In this study, 84 male Wistar rats were randomly divided into 7 groups (n=12): sham, control, model, lovastatin (10 mg/kg), vehicle (CMC 0/5%), high dose cinnamon (260 mg/kg) and low dose cinnamon (130 mg/kg). All groups except the control group were on a high fat diet for 8 weeks. Stroke was induced through Middle Cerebral Brain Artery Occlusion (MCAO). After 12 hours of stroke induction, the animals were sacrificed and the brain water content (Cerebral edema) and Expression of ZO-1 gene were evaluated.

Results : Brain water content decreased significantly in rats receiving low dose cinnamon (130 mg / kg) (P<0/05). In addition, the ZO-1 gene expression is increased significantly in low dose cinnamon group (130 mg / kg) (P<0/05).

Conclusion : pre-nutrition with cinnamon hydroalcoholic extract enhance the ZO-1 gene expression. Thereby, it prevents the permeability of the blood-brain barrier and its subsequent edema in ischemia–reperfusion.

Keywords : Cinnamon; Brain edema; ZO-1; Ischemic stroke

Count: 372
Abstract ID: 268
subject: Neural Injuries and Neurodegenerative Disorders: Ischemia, Stroke, and Neurovascular Disorders
Presentation Type: Poster

Melatonin as valuable therapeutic target for the treatment of cerebral ischemia

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Background and Aim : Cerebral ischemia is a leading cause of death and long-term disability in adults. Melatonin (N-acetyl-5-methoxy-tryptamine) is a potent free radical scavenger and broad spectrum antioxidant that counteract inflammation and apoptosis in brain injury. It provides neuroprotective effects and protects the brain against ischemic stroke in rats and human.

Methods : articles were searched from 2012 to 2018

Results : Melatonin can protect the brain against ischemia/reperfusion injury by attenuating endoplasmic reticulum stress, reducing oxidative, nitrosative stress and apoptosis.

Conclusion : Melatonin improves brain I/R injury and this outcome is essentially due to the antioxidant and anti-inflammatory effects of melatonin.

Keywords : Melatonin; cerebral ischemia ; ischemia/reperfusion injury

Count: 373
Abstract ID: 376
subject: Neural Injuries and Neurodegenerative Disorders: Ischemia, Stroke, and Neurovascular Disorders
Presentation Type: Oral

14-3-3ζ recombinant protein induces BDNF transcription after MCAO in rat

Submission Author: Naeemeh Khalesi

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Background and Aim : Brain ischemia is a leading cause of death and disability worldwide that occurs when blood supply of the brain is disrupted. Brain-derived neurotrophic factor (BDNF) is a protective factor in neurodegenerative conditions. Nevertheless, there are some problems lf exogenous BDNF is to be used in the clinic. 14-3-3ζ is a pro-survival highly-expressed protein in the brain that protects neurons against death. This study evaluates 14-3-3ζ effects on BDNF transcription at early time point after ischemia

Methods : Rats were assigned into four groups, including sham, ischemia, and two treatment groups. Stereotaxic cannula implantation was carried out in the right cerebral ventricle. After one week, rats underwent middle cerebral artery occlusion (MCAO) surgery and received 14-3-3ζ (produced in our laboratory or standard form as control) in the middle of ischemia time. At 6 h of reperfusion after ischemia, brain parts containing the hippocampus, the cortex, the piriform cortex-amygdala and the striatum were collected for real time PCR analysis.

Results : The present study showed that 14-3-3ζ could up-regulate BDNF mRNA at early time point after ischemia in the hippocampus, in the cortex and in the piriform cortex-amygdala

Conclusion : It seems that 14-3-3ζ could be a candidate factor for increasing endogenous BDNF in the brain and a potential therapeutic factor against brain ischemia.

Keywords : Brain ischemia; 14-3-3ζ; BDNF; MCAO; purification

Count: 374
Abstract ID: 391
subject: Neural Injuries and Neurodegenerative Disorders: Ischemia, Stroke, and Neurovascular Disorders
Presentation Type: Poster

Preventive effects of galic acid on behavioral disorders, brain edema and blood brain barrier function following global cerebral ischemia/reperfusion in rats

Submission Author: Hamzeh Mirshekari jahangiri

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Background and Aim : Global cerebral ischemia/reperfusion (I/R) may occur after any of several clinical conditions such as cardiac arrest and coma due to accident. In the present study we aimed to investigate the probable effects of galic acid (GA) on passive avoidance memory, anxiety, locomotion behaviors, brain edema and blood-brain barrier (BBB) disruption induced by permanent arteria vertebralis heat-blocked and temporary carotid arteries occlusion/reperfusion (4VO) in rats.

Methods : Eighty male Wistar rats (250-300 g) were divided randomly into four groups; 1) Sham, 2) I/R, 3) GA + I/R and 4) Sham + GA. 4VO was induced after 10 days of pretreatment by GA. 72 h later 4VO induction all behavioral tests, brain edema and BBB permeability evaluation were done.

Results : Data showed that 4VO ischemia/reperfusion induced anxiety, locomotion impairment, increase brain edema and BBB permeability ($P<0.001$). Pretreatment with GA improves behavioral disorders and reduced brain edema as well as BBB permeability significantly ($P<0.01$)

Conclusion : Our findings suggest that GA pretreatment can reverse behavioral disorders, brain edema and BBB disruption. These actions may induce by its antioxidant and anti-inflammatory properties.

Keywords : cerebral ischemia; galic acid; behavioral disorders; BBB; inflammation; rat

Count: 375
Abstract ID: 278
subject: Neural Injuries and Neurodegenerative Disorders: Ischemia, Stroke, and Neurovascular Disorders
Presentation Type: Poster

Viola spathulata as a pretreatment for brain ischemia

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Background and Aim : Stroke is the second leading cause of mortality and long-term disability in developing countries including Iran; ischemia is a major type of strokes. Plants with high level of melatonin have been used traditionally for treatment of neurological disorders and viola plant tissue contains melatonin. In this study, we wanted to estimate Viola spathulata extracts in animal model study of cerebral ischemia-reperfusion injury.

Methods : Mail Wistar rats were divided into four groups (each of 7 animal), respectively control, sham (vehicle), pretreatment 1 (5 mg/kg/day) and pretreatment 2 (10 mg/kg/day). Sham group received DMSO (extract solution) and pretreatment 1 and 2 groups received extract via intraperitoneal injection for 7 days. After pretreatment, 60 min period of middle cerebral artery occlusion (MCAO) was operated. In this procedure, a filament was advanced into the right internal carotid artery for blocking the blood flow to the middle cerebral artery. Reperfusion was started by withdrawing the suture after 60 min of ischemia. After 24 h reperfusion, neurobehavioral scoring were assessed, then rats were sacrificed and decapitated for staining the brain tissue and calculating infarct volume. Infarct volume was estimated in three regions of right hemisphere (core, penumbra and subcortex).

Results : Viola extract reduced neurological deficit scores, and infarct volume in doses 5 and 10 mg/kg/day in comparison to the control group significantly, and offered cerebroprotection from ischemia-reperfusion. DMSO was not affected the results.

Conclusion : It has been shown that viola plant tissue contains melatonin and melatonin have been used traditionally for treatment of neurological disorders. Our finding indicate that Viola spathulata extract reduces hypoxia-ischemia, probably because of its melatonin content.

Keywords : Brain Ischemia; MCAO; Neuroprotective; Viola; Melatonin; Infarct Volume.

Count: 376
Abstract ID: 654
subject: Neural Injuries and Neurodegenerative Disorders: Ischemia, Stroke, and Neurovascular Disorders
Presentation Type: Poster

The effect of Cinnamomum Zeylanicum Extracts pre-nutrition on TNF-α und IL-6 factor in strok model in high fat diet rats

Submission Author: Mohammad Reza Mostajabi Dastjerdi

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Background and Aim : Stroke is the third leading cause of death and one of the major causes of disability in industrialized countries. The stroke occurs due to the reduced blood supply to the brain tissue and damage to the brain cells. Despite many improvements, there is still no effective treatment for stroke. Restrictions on the use of thrombolytic drugs suggest the importance of prevention and pre-conditioning in people who have risk factors for stroke. Hyperlipidemia is a risk factor for stroke.

Methods : In this study, 84 male Wistar rats were divided into seven groups: sham, control, model, lovastatin, vehicle, low dose cinnamon (130 mg) and high-dose cinnamon (260 mg). Animals in all groups except the control group received high-fat diet for 8 weeks. Then, lovastatin, vehicle, low and high dose cinnamon groups received lovastatin (10 mg/ kg), carboxy methyl cellulose (0.5%), cinnamon 130 mg and 260 mg respectively for 6 weeks. Animals were anaesthetized and stroke was induced by middle cerebral artery occlusion (MCAO). 12 hours after induction of stroke, the animals were examined for, n, lipid profiles, and inflammatory factor.

Results : Stroke is the third leading cause of death and one of the major causes of The results of this study showed that high-fat diet significantly increased body mass index (BMI) and lipid factors in the high-fat recipient groups compared to the control group ($P < 0.05$). Treatment with cinnamon and lovastatin for 6 weeks resulted in a significant decrease in BMI and lipid factors compared to untreated groups ($P < 0.05$). Cinnamon treatment decreased the inflammatory factors of IL6, TNFα and glucose ($P < 0.05$).

Conclusion : The low dose of the cinnamon extract was more successful in reducing in serum lipids in the animal is probably Also, cinnamon may reduce the complications associated with ischemia-reperfusion by reducing the effect of inflammatory factors.

Keywords : Cinnamon : MCAO : Lipid profile : Cinnamaldehyde

Count: 377
Abstract ID: 239
subject: Neural Injuries and Neurodegenerative Disorders: Ischemia, Stroke, and Neurovascular Disorders
Presentation Type: Poster

Could high fat diet attenuate blood brain barrier integrity in cerebral ischemic stroke?

Submission Author: Solmaz Najjary

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Background and Aim : Stroke is one of the main causes of disability and mortality worldwide and is the second leading cause of death after cancer and heart disease in Iran. Hyperlipidemia is a highly prevalent risk factor for ischemic stroke. In this study, the effects of hyperlipidemia on the expression of genes involved in the destruction of the blood-brain barrier and its increased permeability after cerebral stroke was studied.

Methods : In this study, 48 Wistar rats were divided into 4 groups (n=12): sham, control, model, lovastatin (10 mg/kg). All groups except the control group were on a high fat diet for 8 weeks. Stroke was induced through Middle Cerebral Brain Artery Occlusion (MCAO). 12 hours after the induction of stroke, the animals were sacrificed and brain tissue evaluated for the expression of calpainI, calpainII, occludin and vegf genes, and P-Selectin protein.

Results : Hyperlipidemia increased the calpainI, calpainII,vegf mRNA and P-Selectin protein levels and Reduced occludin mRNA level (P<0/001). Lovastatin has been effective in reducing the expression genes of calpainII, vegf and P-selectin protein and increasing the expression of occludin gene (P<0/001).

Conclusion : Hyperlipidemia increased the expression of genes involved in the destruction of the blood-brain barrier and increase permeability after cerebral stroke. moreover lovastatin, by increasing the integrity of the blood-brain barrier, reduces the permeability of the blood-brain barrier and the complications of stroke.

Keywords : Stroke;calpainI;calpainII;occludin;vegf;P-Selectin

Count: 378
Abstract ID: 443
subject: Neural Injuries and Neurodegenerative Disorders: Ischemia, Stroke, and Neurovascular Disorders
Presentation Type: Poster

Cerebrolysin improves cognitive function in photothrombotic mouse model of medial prefrontal cortex ischemia

Submission Author: Ehsan Nasiri

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Background and Aim : Ischemic stroke is the leading cause of brain dysfunction, resulting in sensory, motor, and cognitive impairment. However, no effective treatment has been yet introduced for restoring normal functions after stroke. Ischemic stroke in different cortical regions can impair learning and memory depending on the ischemia size and region. It has been showed that, medial prefrontal cortex (mPFC) ischemia affects post-stroke cognitive outcomes. However, there is limited information about the effects of Cerebrolysin (CBL) as a mixture of peptides and neurotrophic factors on cognition after ischemia. In this study, we aimed to investigate the effects of different doses of CBL on the cognitive function after mPFC ischemia in mice.

Methods : Different behavioral test was administrated to assess the efficiency of CBL (1, 2.5 ml/kg/i.p./daily) for two weeks on the improvement of cognition after photothrombotic mPFC ischemia in mice. What-where-which, (WWWhich) test was used to assess episodic-like memory and Barnes maze was used to investigate spatial learning and memory.

Results : Treatment with 2.5 ml/kg/i.p. CBL attenuated mPFC ischemia-induced episodic and spatial memories impairment.

Conclusion : In conclusion, we found that specific dose of CBL have positive effects on cognitive outcomes after mPFC ischemia.

Keywords : Cerebrolysin; Ischemia; Medial prefrontal cortex; Memory

Count: 379
Abstract ID: 133
subject: Neural Injuries and Neurodegenerative Disorders: Ischemia, Stroke, and Neurovascular Disorders
Presentation Type: Poster

The Sertoli cell allograft transplantation along with memantine reduces ischemic damages in animal model of cerebral ischemia

Submission Author: Zeinab Safialhosseini

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Background and Aim : The objective of most researchers is exploring more effective and safer treatments due to high morbidity rate and irreversible injuries following cerebral ischemia. Administration of Sertoli cells along with memantine could be considered as an effective candidate for the present research due to their abilities in secretion of growth, trophic, and immune system inhibitor factors and also memantine as an uncompetitive NMDA antagonist in reduction of glutamate and intracellular calcium. In this study, the effect of Sertoli cells allograft transplantation and memantine on brain damages induced by ischemic stroke model were investigated.

Methods : In this study, 35 adult male rat weighting between 250-300 g were used. Rats were divided into 5 groups: Sertoli cell allograft transplantation group, memantine-received group, Sertoli cell allograft transplantation along with memantine injection group, control, and sham group (n=7). Through stereotaxic surgery, Sertoli cells were injected into the right striatum area. A week after of transplantation, memantine in doses of 1 mg/kg and 20 mg/kg (i.p.) injected twice a day with interval 12 hour. The ischemic surgery (MCAO) performed one hour after last injection. After 24 h neurological deficits, infarction, cerebral edema, and blood-brain barrier permeability were evaluated.

Results : Combined administration of memantine and Sertoli cells remarkably decreased neurological deficits, infarction, cerebral edema, and blood-brain barrier permeability in the striatum ،amygdala, and cortex areas of brain compared with control group ($P<0.05$). This group showed the most effective results in the decrease of cerebral damages.

Conclusion : The present results indicate that probably memantine along with Sertli cells through the secretion of growth factors, anti-inflammatory cytokines, antioxidants, and reduction of excitotoxicity exert decremental effects on inflammation and apoptosis induced by ischemic stroke.

Keywords : Crebral Ischemia, Sertoli Cells Transplantation, Memantine ،Cerebral Damages.

Count: 380
Abstract ID: 509
subject: Neural Injuries and Neurodegenerative Disorders: Ischemia, Stroke, and Neurovascular Disorders
Presentation Type: Poster

Cerebrolysin improves structural synaptic plasticity in photothrombotic mouse model of medial prefrontal cortex ischemia

Submission Author: Sepideh Seyedi Sahebari

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Background and Aim : Ischemic stroke results in brain dysfunction by variety of structural and molecular pathologies. Assessment of structural synaptic plasticity as an indicator of synaptic connections can be an appropriate tool for evaluating recovery process, as its recovery results in functional improvement after stroke. The aim of this study is to evaluation of the effects of different doses of cerebrolysin (CBL) on the structural synaptic plasticity after medial prefrontal cortex (mPFC) ischemia in mice.

Methods : For this purpose, CBL (1, 2.5 ml/kg/i.p./daily) for two weeks, were administered to photothrombotic mouse model of mPFC ischemia. For ultrastructural evaluations, golgi-cox staining was used and dendritic arbors, spine densities and morphology were evaluated under microscope.

Results : Treatment with 2.5 ml/kg/i.p. dose improved dendritic arbors, spine densities and mushroom shaped spines in pre-infarct area.

Conclusion : At the end we noticed that specific dose of CBL as a complex lipid-free mixture of neurotrophic factors have positive effects on the structural synaptic plasticity after mPFC ischemia.

Keywords : Cerebrolysin; Ischemia; Medial prefrontal cortex; Memory; Structural synaptic plasticity

Count: 381
Abstract ID: 561
subject: Neural Injuries and Neurodegenerative Disorders: Ischemia, Stroke, and Neurovascular Disorders
Presentation Type: Oral

Serum antioxidant and oxidative markers are associated with clinical neurological outcomes in acute stroke patients

Submission Author: Leila Simani

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Background and Aim : Disruption of oxidant-antioxidant balance may lead to oxidative stress which is known as a mechanism contributing to ischemic stroke. However, the early changes in serum levels of oxidative stress markers and clinical neurological outcomes have not clearly established. This study aims at measuring serum concentration of major indicators of antioxidant and oxidant among patients within 24 h after onset of the stroke symptoms, and investigating their relation with the clinical status of patients.

Methods : Serum levels of Q10 (CoQ10), superoxide dismutase (SOD) and malondialdehyde (MDA), as oxidative markers, were measured in 76 patients and 34 healthy individuals. Severity of the neurological deficit, functional disability and cognitive status in ischemic subjects were respectively studied with national institute of health stroke scale (NIHSS), modified ranking scale (MRS) and mini-mental state examination (MMSE).

Results : Stroke patients had significantly lower serum level of CoQ10 and SOD as compared to controls, whereas serum MDA level was significantly higher. The significant negative correlation was detected between the serum CoQ10 level and scores of NIHSS and MRS. Similar association was discerned between the SOD level and the neurological deficit score. Serum MDA level was also found to be strongly correlated with all three neurological scales.

Conclusion : These findings revealed that serum level of CoQ10, SOD and MDA can significantly change early after ischemic stroke and they are substantially associated with clinical neurological outcomes.

Keywords : CoQ10 ;MDA ; SOD ;Acute ischemic stroke ; Neurological defici

Count: 382
Abstract ID: 562
subject: Neural Injuries and Neurodegenerative Disorders: Ischemia, Stroke, and Neurovascular Disorders
Presentation Type: Poster

Coenzyme Q10 Supplementation in Acute Ischemic Stroke: Is It Beneficial in Short Term Administration?

Submission Author: Leila Simani

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Background and Aim : Clinical studies demonstrated the efficacy of Coenzyme Q10 (CoQ10) as an adjuvant therapeutic agent in several neurological diseases such as Parkinson's disease (PD), Huntington's disease (HD), and migraine. The purpose of this study is to investigate oxidative stress, antioxidant enzymes activity, neuroinflammatory markers levels, and neurological outcome in acute ischemic stroke (AIS) patients following administration of CoQ10 (300 mg/day).

Methods : Patients with AIS (n=60) were randomly assigned to a placebo group (wheat starch, n=30) or coenzyme Q10-supplemented groups (300 mg/day, n=30). The intervention was administered for 4 weeks. Serum coenzyme Q10 concentration, malondialdehyde (MDA), superoxide dismutase (SOD) activity, glial fibrillary acidic protein (GFAP) as primary outcomes and National Institute of Health Stroke Scale (NIHSS), Modified Ranking Scale (MRS), and Mini-Mental State Examination (MMSE) as secondary outcome were measured at the beginning and end of the study.

Results : 44 subjects with AIS completed the intervention study. Serum level of CoQ10 significantly increased in supplemented group as compared to placebo group (mean difference=26.05±26.63 ng/ml, 14.12±14.69 ng/ml, respectively; p=0.01). CoQ10 supplementation improved NIHSS and MMSE score significantly (p=0.05, p=0.03 respectively). but there were no significant differences in MRS, MDA, SOD, and GFAP between the two groups.

Conclusion : CoQ10 supplementation probably due to low dose and short duration of supplementation, no favorable effects on MDA level, SOD activity and GFAP level.

Keywords : Coenzyme Q10(ubiquinone); Oxidative stress; Acute ischemic stroke; Neurological deficit; Supplement

Count: 383
Abstract ID: 198
subject: Neural Injuries and Neurodegenerative Disorders: Ischemia, Stroke, and Neurovascular Disorders
Presentation Type: Poster

The effect of intraperitoneal administration of vitamin K2 on thermal and chemical pain following global cerebral ischemia in male Wistar rats

Submission Author: Sahar Talaei

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Background and Aim : According to the world health organization (WHO), Stroke is the second leading cause of death globally. Stroke is the lack of sufficient blood flow to the brain tissue. Reduction of oxygen in the brain tissue, leads to impairment in mitochondrial function and production of free radicals. Adverse effects of elevated oxidative stress is a decrease in glutamate absorption that may cause increases in pain perception. Vitamin K2 is a fat-soluble vitamin, easily crosses the blood brain barrier, and increases the activity of glutamate carriers on astrocytes and clearance of glutamate. This assumption amplifies that administration of vitamin K2 following ischemia has negative effect on feeling of pain. The purpose of this research was to investigate the truth of this assumption.

Methods : Male rats weighing 200-280g, were randomly divided into 5 groups (n=5): control, sham surgery (without carotid arteries occlusion), ischemia (carotid arteries closure for 20 minutes), ischemia + solvent (DMSO %0.1) and ischemia + vitamin K2 (1mg/kg).Vitamin K2 was injected during reperfusion and one hour after reperfusion. This process was repeated for ischemia + solvent. Five days after reperfusion, thermal pain was measured by tail flick and chemical pain was evaluated by the Formalin test.

Results : Results showed threshold of thermal pain significantly decreased in ischemia compared to the control ($p<0.001$). Ischemia showed an increase in response to the pain in first phase of formalin test compared to the control ($p<0.05$). Vitamin K2 didn't show any significant effect in both tests.

Conclusion : Oxidative damages in the peripheral nerve cells causes increased activity of glial cells and neural fibers and lead to release of pro-inflammatory factors, such as cytokines and glutamate. Under ischemic condition, mitochondrial activities are disrupted then depolarize the cell and consequently leading to neurotransmitter release, such as glutamate. Accordingly, It's possible that ischemia increases the feeling of pain. The results of this study demonstrated this assumption however administration of vitamin K2 couldn't improve thermal pain in ischemia. As

expected, in chemical pain test, ischemia causes hyperalgesia in first phase of formalin test, but it had no effect on the second phase. Maybe ischemia has effects on the pain process system from other pathways more than the increase of glutamate and this could provide a probable reason, that way acute administration of vitamin K2 couldn't be effective. To continue, the other doses and chronic methods of vitamin K2 administration is suggested.

Keywords : Ischemia; Vitamin K2; Pain test

Count: 384
Abstract ID: 370
subject: Neural Injuries and Neurodegenerative Disorders: Demyelinating Disorders
Presentation Type: Poster

Determination of the frequency of clinical features and electrophysiological findings of CIDP in patients referring to Rasoul-e-Akram Hospital in the last 10 years

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Background and Aim : Chronic Inflammatory Demyelinating Polyneuropathy (CIDP) is thought to be an autoimmune disease. This disease is clinically similar to the Guillen-Barré syndrome and its prevalence may be less than estimated. Due to the unreliable prevalence of this disease and the need for accurate diagnostic methods for identifying patients, this study aimed to determine the frequency of clinical features and electrophysiological findings of CIDP in patients referred to Rasool Akram Hospital in the last 10 years.

Methods : In this cross-sectional study, all patients with CIDP referred to Rasool Akram Hospital in the last 10 years were evaluated by census method. Data from the clinical records of the patients were provided with a checklist including demographic information, clinical symptoms, lumbar puncture results and EMG-NCS. After reviewing the records, the required information and the check list were completed and analyzed with SPSS 22 software.

Results : In 32 patients, 65.6% were male and 34.4% were female. The age range was between 10-80 years old, with an average age of 44.2 years. 21% of patients had diabetes and 18.8% were treated with GBS diagnosis in the first episode. All patients complained of weakness, 21.9% had lower limb weakness and 78.1% had weakness in all 4 limbs. 96.9% of patients had paresthesia and 15.5% of patients had dysarthria and dysphagia. Conduction velocity was decreased in all patients and Distal latency increased by 93.8%. The age of the diagnosis was significant in both males and females (P value = 0.032) and sphincteric disorder in male and female sex (P value = 0.049). Other findings were not statistically significant in both sexes and females.

Conclusion : Diabetes is the most common underlying disease in CIDP and can highlight the CIDP autoimmune etiology hypothesis. Based on this study, the age of onset and the diagnosis of the disease in the female sex is lower than that of men.

Keywords : CIDP, clinical features, electrophysiological findings

Count: 385
Abstract ID: 498
subject: Neural Injuries and Neurodegenerative Disorders: Demyelinating Disorders
Presentation Type: Poster

Adenosine A2A receptor blockade attenuates spatial memory deficit and extent of demyelination areas in lyolecithin-induced demyelination model

Submission Author: Atefeh Akbari

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Background and Aim : In recent years, inactivation of A2A adenosine receptors has been emerged as a novel strategy for treatment of several neurodegenerative diseases. Although numerous studies have shown the beneficial effects of A2A receptors blockade on spatial memory, the impacts of selective adenosine A2A receptors on memory performance has not yet been examined in the context of demyelination. In the present study, we evaluated the effect of A2A receptor antagonist SCH58261 on spatial memory and myelination in an experimental model of focal demyelination in rat fimbria.

Methods : Demyelination was induced by local injection of lysolecithin (LPC) 1% (2 µl) into the hippocampus fimbria. SCH58261 (20 µg/0.5 µl or 40 µg/0.5 µl) was daily injected intracerebroventricularly (i.c.v.) for 10 days post LPC injection. The Morris water maze test was used to assess the spatial learning and memory on day 6 post lesion. Myelin staining and immunostaining against astrocytes/microglia were carried out 10 days post LPC injection.

Results : The administration of adenosine A2A receptor antagonist prevented the spatial memory impairment in LPC receiving animals. Myelin staining revealed that application of SCH58261 reduces the extent of demyelination areas in the fimbria. Furthermore, the level of astrocytes and microglia activation was attenuated following administration of A2A receptor antagonist.

Conclusion : Collectively, the results of this study suggest that A2A receptor blockade can improve the spatial memory and protect myelin sheath, which might be considered as a novel therapeutic approach for multiple sclerosis disease.

Keywords : Adenosine; A2A receptor antagonist; Lysolecithin; Fimbria; Spatial memory; Demyelination

Count: 386
Abstract ID: 420
subject: Neural Injuries and Neurodegenerative Disorders: Demyelinating Disorders
Presentation Type: Poster

Safranal attenuates excitotoxin-induced oxidative OLN-93 cells injury

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Background and Aim : Researches have been shown that glutamic acid (GA) or quinolinic acid (QA) can play role in neuroinflammatory and demyelinating diseases including multiple sclerosis (MS) mainly via oligodendrocytes activation and extreme free radicals generation. Recent studies have demonstrated that safranal has several pharmacological effects such as antioxidant, anti-inflammatory and neuroprotective properties. Since there is no data about safranal impact on multiple sclerosis, this study was designed to investigate the protective effect of safranal on human OLN-93 oligodendrocytes injury induced by GA or QA.

Methods : At first, the effect of safranal on OLN-93 viability was evaluated. The cells were pretreated with safranal (0.1, 1, 10, 50, 100 and 200 μM) for 2 h and then subjected to GA (16 mM) or QA (8 mM) toxicity for 24 h in which the same treatments were applied. Cell viability and parameters of redox status such as the levels of intracellular reactive oxygen species (ROS) and lipid peroxidation were measured using 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium (MTT), 2,7-dicholorofluorecin diacetate (DCF-DA) and thiobarbituric acid (TBA), respectively.

Results : Safranal at concentration ranges of 1-800 μM had no toxic effect on cell viability ($p>0.05$). Treatment with safranal significantly increased cell viability following GA or QA insults at concentrations above 1 μM ($p<0.01$). The cytoprotective potential of safranal was also accompanied by ROS accumulation ($p<0.001$) and decreased malondialdehyde level ($p<0.001$) following GA or QA insults.

Conclusion : These data suggest that safranal exhibits oligoprotection potential by means of inhibiting oxidative stress parameters.

Keywords : Quinolinic acid, Glutamic acid, Safranal, OLN-93 cells, Gliotoxicity

Count: 387
Abstract ID: 456
subject: Neural Injuries and Neurodegenerative Disorders: Demyelinating Disorders
Presentation Type: Poster

Nano hesperetin: Modulation conduction of visual signal in demyelination-optic chiasm in model of MS induced by lysolecethin

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Background and Aim : Multiple sclerosis (MS) is one of the most autoimmune diseases in worldwide. Demyelination and disturbance of action potential conductance are regarded as main signs of MS disease. Hesperetin (Hst) is a flavonoid from citrus species, that possesses various biological properties such as antioxidant and anti-inflammatory. The present study attempts to examine the effect of nano-Hst on myelin repair and astrocytes activation in lysolecithin (LPC)-induced demyelination.

Methods : After injection of LPC into the optic chiasm of rat, animals have received oral administration of nano-Hst at the dose of 20 mg/kg for 14 and 21 days. Visual evoked potential (VEP) records were performed on days 0, 7, 14 and 21 post lesions. Immunostaining against Iba1 and GFAP were carried out for evaluation of myelination and astrocytes activation.

Results : Electrophysiological evidence emphasizes that oral administration of nano-hesperetin could reduce the P1-N1 latency and increase the amplitude of VEP waves compared to the saline and Hst groups. Immunostaining showed that myelin repair was improved in animals which have received nano-Hst treatment. In addition, nano-hesperetin effectively reduced the expression of GFAP in optic chiasm. Furthermore, nano-Hst treatment decreased the extent of demyelination areas and increased the remyelination process following LPC injection

Conclusion : Overall, our findings indicate that nano-hst could remarkably enhance the functional recovery of the optic pathway by its protective effects on myelin sheath and attenuation of glial activation

Keywords : Myelin repair _ Lysolecithin _Optic chiasm_nano-Hst _ Glial activation

Count: 388
Abstract ID: 457
subject: Neural Injuries and Neurodegenerative Disorders: Demyelinating Disorders
Presentation Type: Oral

Quercetin-loaded nanoparticles improve myelin repair of optic chiasm in lysolecithin-induced focal demyelination

Submission Author: Maryam Ghasemi kasman

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Background and Aim : Multiple sclerosis (MS) is an autoimmune disease in which more than 70% of patients experience visual disturbance as the earliest symptoms. In recent years, encapsulation of natural herbal compounds into biodegradable polymers has been widely introduced as the novel therapeutic approaches in neurological disorders. In this study, the effects of quercetin-loaded NPs on functional recovery, myelin repair and astrocytes activation of optic chiasm was investigated.

Methods : Local demyelination was induced by injection of LPC (1%, 2µL) into the rat optic chiasm. Quercetin or its nanostructure (50 or 100 mg/kg) were daily administrated by oral gavage. Visual evoked potential (VEPs) recordings were performed for evaluating the function of optic pathway on days 7 and 14 post lesions. Myelin specific staining and immunostaining against GFAP were also carried out for assessment of myelination and astrocytes activation, respectively.

Results : Electrophysiological data indicated that administration of quercetin-loaded nanoparticles significantly reduced the N1 latency of VEPs waves compared to saline group. Immunostaining against PLP, as mature myelin marker, showed that myelin repair has been improved in animals received quercetin-loaded nanoparticles treatment. In addition, quercetin nanoparticles effectively alleviated the expression of GFAP in optic chiasm.

Conclusion : The present study indicates that quercetin-loaded nanoparticles enhance myelin repair and ameliorate astrocytes activation of optic chiasm following local injection of LPC.

Keywords : Optic chiasm; Lysolecithin; Quercetin; Nanoparticles; Myelin repair; Astrocytes activation

Count: 389
Abstract ID: 477
subject: Neural Injuries and Neurodegenerative Disorders: Demyelinating Disorders
Presentation Type: Poster

Effect of fingolimod on functional recovery and glial activation of rat's optic chiasm in lysolecithin-induced focal demyelination model

Submission Author: Mona Hashemian

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Background and Aim : Multiple sclerosis is a neurodegenerative disorder that occurs in 70 percent of people with visual impairment as the first symptom. In this study, the effect of oral administration of fingolimod on myelin restoration and astrocytes activation has been investigated in lysolecithin-induced focal demyelination model of optic chiasm.

Methods : Focal demyelination was induced by administration of LPC (1%, 2 μL) into the rat optic chiasm. Rats receive daily oral administration of fingolimod (0.3 mg/kg). Visual-evoked potentials (VEPs) recordings were performed for assessment the function of optic pathway on days 7 and 14 post lesions. Myelin specific staining and immunostaining against GFAP, and Iba1 were also carried out for evaluating of astrocytes and microglia activation, respectively.

Results : Electrophysiological data indicated that fingolimod administration significantly reduced the N1 latency of VEPs waves compared to the saline group. Immunostaining against PLP, as mature myelin marker, showed that myelin repair was improved in animals received fingolimod treatment. Also, fingolimod effectively attenuated the expression of GFAP and Iba1 in the optic chiasm.

Conclusion : The present study indicates that fingolimod administration effectively enhances myelin repair and inflammation of rat's optic chiasm.

Keywords : Fingolimod; Multiple sclerosis; Lysolecithin; Optic chiasm; Visual evoked potential

Count: 390
Abstract ID: 605
subject: Neural Injuries and Neurodegenerative Disorders: Demyelinating Disorders
Presentation Type: Poster

The investigation of factors affecting on gait of Patients with Multiple Sclerosis Disease

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Background and Aim : Multiple sclerosis (MS) is a chronic inflammatory, demyelinating and neurodegenerative disorder of the central nervous system (CNS) and it is the most common cause of non-traumatic neurological disability in young adults. M.S among women, especially young women, is about 1.5 to three times more common than men around the world. About 2.5 million people worldwide are affected by the disease. The destruction of myelin in certain areas exhibits certain sign and symptoms. Balance disorders are particularly problematic because they are associated with difficulty in moving from one position to another, sustaining an upright posture, and performing functional activities such as walking and turning, all of which predisposes people with MS to loss of equilibrium and falls. The high prevalence of MS puts Isfahan amongst the regions with the highest prevalence of MS in Asia and Oceania. The aim of this study from holistic approaches of occupational therapy was to examine the effectiveness of physical and cognitive factors affecting on gait of patients with M.S disease in Isfahan city(attention, cognition and strength of lower extremities

Methods : The present study was a descriptive-correlational one and available sampling method was used. The study population consisted of all patients with MS in Isfahan city in August 2017. A group of 70 patients (24 males and 46 females with mean age of 32.20 ± 7.55) met the inclusion-exclusion criteria and were enrolled in the study. To be eligible for the study, the patients had to meet the following inclusion criteria: participants had to have a neurologist-confirmed diagnosis of MS with MRI scan, the ability to read and write, and the ability to walk at least 100 meters independently. We excluded patients with cognitive impairments that might hinder understanding of the tasks to be accomplished, the presence of any comorbid neurologic condition other than M.S, and the patient's unwillingness to collaborate on research. After providing sufficient information about the research process and getting informed consent of patients, the questionnaire and tests provided to participants and completed. In this study we used some tools such as: Mini Mental Status Examination (MMSE), 10 Meter Walking Test (10 MWT), Timed Up and Go test(TUG), and Sit to Stand test and Stroop test. For data analysis, SPSS software version 16 and Pearson correlation coefficient and multiple regression analysis were used.

Results : In this study, 70 patients with MS were participated. The results showed that There were significant negative correlations between the scores of walking speed test (10 m walking) and the scores of the functional

strength of the lower extremities muscles (P <0.001) and attention (P = 0.01). It was also shown that there is a significant correlation between muscle strength of lower extremity and balance (P = 0.01). Regression analysis shown muscle strength of lower extremities has most contributions in predicting speed of walking in patients with M.S.

Conclusion : according to the findings of this study, among the physical and cognitive factors affecting gait and balance such as muscle strength of lower extremity, cognition and attention, the muscle strength of lower extremity is the most important factor affecting the balance and speed of walking in patients with MS. In rehabilitation especially occupational therapy, special attention must be paid to muscle strengthening program of lower extremities.

Keywords : Gait ;muscle strength of Lower extremity ; Attention ; Cognition ;Multiple Sclerosis

Count: 391
Abstract ID: 452
subject: Neural Injuries and Neurodegenerative Disorders: Demyelinating Disorders
Presentation Type: Poster

Immunomodulatory effects of Silymarin in animal model of Multiple Sclerosis

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Background and Aim : Multiple sclerosis, an autoimmune disease, in result of nerve cells demyelination in the brain and spinal cord causes nerve dysfunction. On the other hand, Silibinin, the major pharmacologically active compound of silymarin of the Silybum marianum fruit extract, have an anti-inflammatory agent that could be suppress the inflammatory response of immune system. Therefore, we hypothesized that silymarin could be effective in the MS therapy and we tested its immunomodulatory effects in experimental animal model.

Methods : The study was performed on adult female Wistar rats (200-150 g). Multiple sclerosis disease was induced by intraperitoneal and intraperitoneal injection of poisonous toxin. In the pretreatment group, animals received intraperitoneally injection of silymarin (50 mg / kg) 17 days prior to intraspinal injection of venom (250 ng / 0.2cc / rat). In the treatment group, the animals were treated with silymarin (50 mg / kg) after 13 days of the intraperitoneally injection of toxin. The behavioral symptoms were scored on the basis of the paralysis of the tail and the limbs. At the end of the study, we evaluated inflammatory response and cytokine (IL17, TNF-α, IL-1β) production in CSF, serum samples, brain and spinal cord by spectrophotometry.

Results : The severity of the signs was significantly decreased in the pre-treatment and treatment group (from 27th to 30th) treated by 50 mg / kg Silymarin than the MS untreated group. Our results showed that the cumulative signs in treated and pretreated groups with 50 mg / kg silymarin were significantly lower than MS patient group. Our results showed that inflammatory cytokines in brain, serum samples, CSF and spinal cord were significantly different in pre-treatment and treatment groups than patient group.

Conclusion : We concluted that Silymarin significantly reduced the inflammation signs in MS. Also, herbal medicine silymarin, as an alternative treatment for MS patients modulate the immune system

Keywords : Multiple Sclerosis, Silymarin, Animal

Count: 392
Abstract ID: 611
subject: Neural Injuries and Neurodegenerative Disorders: Demyelinating Disorders
Presentation Type: Poster

Inhibition of GABA A receptor improved spatial memory impairment in the local model of demyelination in rat hippocampus

Submission Author: Atena Nazari chamazkoty

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Background and Aim : Multiple Sclerosis (MS) is an inflammatory demyelinating disorder of central nervous system (CNS). Cognitive impairment and memory deficit are common features in multiple Sclerosis patients. The mechanism of memory impairment in MS is unknown, but neuroimaging studies suggest that hippocampal demyelination is involved. Here, we investigate the role of GABA A receptor on spatial memory in the local model of hippocampal demyelination

Methods : Demyelination was induced in male Wistar rats by bilaterally injection of lysophosphatidylcholine (LPC) 1% into the CA1 region of the hippocampus. The treatment groups were received daily intraventricular injection of bicuculline (0.025, 0.05 µg/2µl/animal) or muscimol (0.1, 0.2 µg/2µl/animal) 5 days after LPC injection. Morris Water Maze was used to evaluate learning and memory in rats. We used Luxol fast blue staining and qPCR to assess demyelination extention and MBP expression level respectively. Immunohistochemistry (IHC) for CD45 and H&E staining were performed to assess inflammatory cells infiltration.

Results : Behavioral study revealed that LPC injection in the hippocampus impaired learning and memory function. Animals treated with both doses of bicuculline improved spatial learning and memory function; however, muscimol treatment had no effect. Histological and MBP expression studies confirmed that demylination in LPC group was maximal. Bicuculline treatment significantly reduced demyelination extension and increased the level of MBP expression. H&E and IHC results showed that bicuculline reduced inflammatory cell infiltration in the lesion site.

Conclusion : Bicuculline improved learning and memory and decreased demyelination extention in the LPC-induced hippocampal demyelination model. We conclude that disruption of GABAergic homeostasis in hippocampal demyelination context may be involved in memory impairment with the implications for both pathophysiology and therapy

Keywords : Demyelination; spatial memory; GABA A receptor; Bicuculline; Remyelination

Count: 393
Abstract ID: 383
subject: Neural Injuries and Neurodegenerative Disorders: Demyelinating Disorders
Presentation Type: Poster

Evaluation the prevalence of multiple sclerosis in infertile woman compared to fertile woman

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Background and Aim : Multiple sclerosis is a neurological disease with an unknown cause that affects the central nervous system, the brain and the spinal cord, which has caused these patients to face major problems. The purpose of this research is to investigate the prevalence of MS in infertile women compared to fertile women.

Methods : A descriptive study was performed on 400 patients in two groups of 200 patients. The first group was from patients referring to one of the competent centers of infertility in Shiraz from 2007 to 2010 and in the second group, the patients at one of the obstetrics centers of this city,, including those who were naturally pregnant for the same period of time, were susceptible to MS, in the form of questionnaires based on the principles of the questionnaire and the validity and reliability criteria Were placed.

Results : The results of the questionnaires completed by interviewing the patients in both groups were analyzed by statistical software. The results did not show a significant difference between the case group and the control group. There is no significant increase between the two groups. (p more than 0.05).

Conclusion : By comparing the results of this study, there was no evidence of a higher incidence of MS in infertile women compared to the second group. By referring to the results, it is possible to effectively reduce the concerns of the case population in this regard .Nevertheless, in order to achieve more precise results, we need more extensive studies.

Keywords : Multiple Sclerosis, Infertility, Women

Count: 394
Abstract ID: 97
subject: Neural Injuries and Neurodegenerative Disorders: Demyelinating Disorders
Presentation Type: Poster

The Effect of Cognitive-Behavioral Training on Coping Skills in People with Multiple Sclerosis

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Background and Aim : Multiple sclerosis (MS) affects the lives of people for a long time and so it is necessary that Quality of life by all possible means, including the most appropriate way of adaptation. The purpose of this study was to investigate the effect of cognitive-behavioral training on coping skills of the patients with multiple sclerosis.

Methods : This study is a quasi-experimental study with a sample size of 80 subjects who were selected with convenient sampling method. Patients were assigned in the experimental and control groups. The experimental group received eight 1-hour sessions training of cognitive-behavioral training within two month. The control group received routine cares. Patients in both groups completed Coping with Multiple Sclerosis Scale (CMSS) at the beginning and one month after the last training session. To compare the findings between two groups, independent T-Test was used and to compare pre- and post-intervention results, paired T-Test was used. To analyze the data, SPSS 21 was used.

Results : Most respondents in both experimental and control groups (55% - 55.7%, respectively) were male. In the control group, the average age of respondents was 32.22 years and in the experimental group it was 33.02 years. There was no significant difference in coping skills with MS scores between experimental and control groups before cognitive-behavioral training ($P > 0.05$). But after training, both groups showed significant differences (p-value<0. 01).

Conclusion : Our main study result suggests positive effects of using cognitive-behavioral training. Because the main objective of these trainings was preparing and helping patients to solve problems and difficulties encountered due to their diseases, thus, applying cognitive-behavioral training in care plan is recommended in these patients.

Keywords : multiple sclerosis, cognitive-behavioral training, coping

Count: 395
Abstract ID: 594
subject: Neural Injuries and Neurodegenerative Disorders: Demyelinating Disorders
Presentation Type: Poster

Arbutin improves functional recovery following lysolecithin-induced demyelination in rat optic chiasm.

Submission Author: Fereshteh Pourabdolhossein

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Background and Aim : Multiple Sclerosis (MS) is an inflammatory demyelinating disorder of central nervous system (CNS). Visual disturbance is involved in more than 70% of multiple sclerosis (MS) patients as the earliest symptoms. Arbutin has potential role as a free radical scavengers and anti-inflammatory which has not been study in experimental demyelination model. In this study, the effects of arbutin on functional recovery of optic chiasm, myelin repair and inflammatory, anti-inflammatory cytokines and oxidative stress expression level were investigated.

Methods : Local demyelination was induced by administration of LPC (1%, 2μL) into the wistar rat optic chiasm. Treatment group was received daily injection of arbutin (50mg/kg, i.p) following LPC injection. Visual-evoked potentials (VEPs) recordings were used to assess visual pathway at 3, 7 and 14 days post lesions. Myelin specific staining was performed for evaluation of demyelination extension. Real time-PCR was used to assess inflammatory, anti-inflammatory and oxidative stress gene expression level.

Results : Electrophysiological data indicated that LPC induced demyelnation in the optic chiasm enhanced P1-N1 latency and decreased amplitude of VEPs waves and arbutin significantly reduced P1-N1 latency and increase the amplitude of VEPs waves at 7 and 14 days following optic chiasm demyelination. Histological study in agreement with electrophysiological data proved that demyelination extention in optic chiasm was considerably reduced in arbutin treated groups at 7 and 14 days post demyeliation. q-PCR analyses of optic chiasm samples revealed that arbutin significantly reduced inflammatory cytokines gene expression (IL1, Il17, TNF-α) and iNOS and enhanced anti-inflammatory cytokine (IL10) and Nrf2 gene expression levels.

Conclusion : Our results indicate that arbutin facilitate myelin repair and restore VEP response in the demyelinated optic chiasm. Thus, Arbutin could have therapeutic potential for demyelinating disorders such as Multiple Sclerosis.

Keywords : Lysolecethin, Arbutin, Demyelination, Optic chiasm, VEP

Count: 396
Abstract ID: 437
subject: Neural Injuries and Neurodegenerative Disorders: Demyelinating Disorders
Presentation Type: Poster

Urinary oxidative toxic stress biomarkers of multiple sclerosis patients: Role of crocin

Submission Author: Mohammadmahdi Sabahi

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Background and Aim : Multiple sclerosis (MS) is a chronic and progressive demyelination disorder in the central nervous system, the cause of which is still unknown. Inflammatory factors and oxidative stress play a very important role in the development of this disease. Saffron, as a potent and anti-inflammatory antioxidant, improves the oxidative stress indices, oxidative load damage and inflammation. Therefore, this study aimed to determine the effect of crocin on Thiol, MDA, Catalase and TAC (Total Antioxidant Capacity) concentration as biomarkers of oxidative stress in the urine of patients with MS.

Methods : A randomized controlled trial was conducted on patients with multiple sclerosis referred to Farshchian Hospital in Hamadan in 2017. Patients were randomly divided into two groups and assigned to a group of patients with a crocin capsule and to another group of placebo capsule for 4 weeks. After the treatment period, in the urine samples, the amount of Thiol, MDA, Catalase and TAC were measured by spectrophotometer. Data analysis was conducted using SPSS 22 software. Our IRCT number is: IRCT2016122013194N3.

Results : Thiol detection assay, Aeibi assay, Thiobarbitoric acid (TBA) and TAC assay are the most commonly used method for determination of the thiol, catalase, MDA and TAC respectively. According to our results, thiol, catalase, MDA and TAC not differ significantly in the control group between beginning and after receiving placebo ($P > 0.05$). But, after 4 weeks' treatment with crocin in these case group significant decrease of MDA ($P < 0.05$) and increase of catalase ($P < 0.05$), thiol ($P < 0.05$) and TAC ($P < 0.05$) were seen.

Conclusion : The recognition of the pharmacokinetics of saffron and its components in the field of effective and positive effects on diseases is very important. Given that little studies have been done so far, animal and human studies in this field, especially on MS disease, are necessary.

Keywords : Crocin; Oxidative Stress; TAC; Thiol; MDA; Catalase; Urine; Multiple sclerosis.

Count: 397
Abstract ID: 272
subject: Neural Injuries and Neurodegenerative Disorders: Demyelinating Disorders
Presentation Type: Oral

Fingolimod Enhances Oligodendrocyte Differentiation of Transplanted Human Induced Pluripotent Stem Cell-Derived Neural Progenitors

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Background and Aim : Multiple sclerosis (MS) is an autoimmune disease which affects myelin in the central nervous system (CNS) and leads to serious disability. Currently available treatments for MS mainly suppress the immune system. Regenerative medicine-based approaches attempt to increase myelin repair by targeting endogenous progenitors or transplanting stem cells or their derivatives. Fingolimod exerts anti-inflammatory effects and directly affects neural cells. In this study we assessed the effect of fngolimod on transplanted human induced pluripotent stem cell derived neural progenitors (hiPSC-NPs).

Methods : hiPSC-NPs were labeled by green fluorescence protein (GFP) and transplanted into the corpus callosum of mice which were chronically demyelinated after cuprizone (CPZ) feedings for 10 weeks. The animals received fngolimod from 1 day prior to NPs transplantation via gavage as well as daily intraperitoneal cyclosporine A from 2 days before cell transplantation until the time of sampling. At either 7 or 21 days after NPs transplantation, the animals were sacrifced and their brains were histologically evaluated for the number of transplanted cells and their fate.

Results : In the animals treated with fngolimod, we observed higher numbers of NPs within the injection site compared to the animals who did not receive fngolimod showing that hiPSC- NPs were more effciently differentiated to the oligodendrocyte lineage.

Conclusion : These data have suggested that repetitive treatment with fngolimod, beside its anti-inflammatory effect, may enhance the survival and differentiation of transplanted NPs to oligodendrocyte lineage cells to participate in myelin repair

Keywords : Fingolimod (FTY720); Cell therapy; Neural progenitor cell; Cuprizone; Oligodendrocyte; Mouse.

Count: 398
Abstract ID: 292
subject: Neural Injuries and Neurodegenerative Disorders: Other
Presentation Type: Poster

Horizontal Gaze Palsy with Progressive Scoliosis

Submission Author: Faezeh Fazelnia

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Background and Aim : Horizontal gaze palsy with progressive scoliosis (HGPPS) is a rare disease with characteristic imaging features.

Methods : A 17-years old girl was referred for repair of scoliosis which began since 2 years ago she also had bilateral horizontal gaze palsy, but the other neurologic were normal. It was not possible to overcome to limitation of horizontal gaze with vestibuloocular maneuver. She had no birth difficulty or developmental delay and her intelligence and school performance were intact. Her sister had also scoliosis in her teens.

Results : Absence of facial colliculi in the floor of forth ventricle are prominent at the sagittal plan of brain stem. Based on clinical features and typical brain imaging features, the diagnosis of HGPPS was made

Conclusion : The absence of facial colliculi which is an anatomic structure at the floor of forth ventricle is due to selective agenesis of abducens nuclei and gives rise to the picture of “a tent” to pons. In addition to abducens nuclei, maldevelopment of medial longitudinal fasciculus may lead to a dorsal midline cleft along the pons. Also there is a ventral midline medullary cleft which is thought to be as the result of uncrossed corticospinal fibers. The gracilis and cuneatus nuclei and medial lemniscus are absent in HGPPS and lead to a prominent decrease in the size of medulla oblongata. All of these structures are a part of proprioceptive systems that can explain the scoliosis.

Keywords : Horizontal gaze palsy, Progressive scoliosis, MRI features

Count: 399
Abstract ID: 580
subject: Neural Injuries and Neurodegenerative Disorders: Other
Presentation Type: Oral

Pre-conditioning of MSCs by deferoxamine improve stem cell homing in the damaged cochlea through the PI3K/AKT- HIF1-α-CXCR4 Pathway activation

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Background and Aim : Over 5% of the world's population suffers from disabling hearing loss. Stem cell homing in target tissue is an important aspect of cell-based therapy, which its augmentation increases cell therapy efficiency. Deferoxamine (DFO) can induce the Akt activation, and phosphorylation status of AKT (p-AKT) upregulates CXC chemokine receptor-4 (CXCR4) expression. We examined whether DFO can enhance mesenchymal stem cells (MSCs) homing in noise-induced damaged cochlea by PI3K/AKT dependent mechanism

Methods : Mesenchymal stem cells were treated with DFO. AKT, p-AKT protein and hypoxia inducible factor 1-α (HIF-1α) and CXCR4 gene and protein expression was evaluated by RT- PCR and Western blot analysis. For in vivo assay, rats were assigned to control, sham, noise exposure groups without any treatment or receiving normal, DFO-treated and DFO +LY294002 (The PI3K inhibitor)-treated MSCs. Following chronic exposure to 115 dB white noise, MSCs were injected into the rat cochlea through the round window. Number of Hoechst- labelled cells was determined in the endolymph after 24 hours

Results : Deferoxamine increased P-AKT, HIF-1? and CXCR4 expression in MSCs compared to non-treated cells. DFO pre-conditioning significantly increased the homing ability of MSCs into injured ear compared to normal MSCs. These effects of DFO were blocked by LY294002.

Conclusion : Pre-conditioning of MSCs by DFO before transplantation can improve stem cell homing in the damaged cochlea through PI3K/AKT pathway activation.

Keywords : Deferoxamine; p;Stem Cell Homing; Noise -Induced Hearing Loss; PI3K/AKT- HIF1-α-CXCR4 pathway

Count: 400
Abstract ID: 425
subject: Neural Injuries and Neurodegenerative Disorders: Other
Presentation Type: Poster

Effect of minocycline on the behavior of neural stem cells in 2-D and 3-D conditions

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Background and Aim : Given the importance and high prevalence of neurodegenerative diseases around the world, attempts for improving the capacities of neural stem / progenitor cells (NS/PCs) as a probable source of stem cell therapy for neurodegerative diseases are increasing. Minocycline is a tetracycline derivative which has been shown to have several non-antibacterial effects in animal models of neurodegenerative diseases. The current study aimed to investigate the effect of minocycline on proliferation, survival and migration of embryonic NS/PC.

Methods : NS/PCs were extracted from ganglionic eminence of 13.5-day embryonic mice. They were cultured according to neurosphere protocol and after second passage they were exposed to different doses of minocycline (0 µg/ml, 1 µg/ml, 10 µg/ml, 50 µg/ml and 100 µg/ml) for 7 days. The number and diameter of neurospheres were assessed to evaluate their proliferation and the MTT assay was used for the survival. Migration was estimated based on the distances traveled by the cells. Because of the importance of NS/PCs behaviors in 3-dimentional environment, all assessments were done in 3-dimentional culture in addition to 2-dimentional culture.

Results : NS/PCs exposed to 1 µg/ml and 10 µg/ml of minocycline and those in untreated group traveled significantly longer distances compared to those treated with 50 µg/ml and 100 µg/ml of minocycline. In addition, higher doses of minocycline reduced the NS/PCs proliferation remarkably compared to control condition just in 2-D culture. .However, the survival capacity of NS/PCs was not significantly affected by any dose of drug in both 3-D and 2-D cultures.

Conclusion : Based on the current findings, lower doses of minocycline can be a choice in treatment of neurodegenerative diseases for protecting injured microenvironment from proinflammatory cytokines without defined adverse effects on NS/PCs.

Keywords : Minocycline, Neural stem cell, Puramatrix

Count: 401
Abstract ID: 615
subject: Development: Neuronal Cell Death
Presentation Type: Oral

Radio-Protective Effects of Melatonin on Subventricular Zone in Irradiated Rat: Decrease in Apoptosis and Upregulation of Nestin

Submission Author: Tayebeh Rastegar

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Background and Aim : Neural stem cells are self-renewing, multipotent cells that can be found in subventricular (SVZ) and subgranular (SGZ) zones of the brain. These zones are susceptible to irradiation-induced apoptosis and oxidative stress. Melatonin (MLT) is a natural protector of neural cells against toxicity. The aim of this study was to evaluate the effects of MLT as a radio-protective material effective in reducing tissue lesions in the SVZ of the brain and changing local apoptotic potential in rats.

Methods : Z of the brain and changing local apoptotic potential in rats. Twenty-five Gray irradiation was applied on adult rat brain for this study. One hour before irradiation, 100 mg/kg/IP MLT was injected, and 6 h later, the animals were sacrificed. The antioxidant enzymes and MDA activity levels were measured post-sacrifice. Also, the expression level of Nestin and caspase 3 were studied by immunohistochemistry

Results : stin and caspase 3 were studied by immunohistochemistry. Spectrophotometric analysis showed significant increases in the amount of malondialdehyde (MDA) levels in the irradiation-exposed (RAD) group compared to that of the control (Co) group ($P < 0.05$). Pre-treatment with MLT (100 mg/kg) ameliorates the harmful effects of the aforementioned 25 Gy irradiation by increasing antioxidant enzymeactivity and decreasing MDA levels. A significant reduction in apoptotic cells was observed in rats treated with MLT 1 h before exposure ($P < 0.001$). Nestin-positive cells were also reduced in the RAD group ($P < 0.001$)

Conclusion : Our results confirm the anti-apoptotic and antioxidant role of MLT. The MLT concentration used may serve as a threshold for significant protection against 25 Gy gamma irradiations on neural stem cells in SVZ.

Keywords : Melatonin . Radiation . Malondialdehyde . Catalase . Caspase . Nestin

Count: 402
Abstract ID: 282
subject: Development: Evolution of Developmental Mechanisms
Presentation Type: Oral

Development of Gait Adjustments during Childhood: A Kinematic Analysis of Transition to a Narrow Pathway

Submission Author: Zeinab Hatami

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Background and Aim : One of the essential component of optimized performance of walking and motor activities is maintaining an adequate postural control. Perturbations may modify Control of posture, that include fast movements of limbs or unexpected translation of the base of support, and slip from an elevated surface. One of these predictable perturbations that is imperative in daily life is transition to different pathways with different widths. The ability to change pathways of different widths is a prerequisite of daily living. However, only a few studies have investigated changes in gait parameters in response to walking on narrow pathways. The aim of this study was to investigate the effect of reducing the pathway width on gait parameters in different age groups. 12 elderly (75-65), 12 young adults (27-23) and 12 children (3-6) participated in this study

Methods : Before fixing markers on determined segments, we measured age, height, weight, lower limb length, foot width and body mass because all these factors influence the temporal and spatial parameters of walking. The Motion Analysis with eight cameras (Motion Analysis Corporation, Santa Rosa, California, USA) at 100Hz was used to measure gait spatiotemporal parameters for all subjects during self-pace transition from wide to narrow pathway and Cortex software to analyzing the collected data. Thirty healthy people, 10 children (0.66±4.55 years), 10 young adults (±25.33 1.49 years) and a group of 10 older men that hadn't any falling experience (67.5 3.72±. years) volunteered to participate in this study. All subjects were able to perform the experimental task. They successfully transited from wide to narrow pathway without any trouble and their kinematic parameters were changed Initial instructions related to the specified pathway was given to them. Kinematic parameters including, step length, step width, velocity and joints range of motion of lower extremity were recorded with 3-dimensional motion tracking

Results : The results of ANOVA showed a significant main effect of group for speed ($F(2,33)= 27.56$, $p=0.0001$). Bonferroni comparison were completed between groups and revealed that comparisons between adults and children, older and children groups ($p=0.0001$) were significant but no other group were significant. There was a significant main effect of group for length of step ($F (2, 33) = 103.76$, p=001. 0). Bonferroni comparison indicated significant effect between older and children groups, adults and children groups ($p=0.0001$). But no significant effect was shown between other groups. There was no significant main effect of group for range of motion of hip and knee, but it was

observed significant effect for range of motion of ankle (F (2, 33) = 3.64, p=0.03). Bonferroni comparison indicated significant effect between older and children groups (p=0.0001).

Conclusion : one of the essential factor that indicate the CNS maturation is mastering of time adjustments. Almost postural adjustments possibly emerged about 4 years of age, the development of postural control during transition step, involving estimation of narrow pathway, slowly matured in children

Keywords : Children, Postural Control, transition step, kinematics, balance

Count: 403
Abstract ID: 204
subject: Development: Evolution of Developmental Mechanisms
Presentation Type: Poster

Nicotine exposure during adolescence increases nociceptive behaviors in rat model of inflammatory pain

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Background and Aim : A number of studies indicate that smoking initiation is most likely to occur during adolescence. Adolescence is a critical period for brain development and maturation. Studies have confirmed that environmental stimuli such as drugs can make long lasting changes in the person. In the current research we aimed to investigate long lasting effects of adolescent nicotine exposure on pain perception and also on analgesic response to a single dose of morphine injection.

Methods : A total number of 44 male Wistar rats were used in this study. In this regard adolescent rats, postnatal days (PNDs) 28-42, received nicotine or saline and after 30 days of washout period formalin test performed. In the next part of the study, adolescent nicotine or saline treated rats after 30 days of washout period were injected a single dose of morphine (2.5 mg/kg) and then formalin test was performed.

Results : The results demonstrated that adolescent rats exhibited higher pain related behaviors compare to control group. Moreover, adolescent nicotine exposure reduces the nociceptive behavioral response to morphine in formalin test.

Conclusion : Collectively, this study demonstrates long lasting effect of nicotine exposure on pain perception and morphine analgesia.

Keywords : Adolescent; Nicotine; Morphine; Formalin test; Rat

Count: 404
Abstract ID: 228
subject: Development: Evolution of Developmental Mechanisms
Presentation Type: Poster

Adolescent morphine exposure increases negative motivational aspect of opiate withdrawal

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Background and Aim : Adolescence is a Period of transition from childhood to adulthood marked by characteristic behavioral changes, including increased risk-taking and novelty-seeking. In particular, brain regions that are necessary for critical thinking and decision making remain underdeveloped in the adolescent brain relative to the adult brain. So adolescents are more likely to engage in risk-taking behavior and, in particular, increased experimentation with drugs of abuse. The motivational aspect of drug withdrawal may related to drug seeking. Conditioned place aversion (CPA) induced by naloxone-precipitated morphine withdrawal is one of the most sensitive indices to measure the aversive effects of this state. So we examined the influence of adolescent morphine exposure on negative motivational aspects of morphine induced by naloxone in adulthood.

Methods : Adolescent male Wistar rats (30 days old) were administered increasing doses of morphine (from 2.5 to 25 mg/kg, s.c.) every 12 h, for 10days. Control rats received saline with the same protocol. Thereafter, during adulthood (65 days old), they were made dependent on morphine and tested for opioid withdrawal-induced conditioned place aversion.

Results : Adult rats exposed to morphine during adolescence demonstrated significant enhancement in expression of naloxone induced conditioned place aversion compared to control group.

Conclusion : Chronic morphine exposure during adolescence can develop long lasting effects during adulthood in negative motivational aspect of opiate withdrawal.

Keywords : Adolescence, Morphine, conditioned place aversion, rat

Count: 405
Abstract ID: 680
subject: Development: Evolution of Developmental Mechanisms
Presentation Type: Poster

The mediator role of fine motor skills in relation between age and cognitive performances in preschool children

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2. Master degree in motor development in Tehran University
3. PhD in behavioral neuroscience

Background and Aim : The growing body of researches has been shown that cognitive performances in preschool age has a crucial role in later children's physical, social, and psychological performances. Research on the development of cognitive performances has shown that motor skills play a critical role in children's cognitive abilities. As motor and cognitive skills develop at a rapid rate during the preschool period, the aim of this study was investigating the relation between age and cognitive skills with mediator role of fine motor skills in preschool children.

Methods : Participants were 120 children 4 to 6 years in Isfahan who were selected through random cluster sampling from centers for preschool education in Isfahan. NEPSY test was used in order to assess cognitive skills and bruininks oseretsky test was conducted for examining motor skills. Data analyzing was done with SPSS 22 and Amos 22.

Results : Pearson's correlation and regression analyzing released that age and fine motor skills were significantly correlated with cognitive skills in preschool children ($p<0.001$). Also, finding of path analyzing showed that fine motor skills has a mediator role in relation between age and cognitive performances.

Conclusion : As preschool age is an important period for many aspects of development, so the relationship between different skills such as cognitive and motor skills can help experts to design and held effective programs for children to improve their skills and performances and later outcomes

Keywords : age, cognitive skills, motor skills, preschool children

Count: 406
Abstract ID: 375
subject: Development: Neurodevelopmental Disorder (ADHD, Autism, Learning Disorders)
Presentation Type: Poster

Early processing of facial emotion recognition in attention-deficit/hyperactivity disorder (ADHD)

Submission Author: Khatereh Borhani

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3. Faculty of Psychology; Shahid Beheshti University

Background and Aim : Attention deficit/hyperactivity disorder (ADHD) has been revealed to be associated with difficulties in emotion processing. The processing of facial expressions as biologically significant source of emotional information, has been studied in ADHD for past several years. However, there is a discrepancy in findings in terms of emotional face processing in ADHD.

Methods : In the present study event-related potentials evoked by emotional faces is investigated in adults with ADHD. 34 participants (17 ADHD) performed a facial emotion recognition (FER) task consisting fear, anger, neutral, and happy expressions.

Results : Results showed in healthy controls there is a significant difference at the early structural stage of encoding faces (N170) in response to happy facial expressions and other negative and neutral expressions. However, no emotional modulation of the N170 was revealed in ADHD group.

Conclusion : This finding suggest, ADHD seems to involve a deficit in low-level structural processing of emotional face processing.

Keywords : ADHD; Facial emotion recognition, N170 Event-related component

Count: 407
Abstract ID: 447
subject: Development: Neurodevelopmental Disorder (ADHD, Autism, Learning Disorders)
Presentation Type: Poster

Consideration of the Role of MALAT1 Long Noncoding RNA and Catalytic Component of RNA-Induced Silencing Complex (Argonaute 2, AGO2) in Autism Spectrum Disorders: Yes, or No?

Submission Author: Hamid Fallah

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Background and Aim : Autism spectrum disorders (ASD) are complex neurodevelopmental impairments in which dysregulation of long noncoding RNAs (lncRNAs) has been indicated. LncRNAs tend to play role in constituting comprehensive networks of ribonucleoprotein complexes including argonautes.

Methods : Here, we aimed to study the expressions of MALAT1, a highly conserved lncRNA, and AGO2 gene, encoding the catalytic component of the RNA-induced silencing complex (RISC), in ASD patients. In this case-control study, peripheral whole blood samples were gathered from 30 ASD patients and 41 healthy controls and expression level of genes were matured by quantitative TaqMan real-time PCR.

Results : we found an increase in MALAT1 expression, which was statistically insignificant. Moreover, the AGO2 expression revealed a decrease that did not reach a level of significance. There was a significant and direct correlation between expression levels of MALAT1 and AGO2 ($r=0.427$, $P<0.0001$). Eventually, MALAT1 and AGO2 correlations with patients' age did not show a significant difference.

Conclusion : These findings provide clues that although we have indicated a significant direct correlation between MALAT1 lncRNA and AGO2, implying their interactive network, there should be a reconsideration regarding their role in ASD development based on whole blood samples because the altered expressions were not strong enough to be significant. Further investigations employing larger sample sizes and specific leukocytes subsets separately could profoundly strengthen these findings.

Keywords : MALAT1; AGO2; Autism

Count: 408
Abstract ID: 157
subject: Development: Neurodevelopmental Disorder (ADHD, Autism, Learning Disorders)
Presentation Type: Poster

Prosody in Autism Spectrum Disorder: A Review Article

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Background and Aim : Many children with autism spectrum disorder (ASD) exhibit unusual prosody. The aim of this paper is to review supra segmental aspects (prosody) in speakers with autism spectrum disorder.

Methods : A literature review was carried out to demonstrate what areas of prosody in autism spectrum disorder have been researched to date, what the findings have been and to determine what areas are yet to be investigated. Published researches were identified by review of scientific databases (PMC, Science Direct and Neuroscience, PubMed) using relevant keywords with reviewing the articles from 1980 to 2018 through the search of the resources.

Results : The prosody of children who have autism has different abnormal characteristics. Unusual or odd-sounding prosody is one of the first clinical signs in autism. However, little is known about the perception of prosody, or about the specific aspects of prosodic production that result in the perception of ‘‘oddness.’’ both understanding and producing appropriate stress patterns appear to be difficult for these speakers with ASD. The prosody of spoken language in ASD is thought to lack emotional content. intonation is usually monotone and robotic. Levels of fundamental frequency in children with autism is high, besides they have poor control on their loudness . Autistic children show more pitch accents and phrase boundaries than the control group, and often cannot produce high boundary tone even though they are able to produce high pitch accents. Intonation and timing features of autistic children differ from those of normal children both qualitatively and quantitatively. Children with autism use a wider pitch range and a longer duration with greater variability than the control group in reading and imitation data.

Conclusion : Children with autism spectrum disorder who can speak often exhibit abnormal voice quality and speech prosody, but the exact nature and underlying mechanism, as well as their diagnostic power are currently unknown. Stress appeared to be the only area of prosodic function in which significant differences were found.

Keywords : prosody, autism spectrum disorder, intonation, stress.

Count: 409
Abstract ID: 542
subject: Development: Neurodevelopmental Disorder (ADHD, Autism, Learning Disorders)
Presentation Type: Poster

Developmental Skills in a Persian-language Child with Branchio-Oculo-Facial

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Background and Aim : Branchio-oculo-facial (BOF) is one of the malformed rare syndromes of craniofacial with a variable expressivity. This rare genetic disorder is caused by maldevelopment in the branchial arches and inherited as an autosomal dominant trait. Despite the importance of this issue, so far no effort has been made to investigate the status of developmental skills in persons with BOF. Therefore, we aimed to examine different types of developmental skills in an Iranian Persian-speaking child with BOF.

Methods : The patient was an Iranian Persian-speaking boy aged 51 months old, was born in his mother's first pregnancy (normal birth and had a normal intelligence. His obvious symptoms were holes in both sides of the neck, surgeried at 6 months of age, broad nasal bridge, nasal duct obstruction, pseudocleft of the upper lip, submucous cleft palate, microphthalmia, and squint eye more dropping in the right eye. The patient's developmental skills were measured using Jafari & Asad-Malayeri's Newesha Developmental Scale (2015).

Results : Regarding the results, the patient had a normal functioning and age-appropriate in hearing, receptive language, speech and social skills (49-60 months); however, he had poor functioning in expressive language, cognitive and motor skills which were not in normal levels (49-60 months). The patient' s functioning in the aforementioned skills was in 43-48 months.

Conclusion : Conclusion: Regarding the findings of this study, it seems that BOF is accompanied by a developmental delay in some skills. Therefore, paying more attention to these delays is necessary for clinicians.

Keywords : Branchio-Oculo-Facial, developmental skills, Persian language.

Count: 410
Abstract ID: 440
subject: Development: Neurodevelopmental Disorder (ADHD, Autism, Learning Disorders)
Presentation Type: Poster

Cytokine profile in autistic patients

Submission Author: Mir salar Kahaei khosroshahi

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Background and Aim : The etiology of Autism Spectrum Disorders (ASDs) as severe neurodevelopmental ailments is not known. However, several evidences point to dysregulation of immune system as an underlying cause of ASD.

Methods : In the present study we evaluated the mRNA expression levels of TNF-α, TGF-β, IFN-γ, CXCL8, IL-1β, IL-2, 1L-4, IL-6, IL-17 in whole blood samples of 30 ASD patients and 41 age and sex-matched healthy subjects with means of real-time PCR.In the present study we evaluated the mRNA expression levels of TNF-α, TGF-β, IFN-γ, CXCL8, IL-1β, IL-2, 1L-4, IL-6, IL-17 in whole blood samples of 30 ASD patients and 41 age and sex-matched healthy subjects with means of real-time PCR.

Results : TNF-α, IL-6 and IL-17 have been shown to be significantly up-regulated in ASD patients compared with healthy subjects ($P < 0.0001$, $P=0.001$ and $P < 0.0001$ respectively). IL-2 has been shown to be significantly down-regulated in total ASD patients ($P < 0.0001$).No significant difference has been found in expression levels of other cytokines between patients and healthy subjects.

Conclusion : The present study provides further evidences for dysregulation of immune response in ASD patients.

Keywords : Autism, TNF-α, TGF-β, IFN-γ, CXCL8, IL-1β

Count: 411
Abstract ID: 505
subject: Development: Neurodevelopmental Disorder (ADHD, Autism, Learning Disorders)
Presentation Type: Poster

The interaction of sensory deprivation of barrel cortex and environmental enrichment on density and morphology of CA1 pyramidal neurons in female rats

Submission Author: Bahare Khoshnavamoghadam

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Background and Aim : Sensory deprivation, a complete cut or a reduction of sensory inputs, can alter the structural and functional maturity of sensory systems especially when happens during early stages of life. Whisker trimming causes substantial reorganization of neuronal response properties in barrel cortex of rodent. We hypothesized that such alterations may also affect the structure and function of other related structures, like hippocampus, and potentially contribute to the behavioral disorders associated with sensory deprivation. On the other hand, environmental enrichment increases the sensory stimulation of the brain, which could have beneficial outcomes on the structure and function of neuronal circuits. Here, we studied the effects of postnatal whisker trimming on the density and morphology of CA1 neurons in the hippocampus of adult female rats. We also examined the modulatory action of post weaning environmental enrichment on changes caused in the density and morphology of neurons in CA1 hippocampus which resulted from sensory deprivation, in order to study the possible interaction of enriched environment on the structural and functional changes caused by sensory deprivation.

Methods : Whisker of female newborn rats belonging to the experimental group were trimmed bilaterally every other day to the length of <1 mm from postnatal day 3 (PND 3) to PND 59. A subgroup of these animals were kept in standard cage, and the other subgroup were kept in the enriched cage during PND 24 (weaning) to PND 65. Control female rats were handled during PND3-PND59 and housed in standard cage during post weaning period. On PND 100, animals were sacrificed by transcardial perfusion and their brains were dissected out and processed for either Crysel Violet or Golgi-cox staining. The density and morphology of CA1 pyramidal neurons was analyzed in the stained brain sections.

Results : Sensory deprivation caused a significant decrease in the number of dendrite processes and also significantly increased the average length of processes in pyramidal neurons of CA1 compared to the control group $P<0.001$. Furthermore, presence in the enriched environment in post-weaning period remarkably increased the

number of processes and decreased the average length of processes, compared to the rats kept in the standard cage. Sensory deprivation of barrel cortex significantly reduced the density of CA1 pyramidal neurons compared to rats in control group. Moreover, housing in enriched environment period ameliorated the effect of sensory deprivation on density of pyramidal neurons.

Conclusion : Our data supports this idea that sensory deprivation in early stages of life may induce structural abnormalities in regions beyond sensory cortices that could be partially recovered with raising in enriched environment. Considering the direct relationship that exists between density and dendritic complexity of neurons in the CA1 region of the hippocampus and the synaptic plasticity and learning functions, these changes may contribute to the sensory deprivation-induced cognitive impairments and the improving effects of the enriched environment.

Keywords : Environmental enrichment, Sensory deprivation of barrel cortex, CA1 pyramidal neuron, Neuronal density, Morphology of neurons, Rat

Count: 412
Abstract ID: 492
subject: Development: Neurodevelopmental Disorder (ADHD, Autism, Learning Disorders)
Presentation Type: Oral

Autism Screening: A Voice-Based Approach

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Background and Aim : Children with Autism Spectrum Disorder (ASD) are defined by their difficulties in social interaction and communication, as well as restricted interests and repetitious case-dependent activities. In recent years, the fast growing prevalence of the disorder has made researchers to investigate new early and/or automatic diagnosis approaches to benefit from early intervention. The sooner the therapy starts the better the intervention would be. In this paper a voice-based screening approach is introduced. In the proposed approach, discriminative patterns between the crying voice of children with autism and the crying voice of Typically Developed (TD) children are extracted.

Methods : Pattern recognition methods are combined to get appropriate and robust results. The proposed approach is tested on a dataset including 40 subjects, 21 children with autism and 19 TD children. The subjects were boys and between 20 months to 4 years old. Their voices were recorded using a high quality recorder and a few available cell phones. An application has been developed to be able to easily record using a cell phone and send the data to our server. To train classifiers, 24 children were randomly selected from which 12 children were diagnosed with autism and 12 were TD children.

Results : The proposed algorithm was tested on the 16 subjects reaching sensitivity, specificity, and precision of 77.78%, 85.71% and 87.5% respectively.

Conclusion : The results show that the method is suitable for automatic and early screening. It should be mentioned that in the screening of children with autism, reducing the number of false negatives has high importance. Detecting false positives would be done by an expert evaluation. Our future work is focused on increasing the number of subjects to improve the accuracy and the reliability of the approach. Furthermore, we would test the approach on children under 18 months old.

Keywords : ASD, Autism screening, computational neuroscience, voice-based screening

Count: 413
Abstract ID: 624
subject: Development: Neurodevelopmental Disorder (ADHD, Autism, Learning Disorders)
Presentation Type: Oral

Virtual Reality for Cognitive Rehabilitation of people with autism spectrum disorder

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Background and Aim : Autism is a developmental disorder characterized by abnormal verbal communication behaviors. The purpose of this study was to investigate the application of virtual reality environment as an intervention tool for cognitive rehabilitation in patients with autism spectrum disorder.

Methods : In this case and quasi-experimental study, 5 patients with autism spectrum disorder with the age range of 14 years old and higher and with cognitive characteristics including deficit in attention, inhibition control and cognitive flexibility were selected. To examine the cognitive status of patients, CPT, Stroop Test, and Wisconsin tests were run. Moreover, in order to educate the cognitive characteristics of autism patients, the virtual reality program was performed on patients in 24 sessions of 30-45 minutes in 8 weeks with Oculus DK2 device.

Results : The results were analyzed by SPSS software and paired t-test. Based on the results, there was a significant difference between the mean score of the attention performance of individuals before and after the intervention ($P<0.05$).

Conclusion : Accordingly, the application of virtual reality is effective in the promotion of attention function and correct response indicators in congruent and unanswered data in congruent data from inhibition control parameters of autistic patients.

Keywords : Autism spectrum disorder; virtual reality; attention function; cognitive flexibility; inhibition control

Count: 414
Abstract ID: 185
subject: Development: Neurodevelopmental Disorder (ADHD, Autism, Learning Disorders)
Presentation Type: Oral

White Matter Injury and Autistic-Like Behavior Affecting Male Rat Offspring Exposed to prenatal lipopolysaccharide-induced inflammation

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Background and Aim : The impact of lipopolysaccharide-induced maternal inflammation on offspring's brain has not yet been investigated . According to our hypothesis LPS-induced maternal immune activation plays a role in offspring perinatal brain damage and subsequent neurodisabilities such as autism. Using a preclinical rat model of maternal inflammation triggered by LPS, we revealed white matter injury and behavioral impacts on offspring.

Methods : in this experimental study we investigated the influence of maternal inflammation, induced by an intraperitoneal (i.p.) injection of lipopolysaccharide (LPS, 50 µg/kg) on embryonic day 17 (E 17), on genes involved in oligodendrocyte differentiation in male ofsprings. 50 days after birth, rats were assessed with behavioral tests, to measure locomotor activity, social interactions and stereotyped behaviors and gense involved in oligodendrocyte differentation (Sox10 / Olig1 / Oligo2) in brain of adult male rat were evaluated by Real time-PCR,respectively.

Results : According to our data, activation of the immune system by LPS treatment on embryonic day 17 leads to an decreased in gene expressions involved in oligodendrocyte differentation (Sox10 / Olig1 / Oligo2) .LPS significantly impacted locomotor activity and impaired social and stereotyped behaviors.

Conclusion : These results also provide important evidence that beyond genetic influences, modifiable environmental factors play a role in the occurrence of autism .

Keywords : white matter,lipopolysaccharide,behavior,autism

Count: 415
Abstract ID: 79
subject: Development: Neurodevelopmental Disorder (ADHD, Autism, Learning Disorders)
Presentation Type: Poster

Deficits in specific aspects of impulsivity in boys with ADHD compared with ADHD comorbid conduct disorder

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Background and Aim : Impulsivity is the multidimensional construct, affected a range of psychiatric problems in children and adults. Both attention deficit/hyperactivity disorder and conduct disorder are associate with impulsivity as the result of behavioral inhibition deficit. Nevertheless, Clinical findings demonstrated that childhood impulsivity is the core aspect of delinquency, antisocial behavior and predicts early-onset criminal conducts. In present study we examined tow aspect of impulsivity including “rapid response impulsivity” and “choice impulsivity” (impulsive decision making) in tow group of boys with attention deficit/ hyperactivity disorder (ADHD) with conduct disorder and ADHD alone. We hypothesized that boys with ADHD+CD symptom may be have the Specific deficits in aspects of impulsivity.

Methods : 43 male children with symptom of ADHD by using a structured diagnostic interview with the parent and Children Symptom Inventory-4 (CSI-4) divided into 23 children with ADHD only and 20 children with ADHD+CD. We investigated rapid response impulsivity by Go-Nogo task and choice impulsivity by using Balloon Analog Risk Task (BART). Performance of all participants in this tow task was analyzed by MANOVA.

Results : There was no difference between groups in commission errors (no/go errors) as rapid response impulsivity. But ADHD+CD children had most impairments in impulsive decision making (choice impulsivity) as compared to ADHD children.

Conclusion : These findings would suggest that; children with ADHD and ADHD+CD have the same impairment in rapid response impulsivity, mostly due to ADHD symptoms such as inattention, executive function and behavioral inhibition deficits. Nevertheless, children with ADHD comorbid with conduct disorder have most impulsive action as a choice impulsivity. This findings would suggest that ADHD children have impairment in rapid response impulsivity because of behavioral inhibition deficits, and when this deficits joint with choice impulsivity, could actuate destructive behaviors like conduct disorder symptoms.

Keywords : attention deficit/ hyperactivity disorder, conduct disorder, impulsivity

Count: 416
Abstract ID: 128
subject: Development: Neurodevelopmental Disorder (ADHD, Autism, Learning Disorders)
Presentation Type: Poster

Brain's Reading Networks in Dyslexia

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Background and Aim : Dyslexia is a neurodevelopmental disorder that is recognized by difficulties in accurate or fluent reading despite appropriate instruction, adequate cognitive abilities, normal intelligence and intact sensory abilities. Researches that have explored the neural correlates of dyslexia contain investigation of brain regions and networks that associated with reading and its impairment. This review article summarized neuroimaging studies related to this issue.

Methods : In order to collect results of these researches, following key words was used and several studies carried out in this field, was selected.

Results : Findings of functional and anatomical brain connectivity have been revealed that left lateralized neuronal networks involved in dyslexia, comprised of: The posterior temporoparietal network is linked to analyzing of word in phoneme level; the posterior occipitotemporal network is involved in word form and fluent reading and the anterior network of the inferior frontal gyrus (overlapping Broca's area) associated speech pronunciation. Left arcuate fasciculus (AF) shares in reading skills. Subcortical areas such as the thalamus are engaged in reading and language-related matters. Also, white matter connectivity was assessed in dyslexia.

Conclusion : Underactivation in posterior temporoparietal and occipitotemporal regions were reported in dyslexia. Also, the inferior frontal gyrus that is involved in the anterior reading network, showed increased activation in dyslexic readers. It is hypothesized that this is underpinning of memorization of the structure of words rather than phonological skills to read. Reduced connectivity along the visual pathway, increased connectivity to limbic regions and persistent connectivity to a left-hemisphere anterior language region were recognized in dyslexia, as well. a cluster in the left AF was found in one study that is linked to children differences in phonological awareness skills. Findings relating to contribution of white matter bundles are incongruous.

Keywords : Dyslexia, Brain networks, Neural correlates

Count: 417
Abstract ID: 501
subject: Development: Neurodevelopmental Disorder (ADHD, Autism, Learning Disorders)
Presentation Type: Oral

The effects of enriched environment on the cognitive/affective functions in female rats with long term sensory deprivation of barrel cortex

Submission Author: Seyede fatemeh Taghavi

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Background and Aim : The development of brain in many mammals involves consistency of sensory information. Beyond early development, the brain still continues to acquire information from experience. The nervous system appears to have evolved a special mechanism for encoding "expected" information. The tactile somatosensory pathway from whisker to cortex in rodents provides a well-defined system for exploring the link between molecular mechanisms, synaptic circuits and behavior. In the current study, we evaluated the effects of postnatal sensory deprivation of barrel cortex and its interaction with post-weaning environmental enrichment on the cognitive/affective behaviors in female rats.

Methods : Wistar female rats belonging to the experimental group had their whiskers trimmed bilaterally every other day to the length of <1 mm form postnatal day 3 (PND3) to PND59. Female rats on PND24 (weaning) were divided into two subgroups; rats from one was subgroup were kept in the standard cage and the others were housed in an enriched cage. Female rats in the control group were only handled in the same time period. On PND60 the rats were tested for motor and anxiety behavior, and spatial memory in open field and radial arm maze tasks.

Results : Statistical analysis of collected data showed significant difference in OF & RM performance between female rats in trim standard, trim enriched and control groups. Our data indicates in open-field test, female trim rats had a significant difference in the motor activity index with the control group. So that trim standard group has a higher activity than the trim enriched and control group. Also in the exploratory activity index, trim standard group has more exploratory activity than trim enriched group and control group. In addition in the aggressive behavior and anxiety behavior indices, all three groups had significant differences. Deprived groups have higher aggressive behavior than control group. About anxiety index, trim standard group had less anxiety and trim enriched group was similar to control group. Results obtained by RM reveals lower levels of reference & working memory in trim standard rats than trim enrichment rats.

Conclusion : The findings of this study indicate that sensory deprivation of the barrel cortex affects the cognitive and emotional functions that employ structures beyond the somatosensory cortex. In addition, presence in an enriched environment that provides a variety of sensory and motor stimuli is effective in offsetting these changes. These findings support the assumption that an enriched environment can improve the functional and disorders caused by sensory deprivation.

Keywords : Sensory deprivation, enrichment cage, Explorative activity, Anxious behavior, Aggressive behavior, Motor activity

Count: 418
Abstract ID: 261
subject: Development: Neurodevelopmental Disorder (ADHD, Autism, Learning Disorders)
Presentation Type: Oral

Studying the Effectiveness of Cognitive Program based on Gardner's Multiple Intelligences theory on Multiple Intelligences of Children with Autism Spectrum Disorder

Submission Author: Samira Vakili

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Background and Aim : The present research aimed to improve cognitive capabilities based on Gardner's multiple intelligences theory in children with autism spectrum disorder.

Methods : A multiple intelligences program was conducted, and its effectiveness was evaluated by a semi-experimental study, with pretest-posttest and a control group. 15 students in the experimental group participated in this program, and the control group did not receive any treatment. In order to evaluate cognitive capabilities, Multiple Intelligences Inventory (Abedi, 1390) was used, which was conducted before and after of the intervention. The obtained data were analyzed using Multiple Analysis of covariance (MANCOVA)

Results : The findings showed significant differences (p<0/05) between the experimental and the control group in all variables. The effect size was for verbal intelligne was 458/0, for mathematical intelligence was 584/0, for visual-spatial intelligence was 608/0, for bodily kinestetical intelligence was 557/0, for interpersonal intelligence was 686/0, for interapersonal intelligence was 383/0 for musical intelligence was 757/0, for naturalistic intelligence was 696/0.

Conclusion : At the end, using a multiple intelligences program for improving cognitive capabilities of children with ASD was discussed. Further discussions as well as suggestions for future research are presented

Keywords : Multiple Intelligences, Cognitive competencies-Autism

Count: 419
Abstract ID: 259
subject: Development: Neurodevelopmental Disorder (ADHD, Autism, Learning Disorders)
Presentation Type: Poster

Effectiveness of a Psychodrama program with storytelling and puppets for improving communication skills of Children with Autism Spectrum Disorder

Submission Author: Samira Vakili

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Background and Aim : Children with autism have problems in communication and social and communication skills

Methods : . A psychodrama program with storytelling and puppets was designed to help these children in practicing their communication and skills. Effectiveness of this intervention was evaluated by a semi-experimental with pretest-posttest and control group. 10 students in the experimental group participated in this program, and the control group did not receive any treatment and were in the waiting list to receive the treatment after the end of the experiment. Social Communication Questionnaire (Le Couteur, 1989) was used to measure communication skills. The obtained data were analyzed using Analysis of the Covariance

Results : The findings showed significant differences (p<0/5) between the experimental and the control group in communication skills with the effect size of 0.743 for communication skills.

Conclusion : At the end, using psychodrama program with storytelling and puppets for improving communication skills was discussed. Further discussions as well as suggestions for future research are presented.

Keywords : : Psychodrama -communication skills-Autism

Count: 420
Abstract ID: 503
subject: Development: Neurodevelopmental Disorder (ADHD, Autism, Learning Disorders)
Presentation Type: Poster

Effects of social defeat following early handling on the spatial memory and morphology of hippocampal CA1 pyramidal neurons in rats

Submission Author: Farahnaz Yazdanpanah

Farahnaz Yazdanpanah [1], Farahnaz Yazdanpanah Faraghe[2], Zahra Alizadeh Ezdini[3], Jafar Vatanparast[4], Bahare Khoshnava-Moghaddam[5], Parisa Yarmohammadi Samani[6], Aminollah Bahaoddini[7]

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Background and Aim : Postnatal stress is detrimental, in particular in early infancy which is a critical period during which the offspring almost entirely depends on parents. During early infancy, rodent pups fully rely on their mother and are markedly affected by any change in the quality, quantity, and reliability of maternal care. While high level of active maternal behaviors such as licking-grooming and nursing has beneficial effects (include, reduce the HPA axis responsiveness and stress susceptibility) throughout life and in adulthood, poor maternal care disrupts the HPA axis activity and induces adult stress susceptibility and exacerbates the stress-induced behavioral outcomes. The hippocampal formation is involved in episodic, declarative, spatial, and contextual learning and memory and is also a particularly vulnerable and sensitive region of the brain that expresses high levels of receptors for adrenal steroid “stress” hormones. It also exerts strong regulatory control over the HPA axis. Chronic stressors in adulthood exert their behavioral effects by remodeling the brain circuits that are involved in cognitive and affective functions. Social defeat stress uses social conflict between members of the same species and generates emotional and psychological disorders. In the current study, we evaluated the impact of early handling on the morphology of the rat CA1 hippocampal neurons and cognitive response to social defeat in the adolescence.

Methods : Newborn Wistar rats were divided into handled and non-handled groups. In handled litters, pups were separated from mother for 15 min each day from PND 1 to 21. Nonhandled pups were never separated from mother during the same time period. On PND 56 to PND 60, male rats from each group were exposed to repeated attacks from a larger aggressive adult male rat. On PND 65 to PND 93, spatial memory of rats was tested using radial arm maze. On PND 100, animals were sacrificed by transcardial perfusion and their brains were dissected out and processed for Golgi-cox staining. The morphology of CA1 pyramidal neurons was analyzed in the stained brain sections.

Results : Statistical analysis of collected data showed a significant reduction in the number of reference memory error after social defeat in handled rats, but working memory was not significantly affected. In addition, morphological analysis of CA1 pyramidal neurons revealed a significant reduction in total length and terminal segment length of neurons in handled rats compared to non-handled rats.

Conclusion : Our findings show that early handling ameliorates the stress-induced special memory impairment that is associated with altered neuronal arborisation in CA1 region. These findings support the early handling can affect the response to stress in adulthood, which is probably mediated through a better maternal care and the consequent structural modulation in the hippocampus.

Keywords : Stress, Early handling; Radial arm maze; Hippocampus; Golgi-cox staining; Neuronal morphology; CA1 neuron

Count: 421
Abstract ID: 671
subject: Development: Aging
Presentation Type: Poster

Are mitochondrial changes a cause of disease and aging, or diseases are the cause of mitochondrial change and the onset of aging?

Submission Author: Raheleh Gholamzadeh

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Background and Aim : During the aging process, physiological functions of various body organs are decreased. Aging occurs at different levels of a living organism including organs, tissues, cells, and molecular mechanisms. Today, researchers are seeking to understand the mechanisms that prevent or reduce aging process. Mitochondria, an important intracellular organel, plays a significant role in the cell biology. It is not known that the disease leads to mitochondrial dysfunction and begins aging or the impairment of mitochondrial function leads to aging and illness .Thus in this study, the role of mitochondria in the aging process and its related diseases has been targeted.

Methods : In this review, two categories of articles, including diseases resulted from aging and the effects of diseases on the aging process by focusing on the role of mitochondria, were studied.

Results : Mitochondria plays role in many physiological cell process including generation of ATP, apoptosis, autophagy, reactive oxygen species (ROS) production and calcium handling. In some studies, it has been shown that the number, integrity and function of mitochondria during aging decreases. Mitochondrial function damage results in a reduced oxidative capacity, reduced oxidative phosphorylation (OxPhos), decreased ATP production, enhancement of ROS generation, the diminished antioxidant defense, decline in mitochondrial biogenesis, alterations in mitochondrial dynamics, inhibition of mitophagy, opening of the mitochondrial permeability transition pore (MPTP) and change in morphology. These changes are associated with an increased incidence of different diseases such as cardiovascular disease and diabetes which initiates and accelerates the aging process. In the heart, its showed that factors such as cardiolipin and monoamine oxidase A/B reduced by age which lead to an increased ROS production, disturbance in mitochondrial electrical function and elevated aging process. Other studies on diseases have suggested that the occurrence of diseases such as hypertension, hyperlipidemia, cancers, and also obesity, overeating and physical inactivity increased oxidative stress which leads to the activation of harmful signaling pathways in the cells such as glucose synthase kinase 3 beta that by affecting on mitochondria resulted to release of cytochrome C, apoptosis and promote aging process.

Conclusion : Both types of studies have shown that mitochondria plays an important role in the aging process. In any case, aging is an inevitable phenomenon and maintaining the mitochondrial physiological function may be effective in slowing down the aging process.

Keywords : mitochondrial changes, aging, diseases

Count: 422
Abstract ID: 28
subject: Development: Other
Presentation Type: Poster

Effects of hypoxia on Adipose tissue stem cell conditioned medium compounds

Submission Author: Shima Mehrabadi

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Background and Aim : Introduction Hypoxia is defined as the reduction or lack of oxygen for cells. Studies showed that Hypoxia condition can improve cell growth in-vitro. we used adipose tissue mesanchymal stem cell to investigate hypoxic condition on amount of secreted growth factor from ASCM.

Methods : We extract adipose tissue from rat abdominal tissue. Then we cultured them for 10 days. Then we cultured some cell in hypoxic condition for 24 h and some in neurmoxic .In 11th day we extract conditened media from 2 samples and measured NGF,IGF,VEGF in conditioned media via ELISA.

Results : Study showed that NGF ,IGF,VEGF increased in hypoxic conditioned medium in comparison normoxic.

Conclusion : Hypoxic condition is better than normoxic for cell culture

Keywords : Hypoxic,Adipose stem cell, Neurotrophic Factors

Count: 423
Abstract ID: 550
subject: Pain and Sensory Systems: Tactile, Somatosensation and Pain Syndromes
Presentation Type: Poster

The effect of Astaxanthin on formalin induced pain behavior in mice

Submission Author: Fatemeh sadat Abtahi

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Background and Aim : Astaxanthin is one of the potent keto-carotenoids with an anti-inflammatory, antioxidant, immunomodulatory and anticancer properties and found in the red pigment in microalgae, crustacean shells, salmon, and asteroidean. In the present study, we investigated the antinociceptive effect of astaxanthin on formalin pain in mice.

Methods : Male albino Swiss mice (32-35 g) were treated with saline (100 µl, PO), astaxanthin (50, 100 and 150 mg/kg, PO), morphine (5 mg/kg, IP) and piroxicam (10 mg/kg, IP). Formalin pain was induced by intraplantar injection of a diluted formalin solution (1%, 20 µL) in the left hind paw, and the time spent licking and biting of the injected paw was measured in five min blocks for 60 min.

Results : Formalin induced a biphasic (first phase: 0-5 min and second phase: 15-45 min) pain response. The astaxanthin at doses of 50, 100 and 150 (mg/kg) induced significant reduction ($p<0.05$) in pain response only in the second phase of formalin test in comparison with the control group. Morphine significantly reduced pain response in the both phases of the formalin test. Piroxicam significantly ($p<0.05$) reduced pain response in the second phases of the formalin pain test.

Conclusion : These data indicated that, Astaxanthin like piroxicam has an analgesic effect in the inflammatory phase of formalin test and may be this action related to its anti-inflammatory properties.

Keywords : Formalin pain, Mice, Astaxanthin, Piroxicam, Morphin.

Count: 424
Abstract ID: 212
subject: Pain and Sensory Systems: Tactile, Somatosensation and Pain Syndromes
Presentation Type: Poster

Evaluation of preening/grooming behavior following tonic pain induction in the male Japanese quails.

Submission Author: Reza Bahadori

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Background and Aim : Preening is a maintenance behavior found in birds that involves the use of the bill to position feathers, interlock feather barbules that have become separated, clean plumage, and keep ectoparasites in check. Preening activity as a sign of birds comfort behavior could be changed following different physiological and pathological conditions

Methods : 36 male Japanese quails were used in this experiment. The tarsometatarsus region of the male quail's foot was injected with 40µl of formalin (0.3, 0.6 and 0.9%) solutions or saline. Unstimulated preening behavior was recorded over 45 min. Intramuscular administration of morphine (1.25, 2.5 and 5 mg/kg) and ibuprofen 10 mg/kg and normal saline (100 µl) were performed 25 min before the formalin pain test.

Results : Injection of formalin 0.6 and 0.9% significantly ($P<0.05$) suppressed preening activity in comparison with saline injected group. Injection of all concentration of morphine was ineffective but ibuprofen administration significantly ($P<0.05$) improved preening activity.

Conclusion : Our results showed that suffering from pain could deeply affected birds comfort behavior. NSAIDs could improve pain sign and preening activity. Despite morphine induced analgesia in this model, preening suppression was deteriorated by morphine administration. This effect may be due to morphine induced akinesia.

Keywords : Quail, Preening, Pain, Morphine, Ibuprofen.

Count: 425
Abstract ID: 488
subject: Pain and Sensory Systems: Tactile, Somatosensation and Pain Syndromes
Presentation Type: Poster

The effect of intra ACC microinjection of histamine and mepyramine on acute pain following acute restrain stress

Submission Author: Roxana Daniali

Roxana Daniali[1], Rasool Haddadi[2], Fatemeh Zeraati[3]

1. presenter author
2. author
3. author

Background and Aim : Considering the importance of pain and stress as two main phenomena in modern societies, we decided to investigate the intra-Anterior Cingulate Cortex (ACC) microinjection of Histamine and mepyramine alone and concurrently on acute pain induced by hot plate following restraint stress in male rats.

Methods : 8 group of animals each of them containing 6 Male Wistar rats, (weighing 200-240 g) were used for this experiment which 5 groups being restrained for 6 hours before the injection starts. 24-gauge, 10 mm stainless steel guide cannula was implanted over the ACC in the incised scalp of every groups except the first one. Restraint stress in healthy rats, produced significant increase($p<0.05$) in the pain threshold. The microinjection of histamine; 4 µg/side andmepyramine 8 µg/side as a histaminergic system antagonist, concurrently in healthy animals intensified nociception ($p<0.05$).

Results : Histamine and mepyramine alone did not show any notable change in the threshold of pain. In the restrained animals intra ACC microinjection of histamineproduced significant increase in the pain threshold, but intra ACC microinjection of mepyramine before histamine, significantly ($p<0.05$) reversed this effect.

Conclusion : The results of our study demonstrate that histaminergic neurons have important role in the processing of nociception in the ACC following restraint stress. However, histamine microinjection following restraint stress, remarkably elevated the pain threshold. blocking histamine H1 receptors with mepyramine

Keywords : : Anterior Cingulate Cortex; restraint stress; acute pain and histaminergic system

Count: 426
Abstract ID: 250
subject: Pain and Sensory Systems: Tactile, Somatosensation and Pain Syndromes
Presentation Type: Poster

Propolis prevents sciatic nerve injury and attenuate heat-hyperalgesia and mechano-allodynia in the chemotherapy-induced peripheral neuropathy in rats.

Submission Author: Mahdi Dolatyari

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Background and Aim : Oxaliplatine (OXA) is one of the effective chemotherapy drugs widely used in the cancer treatment. One of the important side effects of oxaliplatine is neuropathic pain that reduces patients' quality of life. Propolis is a honey bee byproduct which has been used to treat various chronic painful conditions in many countries as a traditional remedy. In this study, the protective and antinociceptive effects of hydroalcholic extract of Iranian green propolis (IGP) were investigated in oxaliplatine induced peripheral neuropathy in rats.

Methods : IGP was collected from beehives situated in the vicinity of the Urmia city in the West Azarbaijan, Iran. The extraction was performed using Propolis samples (200 g) and 70% ethanol (25 mL) at room temperature for 7 days. The chemical composition of IGP was analyzed by gas chromatography – mass spectrometry (GC-MS). The animals (Male Wistar rat), divided into four groups (n=6/group), were chronically treated with Dextrose (5%, 200µl, I.P)+Sunflower oil (SFO)(200µl, P.O) as a control, OXA (2.4 mg/kg, I.P)+SFO 4 times per week for three weeks, OXA (2.4 mg/kg)+IGP (50 mg/kg/day, P.O) and OXA (2.4 mg/kg)+IGP (100 mg/kg/day, P.O). Mechanical allodynia was determined using an ascending series of Von Frey filaments on pre, 3, 10 and 17 days after first OXA injection. The hot-plate test was performed to assess OXA-induced heat hyperalgesia on day 18 after first OXA injection. At the end of experiment (21 days after first OXA injection) animals deeply anesthetized and then sciatic nerve was collected for histological analysis and stereological quantification.

Results : OXA administration significantly ($P<0.05$) induced heat hyperalgesia and mechanical allodynia. Chronic administration of IGP (50 and 100 mg/kg) significantly ($P<0.05$) suppressed OXA induced heat hyperalgesia and mechanical allodynia compared with the OXA+SFO group. Furthermore, Oxaliplatin caused severe structural changes in the sciatic nerve and many myelinated fibers presented degeneration at different stages of severity compared to control groups. In this group, the amount of extrafascicular connective tissue markedly increased, highly extended inside the fascicles and perineurium had crumpled outline in most fascicles. Stereological analysis indicated that oxaliplatin decreased the number of axons, axonal diameter, cross-sectional area and myelin sheath

thickness but increased g ratio compared to control groups significantly ($p<0.05$). Chronic administration of IGP (50 and 100 mg/kg) significantly ($P<0.05$) prevented from OXA induced neuronal injury.

Conclusion : Our behavioral, histopathological and stereological results revealed that IGP could inhibit oxaliplatin induced neuropathy and structural damages of sciatic nerve in a dose dependent manner as the high dose had a better effect.

Keywords : Oxaliplatine; Neuropathic pain; Propolis; Allodynia; Hyperalgesia, Rats.

Count: 427
Abstract ID: 341
subject: Pain and Sensory Systems: Tactile, Somatosensation and Pain Syndromes
Presentation Type: Oral

Effects of fibroblast growth factor type 1 expressing adipose-derived mesenchymal stem cells (AD-MSCFGF-1) on chronic neuropathic pain in rats

Submission Author: Fatemeh Forouzanfar

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Background and Aim : Neuropathic pain is a debilitating chronic condition that affects numerous people and results in high health care costs. In the present study, we have analyzed the therapeutic potential of systemically administered fibroblast growth factor 1 gene-transfected adipose-derived mesenchymal stem cells (AD-MSCs FGF1) on chronic constriction injury (CCI) of the rat's sciatic nerve

Methods : Mesenchymal stem cells were examined for the mesenchymal markers and for hematopoietic markers with flow cytometry. The cells were also evaluated for their ability to differentiate into fat and bone cells in a specific culture medium. After transfection of stem cells with a plasmid containing the FGF1 gene, the FGF1 level in supernatant cells was evaluated using western blotting. Cell administration (1 × 106 cells) was always done at the day of nerve injury induction, once daily that continued for 2 consecutive days. The mechanical allodynia, thermal hyperalgesia and allodynia were assessed. The histopathological and apoptotic changes were assessed in the lumbar portion (L4-L6) of the spinal cord. Moreover, AD-MSCs FGF1 were labelled with 99mTc -HMPAO and isolated organ counting were performed upon AD-MSCs FGF1 administration. Besides, FGF1, Bcl2, Bax, Caspase3, IL-1β, MMP-2, TNFα, Iba1 and GFAP levels were measured by western blotting

Results : The isolated rat AD-MSCs were positive for mesenchymal and negative for hematopoietic surface markers. Adipogenic and osteogenic differentiation of the AD-MSCs also occurred in the proper culture media. The presence of FGF1 in the conditioned medium from the AD-MSCsFGF1 was confirmed by western blotting. Stem-cell therapy significantly attenuated the CCI-induced mechanical and thermal allodynia and hyperalgesia. Spinal structural alterations and apoptosis were decreased in the stem-cell therapy groups. Increased genetically engineered cells were

counted in the injured sciatic nerve and the elevated levels of FGF1 was detected in the lumbar portion (L4-L6) of the spinal cord. Besides, administration of AD-MSCs and AD-MSCs FGF1 lead to restore the changes of Bax/Bcl-2, Iba1, GFAP, TNFa, MMP-2, Caspase 3 and IL-1ß as compared to neuropathic rats.

Conclusion : The results of this study showed that intravenous administration of AD-MSCsFGF1 improves behavioral symptoms of peripheral neuropathic pain, and these effects may be mediated by inhibition of apoptosis and activated microglia, as well as anti-inflammatory effects

Keywords : Adipose-derived mesenchymal stem cell; Fibroblast growth factor 1; Neuropathic pain; Apoptosis; Microglia.

Count: 428
Abstract ID: 564
subject: Pain and Sensory Systems: Tactile, Somatosensation and Pain Syndromes
Presentation Type: Oral

The Role of Immune System against Amnesia and Depression Caused By Sleep Deprivation Due To the Genes Involved In CA1 of Hippocampus

Submission Author: Mohammadjavad Hoseinpourfard

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3. Islamic Azad University Medical Branch, Tehran, Iran.

Background and Aim : Sleep as a complex process in stages, physical and mental changes are a variety of causes. A complete sleep cycle defined in five stages of sleep a full term that includes five stages on average between 90 to 100 minutes in length. Adverse changes in behavior sleep deprivation, cognitive, autonomic circulatory, endocrine and immune system in particular will emerge.

Methods : Design lab to study animal behavior and set records Neurogenesis markers tested by Morris water table.

Results : sleep deprivation in pregnant women, causing significant neuropsychological changes neurogenesis and the hippocampus. Important molecules involved in the inflammatory process cause synaptic plasticity. Disruption in the expression of some genes changes, such as memory, learning, and some bad affects in cognition activities severely.

Conclusion : sleep disorders changes Plasticity in hippocampus. Dementia, depression, and many others of forebrain disorders occurred due to the disruption of the gene expression of some proteins such as interleukin and tumor necrosis factor and so on.

Keywords : Sleep; sleep deprivation; immune system; hippocampus; CA1

Count: 429
Abstract ID: 563
subject: Pain and Sensory Systems: Tactile, Somatosensation and Pain Syndromes
Presentation Type: Poster

The Effect of Anti TNF-α on Pain Perception in the Rats

Submission Author: Mohammadjavad Hoseinpourfard

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Background and Aim : This study tried to show the effects of pain response with Infliximab (IFX) administration.

Methods : 72 rats in 9 groups, approved by the research and ethics committee. Infliximab, administered and Hot-plate used to measure the pain response latency by seconds

Results : pain perception more over IFX at doses 0.2. So findings (Tables 1, 2, and 3) showed us the increasing pain perception by higher dose of IFX was occured.

Conclusion : we must care of patients intake IFX and control their pain more than before.

Keywords : Anti TNF-α, Pain, Pain Response, Hot-plate.

Count: 430
Abstract ID: 373
subject: Pain and Sensory Systems: Tactile, Somatosensation and Pain Syndromes
Presentation Type: Poster

The effects of cinnamaldehyde on cold allodynia- and anxiety-induced by chronic constriction injury of sciatic nerve and its interaction with α1 and 2-adrenoceptors in the anterior cingulate cortex

Submission Author: Reza Kazemi

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Background and Aim : The anterior cingulate cortex (ACC) is thought to be important for pain perception as well as the development of chronic pain after peripheral nerve injury. Neuropathic pain is a chronic pain condition that arises from peripheral or central nerve damage. The mechanisms of neuropathic pain are far from clear. Today, the most prescribed medicines have undesirable side effects and most patients are often unsatisfied. Medicinal plants have been used in treating many disorders from centuries ago. It seems that the ingredients existing in herbal medicines have less adverse effects. Therefore, the purpose of the current study is to evaluate therapeutic potential of intra-ACC microinjection of cinnamaldehyde, a cinnamon bioactive ingredient, on cold allodynia in chronic constriction injury (CCI)-induced neuropathic pain in rats. Additionally, clinical studies show that anxiety and neuropathic pain are concomitant. Then, we also evaluate the anti-anxiety effects of cinnamaldehyde in CCI model rats. Moreover, the noradrenergic system plays a pivotal role in the control of pain. Therefore, we also assess the interaction of cinnamaldehyde with ACC α1 and 2-adrenoceptors following nerve injury.

Methods : CCI model was induced by applying 4 loose ligatures around the left sciatic nerve on day 5 after cannulation surgery. Adult male Wistar rats (200 to 250 g) were randomly assigned into 5 groups: control, sham, CCI+ cinnamaldehyde (100nM/5µl), cinnamaldehyde+prazosin (α1-adrenoceptors antagonist, 30 µg/5µl) or cinnamaldehyde+yohimbine (α2-adrenoceptors antagonist, 30 µg/5µl). All chemicals were injected through intra-ACC (right side) microinjection and drug injection were started 1 day after induction of neuropathic pain and continued until 6 days' post-surgery. Cold allodynia (using acetone drop) and anxiety-like behavior (using elevated plus maze, EPM) evaluates on 2, 4 and 6 days' after CCI.

Results : The CCI rats showed marked cold allodynia and anxiety-like behavior (such as decreased frequency and time in open arms) on 2, 4 and 6 days after neuropathy. Intra-ACC injection of cinnamaldehyde could suppress

significantly cold allodynia and anxiety behaviors on 4 and 6 days after neuropathy. Co-administration of only α 2-(yohimbine) and not α 1-adrenoceptors antagonists with cinnamaldehyde markedly attenuate the anti-allodynia and anti-anxiety effects of cinnamaldehyde.

Conclusion : The results of current study suggest that intra-ACC injection of cinnamaldehyde after induction of CCI model have a therapeutic effect against neuropathic pain behaviors. Additionally, it is likely that anti-allodynia and anti-anxiety effects of cinnamaldehyde is related to its interaction with α2-adrenoceptors in the ACC.

Keywords : Cinnamaldehyde, CCI, Allodynia, Anxiety, α-adrenoceptors, ACC

Count: 431
Abstract ID: 643
subject: Pain and Sensory Systems: Tactile, Somatosensation and Pain Syndromes
Presentation Type: Poster

Comparison of the Efficacy of Neurofeedback Treatment and Direct Electrical Stimulation with Direct Current (tDCS) in Sleep quality of Migraine

Submission Author: Zahra Kosari

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3. Zanjan Metabolic Diseases Research Center, Vali-e-Asr Hospital, Zanjan University of Medical Sciences, Zanjan, Iran.

Background and Aim : Background and Purpose: Headache is one of the most common complaints among people in the community. Chronic migraines occur for about 3 months and at least 15 days or more per month Besides That headach and sleep problems are related.

Methods : Method: This is a quasi-experimental study with pre-test, post-test and follow-up of 2 months. The sample consisted of 20 migraine patients aged 15-55 years old who were selected from among volunteers for treatment in 2017 by referral of a transplant specialist. Then, initial evaluation (entrance examination and exit), implementation of Sleep Quality were performed. Patients were randomly assigned to the Neurofeedback treatment group (n=10) and tDCS (n=10). Subjects of each group were evaluated 3 times consisting before intervention (pre-test), post-intervention (post-test) and two-month follow-up. The data were analyzed using SPSS 23 software.

Results : Results: The results of Covariance analysis test indicated that there was no significant difference between two treatments in the post-test and two-month follow-up in the Sleep Quality ($P < 0.05$). The results of Repeated Measures test showed that there was a significant difference between the Sleep Quality in the tDCS treatment group during the stages of evaluation (pre-test, post-test, two-month follow-up), But Sleep Quality in the Neurofeedback treatment group in The evaluation steps did not differ significantly.

Conclusion : Conclusion:there is no significant difference between the two treatments in Sleep quality improvement and the tDCS treatment increase Sleep quality.

Keywords : Migraine, Neurofeedback, Transcranial direct current stimulation, Sleep quality

Count: 432
Abstract ID: 645
subject: Pain and Sensory Systems: Tactile, Somatosensation and Pain Syndromes
Presentation Type: Poster

Effect of acute caffeine administration on thermal hyperalgesia in a rat model of neuropathic pain

Submission Author: Monir Naderi tehrani

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Background and Aim : : Neuropathic pain is caused by nerve damage or dysfunction. The exact pathogenesis of neuropathic pain is complex and remains unclear. Caffeine, a non-selective antagonist of adenosine receptors, is a widely used substance with a long history as an analgesic drug adjuvant. This study was designed to determine whether acute administration of caffeine was effective in alleviating symptoms of neuropathic pain

Methods : : Male wistar rats weighing 220-250 g were used in this study. Neuropathic pain was induced by chronic constriction injury (CCI) of the sciatic nerve in rats. Caffeine at doses of 10, 50 and 100 mg/kg intraperitoneally on the testing days. Thermal hyperalgesia was measured on the days 4, 7, 14, 21 and 28 after surgery.

Results : Caffeine at doses of 50 and 100 mg/kg significantly decreased thermal hyperalgesia scores

Conclusion : Our results confirm and extent the previous reports that some doses of caffeine have antinociceptive effect. Caffeine can be considered a potential analgesic adjuvant for the treatment of neuropathic pain. However, more investigations should be carried out to clarify the possible mechanisms of caffeine in attenuation of neuropathic pain

Keywords : neuropathic pain, caffeine, hyperalgesia

Count: 433
Abstract ID: 464
subject: Pain and Sensory Systems: Tactile, Somatosensation and Pain Syndromes
Presentation Type: Poster

Evaluation of neuroprotective, anti-inflammatory and antioxidative potential of ALOE VERA gel in diabetic wistar rats

Submission Author: Sarina Safari ahmadvand

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Background and Aim : The existence of antioxidants in Aloe Vera, by scientific name Aloe Barbadensis, has distinguished it since distant past as an efficient remedy used for the suppression of inflammation, as well as for its antimicrobial effects, wound healing and anti-tumors properties. In this study, we examined the effects of Aloe Vera and its antioxidant properties for the prevention of diabetic neuropathy.

Methods : After animal preparation, 50 rats were divided into five groups, 10 rats in each. Group I: Normal rats as base line, Group II: Diabetic rats for control, Group C: Diabetic rats + Metformin, Group IV: Diabetic rats + Aloe Vera, Group V: Diabetic rats + Aloe Vera. Hot plate test and Tail flick experiments were performed 0, 15 and 30 days after diabetes induction. MNCV and SNCV were conducted 30 days after diabetes induction. After testing behavioral test in thirty days, blood samples were taken to measure cytokines and oxidative marker levels.

Results : Our results indicated that oral administration of both Aloe Vera (100 and 200 mg/kg) and metformin (200 mg/kg) inhibited neuropathy. Treatment of diabetic rats with Aloe Vera decreased the cytokines levels and prevented neuropathy. The results revealed that treatment by Aloe Vera significantly reduced the level of oxidative stress enzymes as well as inflammation cytokines, and improved behavioral tests.

Conclusion : The results showed that Aloe Vera could have protective effects in diabetic neuropathy dysfunction through diminishing the levels of oxidative enzymes and inflammation cytokines.

Keywords : Aloe Vera, Antioxidant, Anti-inflammatory, Diabetic Neuropathy, Rat

Count: 434
Abstract ID: 430
subject: Pain and Sensory Systems: Vision
Presentation Type: Poster

Multiunit selectivity of V1 neurons to speed of visual motion

Submission Author: Marzieh Aghababaeipour dehkordi

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Background and Aim : The pigmented Long-Evans rat is an alternative subject for visual experiments instead of subjects with high level visual system as monkeys and can be used in numerous counts and in parallel systems. Furthermore, its experimental accessibility and its similarity to the mouse, has made it a good model system in which to analyze the thalamic and cortical circuits and visual perception. An important goal of rodent vision researches is to explain visual signals in response to a stimulus. In this study, we wanted to know whether V1 shows selectivity to speed of visual motion.

Methods : In the first step, we collected the extracellular activities of 3 anesthetized Long Evans rats using single electrode recording. The rodents were anesthetized with urethane. The electrode was inserted in primary visual cortex (V1) of animals. We used random dot moving pattern as stimulus that presented in an LCD with 30 cm distance from the rats' eyes (the rats' eyes kept open during presentation of the stimuli). The dots were moving in 4 different speeds including 2, 4, 8 and 16 degrees/s and the neural activities were recorded simultaneously (sampling rate was 32 kHz). After recording, neuronal spikes were detected using thresholding approach. The threshold was considered $Thr=4\sigma$ that $\sigma=median\{|X|/0.6745\}$. Then multiunit firing rates were calculated for each speed and the tuning curves for speeds were analyzed. The statistical tests were used for evaluating the selectivity of the tuning curves.

Results : After investigation of 14 sessions in different part of V1 (including V1B and V1M) in 3 rats our results showed that neurons responded to different speeds but according to the spike responses analyses there is no significant tendency to special speed in various regions of V1.

Conclusion : Based on our findings, we can conclude there is no region with preferred speed in rats' V1 when the stimulus is presented to the anesthetized subject.

Keywords : Primary visual cortex; random dot pattern; speed of motion; Long-Evans

Count: 435
Abstract ID: 628
subject: Pain and Sensory Systems: Vision
Presentation Type: Poster

The priority analysis of categorization levels in human visual system

Submission Author: Aryan Yazdanpanah

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Background and Aim : The time course of objects categorization in human visual system is a moot issue in vision neuroscience. Among different perceptual categories, it is widely accepted that the basic level perceptual categories (dog, chair…) are accessed faster than superordinate level categories (animal, furniture…).

Methods : The current study questions the precedence of basic level as an entry level in human visual processing. Using an ultra-rapid task, 20 subjects were tested in a series of two forced choice tasks. Subjects had to decide whether a presented image for 12 ms is Animal or not in superordinate level trials and had to decide whether the image is dog/non-dog or bird/non-bird in basic level trials.

Results : By means of a dynamic mask with 8 different inter stimulate intervals (ISI) that followed the presented image, it was shown that there is no significant difference between mean reaction time in animal/non-animal trials and mean reaction time in dog/non-dog or bird/non-bird trials.

Conclusion : The results imply that there is no precedence for basic level as an entry level and both perceptual categorization levels can be accessed equally fast.

Keywords : ultra-rapid object categorization; perceptual categories; reaction time; dynamic mask; superordinate level; basic level

Count: 436
Abstract ID: 639
subject: Pain and Sensory Systems: Auditory and Vestibular
Presentation Type: Oral

Investigating the role of insular cortex in hyperacusis and tinnitus in rat

Submission Author: Minoo Karimi

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Background and Aim : Hyperacusis is high sensitivity and increased response to environmental sounds that do not seem loud to others, while tinnitus is the phantom perception of a sound in the absence of a corresponding objective sound source. The mechanisms underlying hyperacusis and tinnitus, specially the role of insular cortex, is not clear. The aim of this study is to investigate the role of insular cortex in hyperacusis and tinnitus in rat

Methods : 33 male adult wistar rats were assigned randomly in three experimental groups: control, sham(surgery), and lesion group (bilateral stereotaxic lesion of insular cortex with 10 mg/ml NMDA). To assess the hyperacusis Auditory Startle Responses (ASR) to 70, 80, 90, 100, 110 dBSPL stimuli, with and without background noise (70,or 80 dBSPL), and to assess the tinnitus, gap detection test using 50 ms gap in 60 dBSPL background noise, 100 ms before the startle Stimulus (115 dBSPL), were mesured before and at different weeks after insular lesion

Results : Results showed increase of ASR at 100dBSPL stimulus without background noise, one week after insular lesion, and increased responses to all intensities at weeks 2 and 4. Additionally, there was a decrease in ASR to 110 dBSPL stimulus with 80 dBSPL background noise, one week after insular lesion, while no significant difference was observed in 70dBSPL background noise. Furthermore, Insular lesion rats exhibited impaired gap detection (increase in ASR following 50 ms gap) after surgery

Conclusion : The findings indicated that excitotoxic lesion limited to insular cortex increase ASR in the absence of background noise, while a decrease ASR in the presence of background noise, both representing increased sensitivity to the loudness perception and a hyperacusis-like phenomenon. Additionally, impaired detection of a silent gap in the background noise suggest possible tinnitus which filled the gap interval. In conclusion, this study suggests the role of insular cortex in hyperacusis and tinnitus

Keywords : hyperacusis; tinnitu; insular cortex; auditory startle response; NMDA; rat

Count: 437
Abstract ID: 520
subject: Pain and Sensory Systems: Chemical Senses: Olfactory and Taste
Presentation Type: Poster

University of Pennsylvania Smell Identification Test and the Iranian Population: 70% of the Odorants are Correctly Identified

Submission Author: Amir Hossein Dehghan

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Background and Aim : University of Pennsylvania Smell Identification Test (UPSIT), a comprehensive 40-item test, is the most widely used olfactory test with a high reliability (test-retest r=0.94). Beside applying UPSIT for olfactory assessment in the field of chemosensation research, its clinical relevance especially for screening the dementia-related disorders has been emphasized during the past decade. While UPSIT has been translated to 28 languages for different cultures, it has not been systematically studied on a representative Iranian population. Therefore, we intended to study the applicability of the UPSIT on a sample of Iranians. Our aim was to identify any odorant that is not easily recognized within our sample and to replace it with another familiar smell for Iranians.

Methods : In this pilot study, a population of 75 Iranian participants (43 females and 32 males, aged between 15 and 75 years old and with different ethnicities) were studied in Tehran. The subjects did not have any specific olfactory complaint or smell loss. The participants were provided with the Persian translation of the multiple-choice questions of the British version of UPSIT. Following the UPSIT administration, the olfactory threshold was also evaluated in a subgroup of 34 participants using the Snap & Sniff test.

Results : The average UPSIT score of the participants was 30.88 (±4.16). We found that 28 smells reached an average performance of equal or greater than 70% as a boundary for applicability in the UPSIT. Six new odorants were chosen and tested to replace the unrecognizable smells. Moreover, there was a significant correlation between the UPSIT score and the age of the participant ($p<0.000$, $r=-0.44$). The average threshold of the participants was 4.22 (±1.30) which indicates that the participants required on average 100 times more concentrated solution in comparison with the international reports. In addition, the correlation between the subject performances for different smells was studied and the odorants were classified according to the conditional probability.

Conclusion : Although 34 odorants were identified for the adapted version of UPSIT in our study, six other odorants remain to be replaced. A modified version of UPSIT with 40 odorants could open a new avenue of research in the basic and clinical neuroscience in Iran and its score would be comparable with the international norms. It is noteworthy that the high olfactory threshold indicates that the Iranian participants required on average 100 times

more concentrated solution in comparison with the international reports and this requires further investigation to figure out its underlying reason.

Keywords : olfactory function, odorant, UPSIT, performance

Count: 438
Abstract ID: 366
subject: Pain and Sensory Systems: Chemical Senses: Olfactory and Taste
Presentation Type: Poster

Hemoencephalographic response in frontopolar brain regions upon olfactory stimulus task in healthy individuals; a controlled cross-sectional study

Submission Author: Seyedeh maryam Hosseini

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Background and Aim : Being the oldest human sensory function, olfaction plays an important role in identifying food, mates, predators, sensual pleasure and hazard warnings. Key pre-specified areas including the prefrontal cortex (PFC) are incorporated into the olfactory functional network. The PFC is a multimodal association cortex which receives, processes, and integrates sensory information from different areas of brain and plays an important role in higher order cognitive functions. Concurrently with PFC lesions in many progressive neurodegenerative conditions, the olfactory system is likewise disrupted. As such, it has been hypothesized that timely detection of olfactory function disturbance may at least partly predict progression towards neurodegenerative processes.

Methods : This study was examined odor perception with regards to changes in PFC hemodynamic response upon an olfactory task. Fifty-five participants received either odor stimulus (n=45, 26 female and 19 male) or sham (n=10, 5 female and 5 male). The sham group was selected to eliminate the role of testing set-up related stress. The vanilla odor was administered at 0.37 mol/L concentration through a full face make and a nebulizer upon controlled laboratory condition. To assess the effect of stimulus on prefrontal cortex, hemoencephalography (HEG) response was assessed in experiment and sham groups. The frontopolar (FP1 and FP2) HEG response was recorded both upon resting state and olfactory task, 60 seconds each over two sequential blocks.

Results : Statistical tests including repeated measures analyses of variance documented significant difference in HEG response in experiment vs. sham groups. In addition, Bonferroni adjusted results upon olfactory task revealed a significant increase in frontopolar HEG response compared to the resting state (p value <0.000).

Conclusion : Out findings substantiated an increased HEG response in bilateral frontopolar brain regions when subjects were submitted to an olfactory task. This would propose that FP1 and FP2 are centrally involved in olfactory sensory processing based on hemodynamic cortical response.

Keywords : Olfaction, Prefrontal cortex, frontopolar cortex, HEG response

Count: 439
Abstract ID: 304
subject: Pain and Sensory Systems: Other
Presentation Type: Poster

Involvement of ventral tegmental area NMDA receptors in the potentiation of morphine-induced antinociception by harmaline

Submission Author: Sakineh Alijanpour

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Background and Aim : Morphine is the most well-known analgesic agents. Since morphine administration has various side effects, identification of drugs that enhance morphine analgesia and/or reduce its side effects will help to develop therapeutic approaches for pain relief. Harmaline, a β-carboline type alkaloid isolated from Peganum harmala, interacts with the opioid receptors. Considering these, the aim of this study was the assesse of the ventral tegmental area (VTA) NMDA receptors in the regulation of pain threshold induced by the co-administration of morphine and harmaline.

Methods : Animals were bilaterally cannulated in the VTA by a stereotaxic frame. A tail-flick (TF) apparatus was employed to determine pain sensitivity in male NMRI mice.

Results : Systemic administration of morphine (2 mg/kg, i.p.) had no anti-nociceptive effect in the TF test. Also, harmaline (1.25 and 5 mg/kg, i.p.) could not change the pain threshold in the TF test. Interestingly, the combination of non-effective doses of harmaline (5mg/kg) and morphine (2 mg/kg, s.c.) induced anti-nociception in mice. Intra-VTA microinjection of different doses of NMDA (0.06 and 0.1 µg/mouse) before systemic combination of harmaline (5 mg/kg) and morphine (2 mg/kg) reversed anti-nociception induced by the drugs. It should be noted that microinjection of the same doses of NMDA into the VTA alone had no effect on pain threshold.

Conclusion : It can be concluded that harmaline potentiated the analgesic effect of morphine via affecting the VTA NMDA receptors.

Keywords : Pain; NMDA receptor, Morphine, Harmaline, Mouse

Count: 440
Abstract ID: 267
subject: Pain and Sensory Systems: Other
Presentation Type: Poster

Evaluating the role and side effects of triptans in migraine treatment

Submission Author: Alireza Arezoumand

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Background and Aim : Migraine is a neurologic condition characterized by moderate to severe attacks of headache associated with hypersensitivity to visual, auditory, olfactory; nausea; and vomiting. It is an important socioeconomic burden and is ranked the sixth cause of years of life lost because of disability in the general population. Migraines are believed to be due to a mixture of environmental and genetic factors but they are almost unknown. Migraine is an episodic disorder, but its frequency during the lifetime can fluctuate back and forth from a low to a high pattern. Each year, ~3% of patients with episodic migraine develop new-onset chronic migraine (affects 2% of the general population), with headache occurring ≥15 days/month. The main goals of treatment are to reduce the frequency of migraine attacks. Acute therapy is based on nonspecific (analgesics and nonsteroidal anti-inflammatory drugs [NSAIDs]) or specific (triptans and ergot derivatives) drugs. The serotonin receptor subtype 1B/1D agonists, called triptans, are nowadays the first-line acute therapy for migraine patients. In this research, we are trying to investigate the role of triptans in migraine treatment and their side effects.

Methods : We performed a systematic review of the literature with related keywords in PubMed, Science direct, Google scholar and Scopus to gather information in articles published since 2010 and summarized here.

Results : Triptans are serotonin (5-hydroxytryptamine [5-HT]) agonists. They bind mostly to 5-HT1B and 5-HT1D receptors within cerebral blood vessels (endothelium), leading to a rather selective vasoconstriction and inhibiting the release of neurogenic inflammatory mediators such as calcitonin gene-related peptide (CGRP). therefore, Inflammation in the brain becomes reduced and pain decreases. The 5-HT1B/1D receptors are also present on coronary and limb arteries. Accordingly, triptan administration causes a reduction in coronary artery diameter and a

brief constriction of limb arteries. triptans may possibly cause ischemia in those with coronary disease. Patients with myocardial infarction, coronary artery disease, stroke, uncontrolled hypertension, and vasculitis cannot use triptans. Also triptans are contraindicated in patients with comorbid depression taking serotonin reuptake inhibitors due to the theoretical possibility of serotonergic syndrome. Most of the adverse effects are related to the central nervous system, depending on the high permeability through the blood–brain barrier and mild to moderate severity. Some of triptans are: sumatriptan, zolmitriptan, rizatriptan, etc. Some of them have characteristics similar to sumatriptan, displaying a rapid dose-dependent efficacy with a higher risk of adverse effects, while others have a slower relieving effect on migraine symptoms but a more prolonged duration of action and less recurrence of migraine attacks.

Conclusion : Migraine is a neurologic condition characterized by headache associated with different symptoms. Triptans are the first-line acute therapy for migraine patients. Their mechanism of action based on vasoconstriction, makes them unsuitable for patients with previous cardio- and cerebrovascular diseases and uncontrolled hypertension. So More research is needed to find more effective drugs with lesser side effects.

Keywords : Migraine ; Acute therapy ; Triptans ; Side effects

Count: 441
Abstract ID: 62
subject: Pain and Sensory Systems: Other
Presentation Type: Poster

Effects of Dominant/Subordinate Social Status on Thermal-inducociception and ed NCorrelation with Concentrations of Glutamate in Prefrontal Cortex and Hippocampus

Submission Author: Fatemeh Bagheri

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Background and Aim : Social dominance is a natural and widespread phenomenon extending to most social species, including humans and animals. However, hierarchical social status greatly influence access to limited resources, reproductive opportunities and health. Laboratory and clinical studies have revealed that social interactions between pairs of conspecifics can affect the response of individuals to noxious external stimuli. Pain is an important sensorial modality with an elevated degree of complexity and subjectivity that involves not only the transduction of noxious stimuli, but also cognitive and emotional features. There has been growing interest in the relationship between pain perception and social hierarchies with a focus on exploration of mechanism(s) and mediators of pain in particular and such studies in rodents addressing the link between the pain and social hierarchical are likely to be relevant in humans. The goal of the current study was to examine the relationship between dominant/subordinate social status and the perception of pain with the concentration of glutamate in prefrontal cortex (PFC) and hippocampus on these processes

Methods : For this purpose, we used the well-known tube dominance test to determine social dominance in animals, and also hot plate (55 ºC) for evaluating thermal pain model effects. Glutamate levels were determined in rat brain regions by the enzymatic method described by Bernt and Bergmeyer.

Results : Our results showed that dominant rats significantly decreased latency to hot-plate test as compared to subordinate rats. However, glutamate levels in hippocampal dominant rats was significantly higher than subordinate rats but no significant differences were found in glutamate levels in the PFC region.

Conclusion : It seems that social dominance increased the perception of pain and this effect may exert through increase in glutamate concentration in the hippocampus.

Keywords : Social dominance; perception of pain; glutamate concentration; hippocampus; prefrontal cortex

Count: 442
Abstract ID: 581
subject: Pain and Sensory Systems: Other
Presentation Type: Poster

BK Channels are involved in analgesic and anti-inflammatory effects of cannabidiol in formalin test

Submission Author: Nasrin Heidari Ashkezari

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Background and Aim : The cannabinoid system (CS) plays an important physiological role in the regulation of tissue inflammation and pain, therefore drugs targeting the CS have the potential to control pain and inflammation. Cannabidiol (CBD) is a non-psychotropic plant-derived cannabinoid which has the therapeutic potential for treatment of neuropathic pain, cancer pain, multiple sclerosis and inflammation. On the other hand, big conductance calcium activated potassium channels (BKca channels) play an important role in pain perception. The aim of this study was to investigate the interaction between CBD and BK channel antagonist paxilline in pain-related behavior as well as spinal cytokine (TNF-α and IL-1β) expression in formalin test paradigm in rats.

Methods : Forty male Wistar rats (250-280 g) were randomly selected in four groups (N = 8-10 in each group): Control group (received vehicle), three CBD groups (received cannabidiol 3, 10, or 30 nM/rat), PXL group (received paxilline 5 nM/rat), and the group received co-treatment of CBD (30 nM/rat) and PXL (5 nM/rat). Drugs or their vehicles were administered through intracerebroventricular (i.c.v; 5 µL) injection using stereotaxic surgery. Ten minutes after last drug injection, formalin (5%, 0.04 mL) was injected into rat's hind paw and the pain-related behavior was scored for 60 minutes. Also, in other groups (N = 4 rats in each group), 30 minutes after formalin injection into rat hind paw, the animals were scarified and the spinal cords were removed and prepared for cytokine determination using western blot technique.

Results : The data of formalin test revealed a dose-dependent decrease in pain related behavior of rats treated with CBD c with the control group, however, PXL pretreatment attenuated CBD-induced analgesia. The data obtained from the western blot technique indicated a significant difference in TNF-α and IL-1β protein expression in CBD-treated group compared with the control group. Moreover, pretreatment with PXL could inhibit TNF-α and IL-1β reduction by CBD, while no effect on the cytokine expression was indicated in group treated by PXL per se.

Conclusion : Our data showed that the analgesic effect as well as the reduction in cytokine expression by CBD in formalin test could be blocked at least in part by BK channel blocker, suggesting possible involvement of BK channels in analgesic and anti-inflammatory properties of CBD.

Keywords : Cannabidiol; Pain; Paxilline; formalin test; TNF-α; IL-1β

Count: 443
Abstract ID: 207
subject: Pain and Sensory Systems: Other
Presentation Type: Poster

The Relationship between pain and Social Support after Spinal Cord Injury

Submission Author: Zahra Khazaeipour

Zahra Khazaeipour[1]

1. Brain and Spinal Cord Injury Research Center, Neuroscience Institute, Tehran University of Medical Sciences, Tehran, Iran.

Background and Aim : It is more likely that spinal cord injury (SCI) persons who perceive themselves as having more support from family, friends, and the community tend to have better disease-management. Thus, the aim of this study was to evaluate the relationship between social support and pain in SCI persons.

Methods : This study was a cross sectional research in a sample of people with SCI who referred to BASIR clinic to receive outpatient rehabilitation. We used a multi-dimension scale of perceived social support (MSPSS), and brief pain inventory (BPI), a 0-10 scale of pain.

Results : Results: the participants were 138 SCI persons, 72.5% male and 27.5% female with mean age of 29±8 years. There was negative association between social support and pain but was not significant (r=-0.026, P= 0.7).

Conclusion : Conclusions: social support may be important variable to decrease pain in SCI persons. The participants with higher social support had lower pain and may tolerate pain better than others.

Keywords : pain, Social Support, Spinal Cord Injury

Count: 444
Abstract ID: 222
subject: Pain and Sensory Systems: Other
Presentation Type: Poster

Investigating the effects of co-administration of chronic progesterone and forced exercise on behavioral pain responses in the neuropathic pain model of chronic constriction injury in rats.

Submission Author: Fariba Khazani

Fariba Khazani[1], Hoseinali safakhah[2], morteza jarrahi[3], ali rashidipour[4], arefeh vafaee nezhad[5]

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Background and Aim : Neuropathic pain is a chronic pain that results from damage to the central and peripheral nerves. According to studies, progesterone is one of the most potent anti-inflammatory and anti-inflammatory neurostimulants. Exercise as a behavioral and non-pharmacological method has beneficial effects on general health in normal conditions and disease. Several studies have shown that physical activity and progesterone can be an effective treatment for improving sensory function. Now the combined effect of exercise and progesterone on peripheral neuropathy due to Chronic pressure on the sciatic nerve will be considered in an appropriate model.

Methods : : In this study, 80 male Wistar rats were used in 8 groups (n=10). First, neuropathic pain was induced by CCI in the respective groups. for the treatment of neuropathic pain, animals in the groups receiving the progestrone (6 mg / kg) started 12 days after the operation until 26th day. In exercise groups, 12 days after surgery, the exercise started until 33 days. On day 12 and 33, behavioral tests were performed.

Results : We found that co-administration of progesterone 14 days (6 mg / kg) and the use of moderate intensity exercise for 3 weeks after the stabilization of neuropathic pain in the respective group compared with the CCI group.

Conclusion : The findings of this study showed that treatment with progesterone may develop and develop neuropathy when the peripheral neuropathy derived from CCI is developing and stabilized

Keywords : Neuropathic pain; Forced exercise;Allodynia; Hyperalgesia;Progesterone;CCI.

Count: 445
Abstract ID: 461
subject: Pain and Sensory Systems: Other
Presentation Type: Poster

ANTINOCICEPTIVE EFFECT OF ASCORBIC ACID AND INVOLVEMENT OF NITRIC OXIDE IN A CHRONIC PAIN MODEL

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Background and Aim : Ascorbate which is presented in high concentration in the nervous system inhibits nitric oxide synthase enzyme (NOS). We investigated the involvement of NO pathway in the analgesic effects of ascorbic acid (AA) in the CCI model of neuropathic rats.

Methods : In this experimental study, neuropathic pain is induced by 4 loose ligature around sciatic nerve on the left paw of male rats using 4.0 chromic gut (CCI model). Ascorbic acid (1, 5 or 10 mg/kg) or saline was injected intraperitoneally two weeks after CCI. Heat and mechanical hyperalgesia and mechanical allodynia were investigated 15 and 30 min after injection. To investigate the involvement of NO on antinociceptive effect of AA on the second week after CCI, 30 min after injection of saline or AA, animals received the intraperitoneal injection of L-arginine (500 mg/kg), or L-NAME (20mg/kg) and were tested 20 min after on.

Results : Acute injection of 5 and 10 mg/kg but not 1 mg/kg of AA increased pain threshold in the second week after CCI. Injection of 5 mg/kg AA inhibited the nociceptive effect of L-arginine and potentiates the antinociceptive effect of L-NAME and pain threshold was significantly different in these two groups comparing the animals which received normal saline instead of AA.

Conclusion : Injection of AA increases pain threshold after nerve injury. Antinociceptive effect of ascorbic acid is dose-dependent and that seems to be mediated at least partially via NO pathway.

Keywords : ASCORBIC ACID, NITRIC OXIDE, NEUROPATHIC PAIN

Count: 446
Abstract ID: 543
subject: Pain and Sensory Systems: Other
Presentation Type: Poster

Modulating role of Hippocampal Orexin-2 receptor over chemically induced antinociceptive behavior in the lateral Hypothalamus

Submission Author: Afsaneh Zargarani

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Background and Aim : Investigations demonstrate Orexin-2 receptor (OX2R) playing a modulatory role in antinociceptive system. Highly densified distribution of OX2R in the lateral hypothalamus (LH) and the Cornu Ammonnic 1 (CA1) region of the hippocampus gives rise to query whether CA1 OX2R could modulate the responses of LH antinociceptive behavior chemically induced by carbachol.

Methods : To investigate this query, fifty-four adult male Wistar rats weighing 200-280g were unilaterally implanted with two cannulae above the LH and CA1. In the treatment groups (n= 6), intra-CA1 administration of 0.5 µL of TCS-OX2-29 (0.1, 1, 10 and 20 nM) diluted in 12% DMSO, as an OX2R antagonist was performed 5 min before intra-LH administration of Carbachol (250 nM/0.5µL saline), as a cholinergic receptor agonist. Therefore in DMSO-control group, DMSO and Saline, in TCS-OX2-29-control group, the highest dose of TCS-OX2-29 and saline, along with Carbachol-control group, DMSO and Carbachol were microinjected into the CA1 and LH, correspondingly. Prior to the microinjections and amid an hour time frame (60-min period) afterwards, the tail-flick test (intensity=45%) was applied to cause acute pain and measure the tail-flick latency (TFL).

Results : In the carbachol-control group, increase in TFLs were apparently observed. Besides no group demonstrated significant alteration, except groups comprising doses of 1, 10 nM ($P<0.05$) and, 20 nM ($P<0.001$) which could significantly reduce the chemically induced antinociceptive behavior of the LH tonically although not in a dose-dependent manner.

Conclusion : It suggests a tonic modulatory role for OX2R within the nociceptive pathway of LH-CA1.

Keywords : Orexin2 - neuromodulation - antinociception - nociception - pain

Count: 447
Abstract ID: 344
subject: Motor Systems and Movement Disorders: Posture and Gait
Presentation Type: Oral

Comparison of the lower extremities inter-segmental coordination during walking between patients with multiple sclerosis and healthy controls

Submission Author: Razieh Mofateh

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Background and Aim : Gait disturbance is one of the most common and disabling signs in patients with multiple sclerosis (MS). Examining the lower extremities inter-segmental coordination, as a higher order property of the human movement system, during walking could explore valuable information about changes in neuromuscular control of gait in patients with MS. Therefore, the aim of this study was to compare the inter-segmental coordination of the lower extremities during walking between patients with MS and healthy controls.

Methods : Three-dimensional coordinate data of the lower extremities were collected from 25 patients with MS and 25 healthy controls while treadmill walking at their preferred walking speed. Mean absolute relative phase (MARP) and deviation phase (DP) were used to examine the thigh-shank and shank-foot coordination pattern and variability in stance and swing phases of the gait cycle.

Results : For the thigh-shank coordination pattern, MARP values were significantly higher in patients with MS compared to healthy controls in stance and swing phases of the gait cycle ($p < 0.01$, $p = 0.03$, respectively). For the shank-foot, MARP values of patients with MS were significantly lower compared to healthy controls ($p < 0.01$). For the thigh-shank coordination variability, patients with MS showed significantly higher DP values compared to healthy controls in stance and swing phases of the gait cycle ($p < 0.01$). Similar results were found for the shank-foot coordination variability ($p = 0.02$ and $p = 0.04$, respectively).

Conclusion : Our results suggest that MS disease could affect the pattern and variability of inter-segmental coordination during walking. Therefore, examining and facilitating lower extremities inter-segmental coordination

during walking could be an important factor in the development of rehabilitation interventions aimed at improving the gait pattern in patients with MS.

Keywords : Multiple sclerosis, Coordination, Variability, Gait.

Count: 448
Abstract ID: 428
subject: Motor Systems and Movement Disorders: Motor Neurons and Muscle
Presentation Type: Poster

Different walking speeds can be discriminated by LFPs from rat primary motor cortex

Submission Author: Mohammad Taghi Ghodrati Shahtouri

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Background and Aim : Understanding the role of brain areas in performing different movements is very important. Studies have shown that different upper-limb movement parameters can be decoded from neural signals in the primary motor cortex. These parameters include positions, movement velocities, and torque trajectories of different limb joints, as well as movement direction, grasping force, etc. While several studies have focused on decoding upper-limb movement parameters, lower-limb movement parameters are less noticed. The locomotion is known as the most important rhythmic lower-limb movements. Previous studies showed that the detail commands for executing the locomotion are generated in spinal cord neural circuits while the primary motor cortex contributes mostly to the initiation and overseeing the progression of walking and running. The purpose of this study was to investigate the possibility of decoding walking speed as an abstract locomotion feature. Here we employed the local field potential (LFP) signals from the M1 area of three Long-Evans rats while they were walking on a treadmill to discriminate between their different locomotion speeds. To this end, we compared the distribution of the LFP amplitudes and the band-powers in different speeds.

Methods : Three Long-Evans rats (250-260 grams) were trained to walk or run on a treadmill at different speeds of 8, 12, 15 and 20 meters/min. After training, 4-channel microwire-arrays were implanted in their hind-limb area of M1 and the LFP signals were recorded during walking or running at different speeds. In this study the following investigations were done: 1) The distribution of LFP signal amplitude in different speeds was compared using

student's t-test; 2) The LFP signal on each channel was band-pass filtered to achieve the conventional frequency bands including Delta (2 to 5 Hz), Theta (5 to 8 Hz), Alpha (8 to 13 Hz), Beta (13 to 32 Hz), low-Gamma (32 to 50 Hz), Gamma (50 to 100 Hz), high-Gamma I (100 to 200 Hz), high-Gamma II (200 to 300 Hz), and High Frequency LFP (300 to 400 Hz). Then the distribution of these band-powers on five seconds time windows was calculated and statistically compared in different walking speeds using student's t-tests.

Results : The results showed that there is no significant difference between the distribution of LFP amplitude in the speeds 8, 12, 15, and 20m/min ($p>0.05$). However the obtained results show that there were significant differences between the LFP band-powers on the frequency bands of Gamma, high-Gamma I and high-Gamma II in different walking speeds ($p<0.001$).

Conclusion : Our results suggest that the power of sub-bands of local field potential signals in primary motor cortex encode the speed of walking in rats.

Keywords : walking speed, motor cortex, local field potential

Count: 449
Abstract ID: 429
subject: Motor Systems and Movement Disorders: Motor Neurons and Muscle
Presentation Type: Poster

The Effect of Slope Walking on the Amplitude and Band power of Rat M1 Local field Potentials

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Background and Aim : Until now, the coding of locomotion parameters such as the angle of the joints and their trajectories has been investigated, but high-level parameters such as the effect of the slope of walking on brain Local field Potential (LFP) signals has been less noticed. In this study, we tried to investigate the effect of walking in different slopes of walking on amplitude and band power of the local field potential signals. The aim of this study was investigating the difference of amplitude and band power of conventional frequency bands between seven slope levels.

Methods : Two Long-Evans rats (3 months old, 250-260 gr) were used for this study. Rats were trained to walk smoothly on a treadmill with slopes 0, 5, -5, 10, -10, 15, -15 degrees with 10 m/min speed. After training, a 4-channel micro-wire array was implanted in hind limb region of M1 and after recovery, LFP signals were recorded from rats' primary motor cortex (M1) while they were walking on treadmill with different slopes (sampling rate: 32000 Hz) . We compared the distribution of the amplitude of LFP signals in different slopes using student's t-test. In addition, the power of 9 bands (Delta 2 to 5 Hz, Theta 5 to 8 Hz, Alpha 8 to 13 Hz, Beta 13 to 32 Hz, Gamma Low frequency 32 to 50 Hz, Gamma 50 to 100 Hz, high frequency Gamma I 100 to 200 Hz, high frequency Gamma II 200 to 300 Hz, High Frequency LFP 300 to 400 Hz) in 5 second time windows of each channel were computed. Student's t-test was used to find out the significance of difference between the band powers in different slopes.

Results : No significant difference between the amplitudes of LFP signals between different slopes was observed ($p>0.05$). By comparing the power of conventional frequency bands of the LFP, there was a significant difference in alpha and beta bands ($p<0.001$) between different slopes. There was also a significant difference between the band-powers of all bands in the slopes -15 and -10 degrees comparing to other slopes ($p<0.001$).

Conclusion : Our results suggest that synaptic activities in primary motor cortex are selective to slopes of walking. These results suggest that the power of sub-bands in LFP signals encode the slope of locomotion.

Keywords : Walking Slope, Locomotion, Local field potential, Motor cortex

Count: 450
Abstract ID: 473
subject: Motor Systems and Movement Disorders: Cerebellum and Basal Ganglia
Presentation Type: Poster

Effects of Subthalmic Nucleus Deep Brain Stimulation on Brain State of Urethane Anesthetized Rats

Submission Author: Faeze Ashoori

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Background and Aim : Basal Ganglia (BG) are the subcortical region of the brain which are involved in the motor system. Malfunctioning of the BG is resulting in movement disorders such as Parkinson's disease (PD). Deep brain stimulation (DBS) of BG subregions such as the subthalamic nucleus (STN) has been used in PD patients to reduce motor deficits. However, it is not well-known to what extent BG micro-stimulation affects brain micro-circuitries in PD and improves motor deficits. There are controversies in the literature about the effect(s) of the DBS, including the inhibitory effect, exciting the DBS target, blockading spiking of targeted neurons, and etc. To clarify underlying mechanism of DBS, we have investigated the effect(s) of STN stimulation on brain state in urethane anesthetized rats.

Methods : Five adult male Wistar-rats were anesthetized with intraperitoneal injection of urethane (1.5 gr/kg). After reaching in deep anesthesia their head was fixed in the stereotaxic frame for head surgery. We inserted the recording/stimulating electrode at the STN coordination (AP: -3.60, ML: 2.2 - 3.4, DV: 7.4 - 8.6) and used electrophysiology properties to find the target. One screw was located on contralateral prefrontal cortex for EEG signal recording. The three bi-phasic stimulation pulses were applied every minute, while the EEG signal was recorded simultaneously for 30 minutes. The signals were preprocessed and analyzed in the frequency domain with Welch's method (MATLAB). At the end of experiment, to confirm the location of microsimulation, we performed cardiac perfusion and histology verification.

Results : We measured the oscillation index (OI) in low frequency range by dividing integral of the power spectrum within 0 to 1.5 Hz to integral over the whole frequency range. We compared OI for two conditions; pre- and post-

phasic stimulation for each pulse. We found that OI was significantly decreased (one-tailed t-test; $p<0.05$). It means each stimulation results in desynchronizing the brain state.

Conclusion : We concluded this desynchronization may be resulted from the cortical excitation via the thalamo-cortical neurons. Desynchronization of the brain state after the STN stimulation suggests the thalamo-cortical excitation. The excitation of the STN stimulation results in disinhibition after inhibition in the thalamo-cortical neurons which induces excitation into the cortex. While by considering rebound burst activities, the STN excitation activates the rebound burst of the thalamus neurons which cause desynchronization of cortical state. Therefore, we concluded that the effect of the STN DBS on cortical state and brain circuitries may be excitatory.

Keywords : Basal Ganglia,Deep brain stimulation ,Subthalamic nucleus, Brain state

Count: 451
Abstract ID: 170
subject: Motor Systems and Movement Disorders: Cerebellum and Basal Ganglia
Presentation Type: Oral

Comparing the effect of spaced and massed training paradigms on long-term adaptation of oculomotor reflex: a cerebellar perspective

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Background and Aim : Repetitive short-term training with a rest between the training sessions is known as an effective way to induce declarative memory. It seems that what has learned during training will be consolidated in posttraining period. The posttraining memory consolidation is also observed in cerebellar motor learning. However, the synaptic dynamics of cerebellar plasticity during posttraining periods has been studied rarely. Specifically, there is little information about the impact of different learning strategies, including massed and spaced training, on long-term adaptation of cerebellar dependent tasks. Meanwhile, the oculomotor reflexes, which serve to stabilize moving images on the retina, are categorized as compensatory eye movements that mainly controlled by cerebellum. Hence, studying such movements can provide valuable clues about the cerebellar learning function. In order to achieve a better understanding on the role of spacing or giving rest intervals within training sessions of a cerebellar-dependent task, we proposed a computational model for learning adaptation of optokinetic gain and memory formation of the cerebellum.

Methods : The process of optokinetic gain adaptation is formulated based on known physiological and anatomical characteristics. Parameters are chosen to fit simulation results with the experimental data. Two plastic sites at parallel fiber-purkinje cell and mossy fiber-deep nuclei cell synapses are defined by differential equations and responsible for short-term memory formation in the cerebellar cortex and long-term memory consolidation in the nuclei cells, respectively. Learning simulation of massed training is carried out in a course of single session, contains repetitive stimulus oscillation during 1 h of training and 23 h of posttraining period in darkness. We also conducted a series of simulations with shorter training sessions spaced by sufficient rest, such as 15 min training followed by 1 h of rest and repeated four times, or a single 15 min training each day and repeated for 4 d, or a single 7.5 min training each day and repeated for 8 d. The total training time in all the cases is considered one hour.

Results : The model is capable to reproduce the optokinetic gain adaptation of eye movement during both training and posttraining periods, matching with the reported behavioral data from wild-type mice (exactly within SEMs (n=15)). Also, the model is able to show the cooperative act of main forms of synaptic plasticity in the cerebellum. As a second step, we investigate the effect of spacing on the persistence of motor memory in the cerebellum. Among the examined paradigms, the massed training showed the highest instantaneous optokinetic gain increase immediately after the training. The spaced training showed a mild and graded increase across the sessions. At the end of the last training session, the gain in spaced paradigms exceeded that in the massed training.

Conclusion : The results show that spaced training with appropriate interval facilitates long-term memory consolidation, but massed training has more effect on instantaneous and temporary short-term memory formation. As a brief, spaced training performs better than massed training in long-term memory consolidation.

Keywords : Cerebellar plasticity; Motor learning; Memory consolidation; Spaced training; Eye movement

Count: 452
Abstract ID: 203
subject: Motor Systems and Movement Disorders: Cerebellum and Basal Ganglia
Presentation Type: Poster

Echogenisity of lentiform nucleus in different types of idiopathic dystonia

Submission Author: Mahrokh sadat Vaziri

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Background and Aim : Recently, the use of transcranial sonography (TCS) in the field of movement disorders is growing more and more and new indications for diagnosing these disorders has been appeared. Dystonia is characterized by involuntary patterned muscle contractions resulting in abnormal postures or twisting movements. Routine imaging techniques such as brain MRI are usually normal in idiopathic dystonia. The aim of this study was to evaluate the results of TCS in patients with idiopathic dystonia.

Methods : This cross-sectional study was conducted on forty patients with primary dystonia, referred to neurology clinic of Rasoul-e-Akram Hospital, Tehran, Iran. A checklist composed of demographic variables, features of dystonia and results of TCS, was completed for each patient. To analyse the data, descriptive statistics were used.

Results : The mean duration of dystonia was 6 (±6.2SD) years. The lentiform nucleus (LN) was hyperechogenic in 26 patients (65%). All of the patients with generalized dystonia and dystonic tremor of head and neck, had hyperechogenic LN. The minimum and maximum area of LN, were calculated for blepharospasm and dystonic tremor of head and neck, respectively (mean of 0.19 cm2 for blepharospasm, and 0.37 cm2 for dystonic tremor of head and neck).

Conclusion : Despitelack of any control group, our results showed the frequency of LN hyperechogenicity in South-West Asian patients with idiopathic dystonia is similar to that reported in European and North-American patients with idiopathic dystonia.

Keywords : idiopatic dystonia ; hyperechogenisity in lentiform nucleus ; transcranial sonography

Count: 453
Abstract ID: 147
subject: Motor Systems and Movement Disorders: Movement Disorders (Parkinson, Huntington's, ALS, Ataxia, edication-induced Movement Disorders)
Presentation Type: Oral

A randomized clinical trial on the Evaluation of the effect of Vestibular exercises on dizziness and postural control in Parkinson patients

Submission Author: Amirabas Abasi

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Background and Aim : Non-motor symptoms of Parkinson disease have significant effects on the quality of life in this group of patients. Among these symptoms, dizziness is associated with the changes in orthostatic hypotension (OH). About 30% of people over 65 years have dizziness; however, the exact mechanism of dizziness in these patients was not clear. Dizziness has symptoms such as fainting, light headache, vertigo and imbalance. The present study is based on the given fact that one of the reasons for dizziness in Parkinson patients is the disturbance of balance systems. In addition, the vestibular system is one of the main elements involved in normal balance. As, the role of vestibular system in Parkinson disease has been suggested in previous studies. The main aim of current study is to investigate the effects of vestibular exercises on the dizziness of Parkinson patients.

Methods : Twenty-four patients participated in this study based on the inclusion criteria and were randomly assigned into intervention and control groups. Dizziness Handicap Inventory-Persian (DHI-P was used for dizziness measurement. In addition, Berg Balance Scale (BBS), Functional Reach (FR) and 2 Minutes Walking Test (2MWT) were used for measuring the postural control before and after interventions. The intervention group performed the vestibular exercises and the control group performed the conventional exercises (3 days a week for 60 minutes and a total of 24 sessions).

Results : The total score of DHI-P showed a significant improvement in the intervention group compared to the control group (P <0.001). Also, the BBS tests (<0/001), FR (P <0/001), 2MWT (P = 0.001) showed a significant improvement in the intervention group

Conclusion : Based on the results of this study, it could be suggested that vestibular exercises, as none sophisticated, feasible, and low cost rehabilitation–protocol has beneficial effects for patients with Parkinson disease. This protocol does not need any particular equipment and can be used in all environments while it can reduce dizziness and improve motor skills and postural control in this group of patients

Keywords : Parkinson disease, dizziness, Vestibular exercises, Physical Rehabilitation

Count: 454
Abstract ID: 397
subject: Motor Systems and Movement Disorders: Movement Disorders (Parkinson, Huntington's, ALS, Ataxia, edication-induced Movement Disorders)
Presentation Type: Poster

Effectiveness of Family-Centered Sensory Motor Integration in Reducing the Symptoms of Children with Reading

Submission Author: Shokufeh Asgari

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Background and Aim : The purpose of this study was to evaluate effectiveness of The family-centered sensory motor integration method in reducing the symptoms of children with reading disorder in normal students. Among all girls with reading disorder between the ages of7 and13 years old. Sample group was consist of fifty individuals were selected assigned in to control and test randomly.

Methods : Two grops, subsequently, the training of sensory and motor integrity skills was carried out in twenty two-hour sessions for children and parents separately and the study group was trained in forty sessions and eighty hours, and after wards they were analayzd with the Ancova data analysis Analyzed.

Results : Results The results of study show The family-centered integration skills are effective in reducing the symptoms of reading disorder.Such as a defective reading of words.

Conclusion : The family-centered sensory motor integrity method is effective in reducing the symptoms of children with gaps in text comprehension,fects in the removal of voices

Keywords : Sensory and motor integration; reading disorder, family-centered

Count: 455
Abstract ID: 345
subject: Motor Systems and Movement Disorders: Movement Disorders (Parkinson, Huntington's, ALS, Ataxia, edication-induced Movement Disorders)
Presentation Type: Poster

The effects of cognitive versus motor demands on postural performance and weight bearing asymmetry in patients with stroke

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Background and Aim : While several studies have investigated the interaction between postural control and secondary cognitive tasks in stroke patients, little is known about the influence of secondary motor task on postural control in these patients. The current research was designed to further examine dual-task performance by comparing the effects of cognitive versus motor dual-tasks on postural performance and weight bearing asymmetry (WBA) in stroke patients (n=23) relative to healthy, matched controls (n=22).

Methods : All participants stood on dual-force plate under 5 conditions: (1) free standing; (2) simple cognitive task(easy Stroop) while standing; (3) difficult cognitive task (difficult Stroop) while standing; (4) simple motor task (holding a tray while a cylinder lying on its flat side) while standing; and (5) difficult motor task (holding a tray while a cylinder lying on its round side) while standing.

Results : The center of pressure (COP) measures was greater in stroke patients than healthy controls. Also, the WBA of the patients was greater than the controls. The COP measures increased when moving from single-task to cognitive dual-task conditions. No significant effect of motor dual-tasking was seen when moving from single-task to motor dual-task conditions. However, in contrast to cognitive dual-tasking, stroke patients and healthy controls employed different strategies during simultaneous performance of postural and motor tasks

Conclusion : It can be suggested that performing a motor task while standing requires greater attentional resources compared to performing a cognitive task while standing and this resulted in greater dual-task interference on motor performance in the stroke patients.

Keywords : Cognitive dual-task, Motor dual-task, Postural control, Asymmetrical weight bearing, Stroke

Count: 456
Abstract ID: 372
subject: Motor Systems and Movement Disorders: Movement Disorders (Parkinson, Huntington's, ALS, Ataxia, edication-induced Movement Disorders)
Presentation Type: Poster

Study the effect of ceftriaxone on working memory and anxiety-like behavior in mice

Submission Author: Elham Hakimizadeh

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Background and Aim : Ceftriaxone (CEF), a beta-lactam antibiotic, has been shown to have antioxidant, neuroprotective and anti-inflammatory properties for the treatment of central nervous system (CNS) disorders. In current study we assessed the effect of CEF on the D-galactose (D-gal)-induced aging in mice.

Methods : Mice were randomly assigned into 3 groups (10 rats in each group) as follows: control, D-gal group and (D-gal + Ceftriaxone) group. CEF (200 mg/kg) was administrated daily in D-gal-received (500 mg/kg/p.o.) mice model of aging for two month. Behavioral tests were evaluated by the elevated plus-maze and Y maze, respectively.

Results : We found that CEF decreases the anxiety-like behaviors and increased working memory in D-gal-treated mice.

Conclusion : The results of current study suggest that CEF could be used as a novel therapeutic strategy for the treatment of age-related conditions.

Keywords : Ceftriaxone, aging, D-galactose

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subject: Motor Systems and Movement Disorders: Movement Disorders (Parkinson, Huntington's, ALS, Ataxia, edication-induced Movement Disorders)
Presentation Type: Poster

Evaluation of serum concentrations of important factors in oxidative stress in patients with Parkinson's disease.

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Background and Aim : Parkinson's disease (PD) is a prevalent neurodegenerative disorder. Believed that oxidative stress is a main modulator in the progress of PD. This investigation aimed to study relations between serum trace elements, vitamin C, ferritin, transferrin, Nitrite oxide (NOx) and peroxynitrite (PrN) concentrations and clinical parameters in patients with PD.

Methods : Serum concentrations of trace elements, vitamin C, ferritin, transferrin, NOx, and PrN were measured in 75 PD patients and 75 healthy subjects. Receiver operating characteristic (ROC) analysis was performed to examine incremental diagnostic value of vitamin C, NOx, and PrN in the study groups

Results : Mean serum NOx (35.81±5.16 vs. 11.27±3.59 mol/L, $p < 0.001$) and PrN (15.78±4.23 vs. 9.62±4.57 mol/L, $p= 0.004$) were markedly higher in patient group versus healthy individuals. Significant differences were also observed in the serum levels of vitamin C ($p <0.001$), copper (Cu) ($p<0.001$), Iron (Fe) ($p= 0.003$), and Zinc (Zn) ($p<0.001$) between patients with PD and healthy subjects. Nevertheless, the serum levels of Se ($p=0.515$), ferritin ($p=0.103$), and transferrin ($p= 0.372$) were not statistically significant between the study groups. ROC analysis revealed a diagnostic ability of serum vitamin C levels for PD with an area under ROC curve of ≥ 0.7 ($p < 0.05$) and relatively high sensitivity and specificity

Conclusion : Our results showed that serum levels of NOx and PrN are significantly higher in the patients with PD. Also, that serum concentrations of Cu, Zn, and vitamin C in healthy subjects were higher than that PD patients. In additions, it has been shown that serum vitamin C levels have a diagnostic value as a biomarker. Further studies are required with larger sample size to provide more detailed information about the cognitive profile of participants and the outcome measures

Keywords : Parkinson Diseases, Trace elements, Oxidative stress, Ferritin, Nitric oxide

Count: 458
Abstract ID: 462
subject: Motor Systems and Movement Disorders: Movement Disorders (Parkinson, Huntington's, ALS, Ataxia, edication-induced Movement Disorders)
Presentation Type: Poster

Therapeutic effects of Levodopa/Carbidopa on pain,anxity-like and cognition deficiency in 6-OHDA- induced Parkinson, s disease in rats

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Background and Aim : Parkinson's disease (PD) is the second most common neurodegenerative disease. The signs and symptoms of PD are slow movement, rigidity, and tremor because of the loss of dopaminergic neurons in the substantia nigra (SN) that project to the striatum. PD treatments have tried to compensate for the loss of striatal dopamine by administering its precursor L-DOPA and/or dopamine D2 receptor agonists . The aim of this study was to assess the effects of Levodopa/Carbidopa on behavioral tests, including memory, anxiety-like and pain on rats with 6-Hydroxydopamine(6-OHDA) -induced Parkinson disease.

Methods : Male Wistar rats were divided into 3 groups. Group 1:Sham operated animals received vehicle. Group 2 : injection of 6-OHDA (16 µg/2 µl) in Right medial forbrain(MFB). Group 3: PD+drug (10 mg/kg/levodapa, 30mg/kg/carbiodapa PO, for 60 days after PD induction). PD was approved by apomorphine-induced contralateral rotation. Shuttle box, elevated-plus-maze (EPM) and tail filick tests performed to evaluate the behavioral changes.Data analyzed statistically by one-way ANOVA and Tukey's post hoc test. P value less than 0.05 assign as significant alteration.

Results : Data showed that PD induction shortened step through latency (STL) in shuttle box and the time spent in the open arms of the EPM ($P< 0.01$). Levodopa/Carbidopa administration prolonged STL as improving the memory ($P<0.05$) and also improved anxiety –like behavior in EPM . there was a significant increase in withdrawal latency of PD group versus sham group ($P<0.001$)

Conclusion : Our results showed that PD caused memory and pain sensory impairment and increased anxiety in rats. Administration of Levodopa/Carbidopa after PD induction exhibits therapeutic potential to improve short-term memory, pain sensory abnormality, which has neuroprotective effect on this pathway and can ameliorate this defect and be considered in PD management.

Keywords : 6-OHDA; Parkinson's disease;Levodopa;Carbidopa; passive avoidance memory; Elevated-plus-maze; tail filick

Count: 459
Abstract ID: 305
subject: Motor Systems and Movement Disorders: Movement Disorders (Parkinson, Huntington's, ALS, Ataxia, edication-induced Movement Disorders)
Presentation Type: Poster

anxiety influence balance in patients with Parkinson's disease

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Background and Aim : anxiety is one of the most common non-motor feature of Parkinson's disease (PD) affecting 40% of patients but little attention has been paid so far to its effects on balance impairments and postural control.This study aimed to investigate the influence of anxiety on the standing postural control of PD patients for treatment improvment of balance problems in these patients.

Methods : Thirty-four patients with PD (17 with high anxiety (HA-PD) and 17 with low anxiety (LA-PD)), as well as 17 gender- and age-matched healthy control subjects (HC) participated in the study. Postural control was evaluated using a combination of two levels of postural difficulty (standing on a rigid force plate surface with open eyes (RO) and standing on a foam surface with open eyes (FO)), as well as three attentional focus instructions (internal, external and no focus).

Results : Only the HA-PD group demonstrated significant postural control impairment as compared to the control, as indicated by significantly greater postural sway measures. Moreover, externalfocus significantly reduced postural sway in all participants especially during the FO condition.

Conclusion : The results of the current study provide evidence that anxiety influences balance control and postural stability in patients with PD, particularly those with high levels of anxiety. The results also confirmed that external focus is a potential strategy that significantly improves the postural control of these patients. Further investigation of clinical applicability is warranted towards developing effective therapeutic and rehabilitative treatment plans

Keywords : anxiety; postural control; parkinson

Count: 460
Abstract ID: 325
subject: Motor Systems and Movement Disorders: Movement Disorders (Parkinson, Huntington's, ALS, Ataxia, edication-induced Movement Disorders)
Presentation Type: Poster

A model-based feature extraction method to diagnose gait disorder in Parkinson disease

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Background and Aim : Nowadays as population age is growing up, the number of people dealing with aged disorders is increasing. Parkinson is one of the neurodegenerative diseases that is more common in elderly people and affects different aspects of human daily life. One of the symptoms of Parkinson is movement impairment. Gait perturbation and unstable posture are samples of movement disorder, which decreases the patient's life satisfactory. The early stages of this disorder is still difficult to diagnose. Therefore, detecting of this disease in that stages is one of the important problem researchers faced. The aim of this article is to extract model-based features from gait pressures recorded from groups of normal and patient people to detect gait abnormalities.

Methods : The data used in this study are freely available in the PHYSIONET for further studies. The data includes the ground reaction force (or gait pressure) collected from 16 wearable sensors that are in eight different positions of each foot. The vertical ground reaction force of each foot is also measured. The data are for 2 minutes walking with self-selected speed on the same path. We proposed a computational nonlinear model that produced different dynamics such as chaos. The parameters of the model were tuned to reproduce the gait pressure signals recorded from 30 patients with Parkinson disease (PD) and 24 control subjects to estimate and evaluate the model parameters. Genetic algorithm was used for parameters' estimation. 90% of data was used for train and 10% of them was used to test the proposed model. The value of the parameters of the obtained model can be considered as a feature of gait signals.

Results : The proposed model was fit to the recoded data by the mean square error of 0.002 in average. There were two parameters in the model that were significantly different between normal and PD subject (p-value <0.03).

Conclusion : In this study, we represented the gait pressure signals by a non-linear model. Comparing the values of the model parameters that were extracted from the signals showed a significant difference between the gait pressures of normal and PD subjects. Gait pressures can be considered as results of brain commands, spinal cord effects, or

muscle or joints activities. According to the results, it can be concluded that different patterns in the pressure under the feet in the sub-phases of the gait may cause motor impairments symptoms in PD subjects and specific muscles of the patient foot that shows higher difference according to statistical test are more affected. As a result of a specific muscle malfunction of the foot during the gait cycle and event-related function of human gait, the patient suffered from gait impairments in the entire gait cycle and also small abnormalities are sequentially transferred and present gait perturbation. According to the severity of disease, this gait perturbation causes falling. Detecting the point of the perturbation may help the development of rehabilitation equipment in future. This method of detection is also reasonable and simply applicable in clinics and movement laboratory to help scientist for gait analysis.

Keywords : Gait;Parkinson;Ground reaction force;Computational model

Count: 461
Abstract ID: 271
subject: Motor Systems and Movement Disorders: Movement Disorders (Parkinson, Huntington's, ALS, Ataxia, edication-induced Movement Disorders)
Presentation Type: Poster

The effect of nobiletin on motor asymmetry in lipopolysaccharide-induced model of Parkinson's disease in the rat

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Background and Aim : Parkinson's disease (PD) is the most prevalent neurodegenerative movement disorder that results from the progressive degeneration of striatum – projecting dopamine (DA) neurons in the substantia nigra (SN) pars compacta. Although the pathogenesis of PD remains to be elusive, cumulative evidence supports a pivotal role for oxidative stress and neuroinflammation in initiation and progression of nigral dopaminergic neuronal loss. Studies in animal models have demonstrated that inflammation induced by lipopolysaccharide (LPS) can replicate some characteristics of PD. Nobiletin (NOB) is one of the major components of polymethoxyflavone family in citrus fruits with anti-inflammatory, anti-cancer and anti-diabetes activities. This study investigated the effect of NOB on motor asymmetry in lipopolysaccharide-induced model of PD in the rat.

Methods : We used 32 adult male rats randomly divided into four groups: Sham, Sham + NOB, LPS, and LPS + NOB. LPS (5 µg/kg) was unilaterally injected into the right SN of rat brains through stereotaxis to generate a neuroinflammatory model of PD with or without NOB (10 mg/kg daily for 1 week after the surgery via gavage). Finally, elevated body swing test (EBST) and rotational tests were applied for assessment of motor asymmetry.

Results : LPS group showed a significant higher rate of contralateral rotations and swings versus sham group. In addition, LPS group treated with NOB showed significantly lower rate of contralateral rotations and swings relative to LPS group.

Conclusion : NOB treatment at a dose of 10 mg/kg has the ability to alleviate motor asymmetry in LPS-induced model of PD in the rat. These findings suggest that the proper supplementation with nobiletin may protect against the neurodegeneration involved in PD.

Keywords : Parkinson's disease ; Lipopolysaccharide ; Nobiletin ; Motor asymmetry

Count: 462
Abstract ID: 101
subject: Motor Systems and Movement Disorders: Movement Disorders (Parkinson, Huntington's, ALS, Ataxia, edication-induced Movement Disorders)
Presentation Type: Poster

Does Parkinson's disease cause problems in function of the body's biological clock? New hope for early diagnosis

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Background and Aim : The body's internal biological clock influences various physical and mental activities throughout the body. It also facilitates synchrony of movements and stabilizes walking. Any disruption of this internal mechanism leads to disturbance in motor control, cognitive performance, alertness, mental health and metabolism. The mechanism underlying gait disturbances in Parkinson's Disease (PD) has not yet been elucidated. The BG play an important role in planning and regulating motor behaviour. PD affects the BG. Therefore, timing in motor tasks is disrupted in people with PD while timing in cognitive task might be unaffected. It seems that another clock is created for motor tasks. Indeed, we can assume that there are two clocks (motor tasks clock and cognitive tasks clock) that are synchronized in healthy subjects. Since the synchrony between these two clocks is disrupted in diseased state, the interpretations of the internal clock are not consistent.

Methods : In order to evaluate the presented hypothesis, we tried to define a cognitive secondary task and examine the effects of cognitive dual-task on walking. 20 PD patients that had ability to walk without any help and 18 age-matched healthy subjects were enrolled in this study. Patients had not taken any drug 8 hours before initiation of the test. Falling or freezing of gait (FOG) were not present in the patients. The stage of gait disturbances in our patients was between 1 and 3. The severity of patients was determined by an expert physician, according to Hoehn and Yahr Stage Scale. The designed device for measuring the stride time intervals (STI) included a three-axis acceleration sensor. This accelerator was able to measure the trunk acceleration. dimensions, was used. The participants were instructed to walk at their normal speed in a "8-shaped path" for 3 minutes and count the number of strides taken while walking. The patients did the same test after enough rest without counting or performing any other cognitive task.

Results : We observed that healthy subjects counted number of their strides correctly, whereas 85% of the patients made glaring errors in counting the stride numbers, especially in chronic cases. It means that the consistency between their bodies' clocks (cognitive and motor tasks clocks) is disrupted. In order to ascertain the correctness of the hypothesis, the stride time interval signals (STI) were extracted from acceleration signal for each foot of each subject.

Based on the results, STI signals of patients had greater variance than the healthy subjects in dual-task condition. Dual task revealed statistically significant differences between the healthy subjects and PD patients.

Conclusion : As a result, performing such a cognitive task makes screening PD patients and healthy subjects simpler and more effective.

Keywords : Parkinson's Disease; early diagnosis; internal biological clock; dual-task

Count: 463
Abstract ID: 441
subject: Motor Systems and Movement Disorders: Movement Disorders (Parkinson, Huntington's, ALS, Ataxia, edication-induced Movement Disorders)
Presentation Type: Poster

Effect of gastrodin on depression and anxiety in parkinsonian rat induced by 6-OHDA; Role of oxidative stress

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Background and Aim : Parkinson's disease (PD), arises from the dopaminergic cell neurodegeneration in the substantia nigra pars compacta (SNc) and subsequent striatal decrease of dopamine (DA). Although the etiology of PD is still unknown, epidemiological studies suggest that oxidative stress has an important role in its pathogenesis. Different mechanisms have been explained about the progression reason of PD, including the generation of reactive oxygen species (ROS) produced by DA auto-oxidation or mitochondrial dysfunction. Oxidative stress stimulates microglia cells and initiates the inflammatory pathway. Gastrodin (4-hydroxybenzylalcohol 4-O-bata-D-glucopyranoside) (Gst), has been reported to have different pharmacological properties, such as antioxidative and neuroprotective effects. However, the therapeutic efect of Gst on anxiety, depression and oxidative stress parameters associated with 6-OHDA model of PD has not been identifed. In this study, we appraised the effect of pre-treatment with intra-cerebro ventricular (i.c.v) microinjection of gastrodin (Gst) on depression, anxiety, substantia nigra pars compacta (SNc) myeloperoxidase (MPO) activity, lipid peroxidation levels, nitric oxide (NO) production and total antioxidant capacity (TAC) in 6-hydroxydopamine (6-OHDA) rats model of PD.

Methods : Male Wistar rats were pre-treated with i.c.v microinjections of Gst (20, 40 and 80 μg/3 μl/rat) for five consecutive days. Then, Parkinson model were induced by unilateral infusion of 6-OHDA (8 μg/2 μl/rat) into the SNc. The anti-anxiety and anti-depressive improving effect of Gst was assessed by the Open field test and forced swim test 3 weeks after neurotoxin injection, respectively. SNc catalase activity, SOD (Superoxide dismutase) and MDA (Malondialdehyde) levels, and TAC (Total Antioxidant Capacity) were assessed at the end of behavioral experiments.

Results : Our data demonstrated that Gst pre-treatment significantly ($p < 0.001$) was prevented anxiety and depression in neurotoxin lesioned rats. The most anti-depressive effect was seen at 80 μg Gst ($p < 0.001$). Pre-treatment of parkinsonian rats with Gst meaningfully ($p < 0.001$) was suppressed MDA and SOD level and increase catalase activity ($P<0.01$). Furthermore, the TAC level in the SNc was increased ($p < 0.001$) in Gst-microinjected rats about to the normal non- parkinsonian animals.

Conclusion : In summary, pre-treatment with Gst abolished 6-OHDA-induced anxiety and improved depressive disorder by decreasing: SNc MDA and SOD activity, and restoring SNc levels of TAC and catalase to the levels of healthy rats.

Keywords : Parkinson; 6-OHDA; Gastrodin; Oxidative Stress; TAC; MDA; SOD; Catalase; Anxiety; Depression.

Count: 464
Abstract ID: 604
subject: Motor Systems and Movement Disorders: Movement Disorders (Parkinson, Huntington's, ALS, Ataxia, edication-induced Movement Disorders)
Presentation Type: Poster

Evaluating frequency of neuropilin-1 in peripheral blood mononuclear cells of patients with Parkinson Disease

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Background and Aim : Parkinson disease (PD), a neurodegenerative disease, has also some immunologic basis in which several regulatory factors, like Neuropilin-1 (NRP-1) may show some roles in its pathogenesis. We aimed to evaluate the circulatory frequency of T regulatory cells (Tregs) expressing NRP-1 in PD.

Methods : In this case-control study, 83 patients with PD and 83 healthy controls were enrolled. The modified Hoehn and Yahr (H and Y) were used to measure the severity of PD. Flow cytometry was used to evaluate the circulatory frequency of CD4+CD25+Foxp3+Tregs expressing NRP-1 in all participants. Also, correlation of disease severity with such frequencies was evaluated.

Results : Our findings showed that frequency of CD4+CD25+Foxp3+Tregs expressing NRP-1 ($P<0.0001$) in patients with PD was significantly higher than those in healthy subjects. The frequency of Tregs expressing NRP-1 showed a negative correlation with disease severity.

Conclusion : Our study showed that the frequency of Tregs expressing NRP-1 may be important prognostic biomarkers of PD.

Keywords : Neuropilin1; Parkinson disease; H and Y

Count: 465
Abstract ID: 342
subject: Motor Systems and Movement Disorders: Other
Presentation Type: Oral

Motor Imagery Enhances by Transcranial Direct Current Stimulation (tDCS) on Prefrontal and Parietal Areas

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Background and Aim : Considering the potential effect of Transcranial Direct Current Stimulation (tDCS) to improve motor imagery the purpose of this study was to investigate the effects of tDCS on prefrontal and post parietal cortex in Hand Mental Rotation (HMR).

Methods : The present investigation was a single-blind, randomized study which sixty healthy right hand college students (30 males and 30 females, age 24.27±0.19) volunteered to attend. Using a simple random method participants were divided into four groups; Anodal: F4 (15) and P4 (15), Sham: F4 (15) and P4 (15). Then, Participants were asked to perform HMR task before and after five season tDCS

Results : Data analyze showed that there is a significant difference between the pre-test and post-test of reaction time (t=10.09, df=29, P=.005) and accuracy (t=-5.04, df=29, P=.005) in two site (F4, P4) in anodal group, also two-way ANOVA of HMR reaction time showed significant main effect of group (F=52.458, P=.000, ηp2=.488) indicating faster response in post anodal group and site (F=6.561, P=.013, ηp2=.107) indicating better response in F4, and in HMR accuracy a significant main effect of group (F=13.659, P=.001, ηp2=.199) but not for the main effect of site (F=.499, P=.483, ηp2=.009).

Conclusion : According to the findings of the study, it is suggested that tDCS on both prefrontal and post parietal cortex could improve HMR with more effect on prefrontal area.

Keywords : Motor Imagery, Hand Mental Rotation, Transcranial direct current stimulation

Count: 466
Abstract ID: 76
subject: Integrative system: Neurogenetics
Presentation Type: Poster

The association study of rs17039988 in promoter flanking site of NRXN1 gene and schizophrenia among Iranian schizophrenic patients

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Background and Aim : Schizophrenia is an acute mental disorder which involves 1% of the world's population. Delusion, hallucination and disorganized thinking are some of the schizophrenia's symptoms. NRXN1 is one of the significant candidate genes which works as a neuronal cell surface adhesion protein having an important role in developing of the brain

Methods : the analysis of the polymorphism and association between rs17039988 in promoter site of NRXN1 gene and schizophrenia was performed by the PCR-RFLP method with a sample number of 100 patients and 101 healthy individuals

Results : The results showed 0.09 of CC genotype frequency in NRXN1 gene in case group of the current study. Chi-square test of the polymorphism showed no meaningful difference between case and control group for rs17039988(P=0.26)

Conclusion : The current population was not in Hardy-Weinberg equilibrium so no models could be predicted for the alleles. Regarding the logistic regression result, no relationship between rs17039988 and schizophrenia were found. The study of the polymorphisms in NRXN1 gene and their association with schizophrenia help us in a better understanding of this mental disorder and it can be useful for designing new treatments for the schizophrenia in the future

Keywords : NRXN1, Schizophrenia, polymorphism, rs17039988

Count: 467
Abstract ID: 448
subject: Integrative system: Neurogenetics
Presentation Type: Oral

Novel Mutations in VPS13B, KCNMA1, NALCN and KPTN Genes Cause moderate to profound Mental Retardation

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Background and Aim : Mental retardation (MR) as one of the more common developmental disabilities, currently is defined as significantly sub-average general intellectual functioning accompanied by significant limitations in adaptive functioning in a least two of the following skills areas: communication, self-care, social skills, self-direction, academic skills, work, leisure, health and/or safety. It now is clear that both genetics and environment play important roles on cognitive development. To date, the number of known genetic causes of MR exceeds 1,000.

Methods : In this research, we have investigated four patients presenting different degrees of intellectual disabilities. Whole exome sequencing using Next Generation Illumina Sequencing was used to enrich all exons of more than 22000 genes as well as some other important genomic regions in the affected patients. Subsequently, Sanger sequencing was used for confirmation of novel mutations found.

Results : Based on the results, four novel mutations were found: homozygous stopgain mutation c.G1043A:p.W348X in VPS13B, heterozygous stop-loss mutation c.A386G:p.X129W in KCNMA1, homozygous non-sense mutation c.C2476T:p.R826X in NALCN, and finally, homozygous non-frame-shift deletion mutation c.916_921del:p.306_307del in KPTN gene. These mutations cause moderate, severe, profound and profound MR in patients studied, respectively. Additionally, except KCNMA1 gene with autosomal dominance inheritance, the inheritance pattern of VPS13B, KCNMA1, NALCN and KPTN genes are autosomal recessive.

Conclusion : Totally, current study uncovered four rare novel mutations in VPS13B, NALCN and KPTN genes in patients with moderate to profound MR and such studies may help to conduct genetic counseling and prenatal diagnosis more accurately for individuals at the high risk of these types of disorders.

Keywords : Mental Retardation, VPS13B, KCNMA1, NALCN, KPTN

Count: 468
Abstract ID: 52
subject: Integrative system: Neuroendocrinology
Presentation Type: Poster

Chronic Postnatal Foot-Shock Stress Impaired Glucose Tolerance in Young Adult Male Rats

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Background and Aim : Early life stress influences the development of metabolic disorders, including functional changes in developing pancreatic mediated by the hypothalamic-pituitary-adrenal (HPA) axis. In the present study, the role of foot shock stress at post-natal days in glucose hemostasis in young adult rats was investigated.

Methods : Two groups of pups were studied, including control group (pups no received foot shock by communication box), and early stress group (pups received foot shock by communication box). Concentrations of plasma corticosterone, glucose and insulin detected before and after stress in pup rats. Also, concentrations of plasma corticosterone, glucose, and insulin and glucose tolerance were measured in young adult rats.

Results : Our results showed that early life stress increased basal corticosterone, insulin and glucose levels in the post-natal age ($P<0.01$) that did not last until young adult age, but it caused an increase in plasma glucose and insulin levels at intra peritoneal glucose tolerance test (IPGTT) in young adult rats ($P<0.05$).

Conclusion : These results suggest that impaired IPGTT in young adult rats who experienced early life stress may indicate insulin resistance that makes it at risk of the type 2 diabetes later in life.

Keywords : : postnatal, foot shock, stress, glucose tolerance

Count: 469
Abstract ID: 35
subject: Integrative system: Brain Immune System and Brain Tumors
Presentation Type: Oral

Localizing memory functions in brain tumor patients: anatomical hotspots over350 patients.

Submission Author: Seyed ehsan Asadi

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Background and Aim : Memory complaints are common in brain tumor patients, but is difficult to map memory functions during awake surgery, to preserve them. Thus we analyzed one of the largest data set on clinical, surgical and anatomical correlates of memory in brain tumor patients to date, providing anatomical hotspots for short and long term memory functions.

Methods : 350 brain tumor patients (250 High-Grade Gliomas - HGG; 100 Low-Grade Gliomas -LGG; 54 Meningiomas) were tested on two commonly used Short-Term Memory (STM: Digit Span Forward and Corsi Spatial Span) and two Long-Term Memory tasks (LTM: Narrative Memory and Delayed Recall of Rey Figure). Patients were evaluated before and immediately after surgery and (for LGG) after four months and data analyzed by means of ANCOVAs and Voxel-based Lesion-Symptom Mapping (VLSM) technique.

Results : As expected, HGG patients were already impaired before surgery, while Meningioma patients were largely unimpaired. LGG were unimpaired before surgery, but showed significant performance drop immediately after, with good recovery within few months. VLSM analyses identified specific anatomical correlates for verbal memory tasks, while visuospatial tasks provided good sensitivity to cognitive damage but failed to show anatomical specificity. Anatomical hotspots identified were in line with both previous fMRI and clinical studies on other neurological populations.

Conclusion : Verbal memory tasks revealed a set of specific anatomical hotspots that might be considered "eloquent" for verbal memory functions, unlike visuospatial tasks, suggesting that commonly used spatial memory tasks might not be optimal to localize the damage, despite an otherwise good sensitivity to cognitive damage.

Keywords : AF; ANCOVA; Analysis of CoVariance; Arcuate Fasciculum; BA; Brain tumors; Brodmann Area; Glioma; HGG; High Grade Glioma

Count: 470
Abstract ID: 125
subject: Integrative system: Brain Immune System and Brain Tumors
Presentation Type: Oral

Exosomal microRNA profiling as non invasive biomarkers for diagnosis and patients survival in glioblastoma

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Background and Aim : Gliomas are the most common malignant primary intracranial tumors of the central nervous system. The recent article shows constantly increasing the incidence of glioblastoma multiforme (GBM) in all age groups. Despite progress in therapeutic strategies such as surgical techniques, radiotherapy, chemotherapy, and target therapy the prognostic factors for survival of patients with GBM remain poor. Therefore, the non-invasive biomarker with high sensitivity and specificity are required to improve diagnosis and new target therapy strategies for glioblastoma patients. Recently, some researchers have demonstrated that differential expression of exosomal microRNAs is as potential biomarkers for the diagnosis and prognosis of gliomas. The aim of the present study was to investigate a novel miRNA signature in the plasma of GBM patients as predictive biomarkers for diagnosis and measures of response to therapeutic interventions

Methods : plasma exosomal-microRNAs were isolated from glioblastoma and astrocytoma (grade II) patients (n=15)and trauma(n=15) as nonglioma control from March 2017 to June 2018 in the Department of Neurosurgery at Rasoul-e-Akram hospital. To investigate Putative targets, genes of the miRNAs and its regulatory network we used Miranda, TargetScan, and mirBase. In order to pathway analysis, the selected miRNAs were subjected DIANA-microT-CDS, KEGG database and microarray data analysis from GEO. In this work, the microRNA expression profiling was evaluated in plasma glioblastoma samples by microarray. Expression of five microRNAs from Microarray was validated using a locked nucleic acid real-time PCR. Moreover, a comparison of miRNA expressions was performed between astrocytoma grades and glioblastoma(grade II vs IV)

Results : Twenty microRNAs were differentially expressed in serum exosomes from glioblastoma patients relative to astrocytoma. The plasma levels of five microRNAs were significantly altered in GBM patients and could discriminate glioma from controls with high specificity and sensitivity. The plasma expression of miR-210 as an oncogenic mir was upregulated in astrocytoma and GBM groups and miR-185, miR-5194 and miR-449 were significantly downregulated in GBM patients compared to trauma controls. There was no significant downregulated in the expression of miR-185 and miR-449 between trauma and astrocytoma, the compared to GBM while the

expression of miR-5194 was significantly decreased in GBM patients compared with astrocytoma. Taken together, for the first time, these findings proved that mir-185 expression downregulated and mir-210 upregulated were associated with poor survival in GBM patients.

Conclusion : These results indicate that the levels of miR-210 and miR-5194 are a promising diagnostic and prognostic biomarker that positively correlated with histopathological grade and invasiveness of glioblastoma multiforme. These findings suggest that plasma exosomal miRNAs have potential use as novel biomarkers of glioma and may be useful in clinical management for glioma patients

Keywords : MicroRNAs; circulating biomarkers; Glioblastoma; exosomes

Count: 471
Abstract ID: 40
subject: Integrative system: Neural Circuits and Connectivity
Presentation Type: Poster

Frequency of sensory processing disorders in children's 5 to 11 years' old

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Background and Aim : Individuals need to be able to handle sensory processing for proper functioning in the environment and participate in daily life activities. The aim of this study was to investigate the frequency of sensory processing disorder in children aged 5-11 years.

Methods : This is a descriptive study. The target population be around all typical children aged 5 to 11 who studied in kindergartens and primary schools in Tehran. After considering the inclusion criteria, a sample of 2191 children was selected using randomized cluster sampling. The instrument used in this study was sensory profile that was completed by parents of the child. Descriptive statistics were used to analyze the data.

Results : In this study 2191 cases were evaluated in terms of sensory processing factors. Awarding to this study frequency of sensory processing disorder in boys is higher than for girls. Additionally, the most common disorder was observed in sensory sensitivity factor, and the lowest was fine movement and perception.

Conclusion : Different sensory processing function in these children may demonstrate their abnormal behaviors. These sensory processing dysfunction effects on child's daily life in areas such as play, academic skills and peer relationships, self-regulation activities Therefore, screening for children at an early age and efforts to prevent and treat this disorder are necessary.

Keywords : child, sensory processing, sensory processing disorders

Count: 472
Abstract ID: 156
subject: Integrative system: Other
Presentation Type: Oral

Gender Affects Sleep Architecture in Obstructive Sleep Apnea

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Background and Aim : Previous studies have reported that Obstructive sleep apnea (OSA) may affect sleep architecture; however, it remains to be elucidated whether sex affects sleep architecture in the different severities of OSA. We, therefore, aimed to assess duration of the different stages of sleep in the different severities of OSA in both genders.

Methods : In this study, the polysomnographic (PSG) data from 470 participants were analyzed. The participants were assigned into five groups based on their apnea-hypopnea index (AHI) and snoring as follows: (1) Control; (2) Primary snoring (PS); (3) mild OSA; (4) moderate OSA; and (5) severe OSA groups. The sleep architecture variables were then evaluated in different groups with regard to the main risk factors body mass index (BMI) and aging.

Results : The analyses revealed that, in correlation with the increasing apnea severity, the duration of the N1 stage of the NREM sleep (light sleep) and arousal index significantly increased; however, the variables included the minimum SpO2 and the duration of the SWS stage of the NREM sleep (deep sleep) significantly decreased than that of the Control and PS groups. Along with the increasing apnea severity, and as the age and BMI of the patients increase, significant increases in the N1 duration and significant decreases in the SWS duration were observed in men, but not in women. Additionally, the sleep architecture (the sleep stage durations) and other variables were not significantly different between the Control and PS groups.

Conclusion : The results indicate that as apnea severity enhances, an increase in aging and BMI can be associated with a poor quality sleep (with more light sleep and less deep sleep) in men, but not in women. Taken together, our findings demonstrate that, along with an increase in apnea severity, men may be at a higher risk for low quality sleep compared with women.

Keywords : Obstructive sleep apnea; Primary snoring; Sleep architecture; Polysomnography.

Count: 473
Abstract ID: 392
subject: Computational Neuroscience: Modeling and Simulation
Presentation Type: Oral

The Effects of Different Ionic Currents on Beta Oscillations in Parkinsonian Network Model of Basal Ganglia

Submission Author: Seyed Mojtaba Alavi

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Background and Aim : Parkinson's disease (PD) is associated with increased synchronized bursting activity and abnormal beta band oscillations (13-30 Hz) in the cortico-basal ganglia circuits. The source of the generation of the beta oscillations is under debate. The network effect and the intrinsic properties of the neurons, such as ionic currents in the network are the potential sources of the generation of the beta oscillations. In this study, we modified the computational network model of Hodgkin-Huxley type neurons of the basal ganglia (BG) which proposed by Terman et al. 2004. The modified model can generate neuronal behaviour in healthy and PD states as what has been observed in experimental studies. Here, we investigated intrinsic neuronal properties by removing different ionic currents to see the changes in PD signs in BG model.

Methods : Our modified network model consists of globus pallidus externa (GPe) and interna (GPi), subthalamic nucleus (STN), and Thalamus. Each neuronal population consists of 20 neurons. Parameter settings representing dynamics of sodium, voltage-dependent and independent (for afterhyperpolarization current; AHP) potassium, T and L type calcium channels were modified as compared to those of Terman et al. 2004. The synchrony and oscillation index, tremor-like thalamus activity in resting state, and fidelity of thalamus neurons across the input sensorimotor commands are the measures for evaluating the network model.

Results : We investigated neuronal activities of the network model by removing different ionic currents from the model equations, except the sodium and potassium currents, which are necessary for the generation of the action potential. Removing T and L type calcium and AHP currents quench the beta oscillations in the STN neurons. Also, T type calcium and AHP currents removal decrease synchrony of the STN neurons, while removing L type calcium

current moves the STN population to more synchronization. In addition, removing L type calcium current results in more tremor activity of the thalamus neurons. It means, there is a relationship between the STN synchrony and the thalamus tremor activity. However, removing other ionic currents vanish the thalamus tremor activity. Moreover, by removing AHP current, some pallidal neurons show long-lasting bursting activity which results in silencing the other pallidal neurons. This phenomenon causes increasing thalamus fidelity in the network model.

Conclusion : We found that all ionic currents (T and L type calcium current, and calcium-dependent potassium current; AHP) are involved in the generation of the pathological beta oscillations in the STN neurons. By removing each of these currents from the model equations, the beta oscillations were quenched. In addition, by removing the ionic currents except for the L type calcium, the synchrony index was decreased, which are accompanied by decreasing the tremor-like thalamus activity. Also, we found that only removing AHP and both of AHP and L type calcium currents recovered the thalamus fidelity. All in all, these results demonstrate how removing ionic currents affect the BG dynamics. Our results help us to find easier, inexpensive, and more effective treatment for PD. Currently, we are testing simulation results experimentally using calcium channel blockers on rats with PD.

Keywords : Basal Ganglia; Parkinson's disease; Subthalamic nucleus; Ionic currents

Count: 474
Abstract ID: 330
subject: Computational Neuroscience: Modeling and Simulation
Presentation Type: Oral

Effects of High-Voltage Transmission Towers on Stress and Attention of humans

Submission Author: Hamed Aliyari

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Background and Aim : Today, variable-frequency high-intensity electromagnetic fields are considered important factors in the humans' surroundings and have captured the attention of research centers due to their possible adverse effects on humans. The human brain is one of the most complicated systems in the universe, and the online analysis of this system is carried out through electroencephalography (EEG). Numerous studies have been carried out on stress and attention based on EEG data. In this study, a comparison was drawn between the brain waves of men living near high-voltage transmission towers and those of people living outside of these zones. The levels of stress and attention were also assessed based on the brain activity of the participants.

Methods : First a general questionnaire was completed by the volunteers and the predisposed samples were included in the research following the screening process. Two 10-member groups of 27-year-old adult men were selected for the research. In one of the groups, the participants were not exposed to high-voltage electric fields. In other words, their workplaces, homes, and activity zones were not in the vicinity of transmission towers or under them. The homes of the members of the second group were located beneath or near high-voltage transmission towers (at a maximum distance of 20 meters). Using a 14-channel Emotiv system the brain waves of each participant were recorded 5 times over two days in the eyes-open resting state while the participants were looking at a white screen (10 records of data were obtained per person). The saliva samples of each participant were also obtained to assess the basal cortisol hormone. Afterwards, the data were analyzed using MATLAB.

Results : The mean stress and attention indices were obtained based on the data on each person and the mean data of each group was compared to that of the other group. The mean cortisol level was also calculated for each person and a comparison was made between the data on each group. The investigation and comparison results proved that the mean attention indices of people exposed to high-voltage electric fields were lower than those of the ordinary people. On the other hand, the mean levels of basal stress and salivary cortisol hormone were higher in the people exposed to high-voltage electric fields than the ordinary people.

Conclusion : Given the variations of the mean indices of stress and attention in the EEGs and salivary samples of the participants it could be stated that exposure to high-voltage electric fields (at one's workplace or home) can increase basal stress and reduce attention. As a result, self-efficacy decreases over time.

Keywords : high-voltage transmission tower; stress; attention; EEG; Hippocampus; Cortex

Count: 475
Abstract ID: 540
subject: Computational Neuroscience: Modeling and Simulation
Presentation Type: Poster

Break Down EEG bands for Sensitivity Checking in Brain Computer Interface

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Background and Aim : A Brain-Computer Interface (BCI) is a pathway system between brain and computer devices that does not need any muscular activity. EEG signals behave as low to noise ratio also shows the dynamic behaviors, base of BCI are electrical activity of the brain, which are measured by Electroencephalogram (EEG), however base of EEG signals are evoked potential. Different bands of frequency are utilized in EEG signals, such as Alfa, beta, theta, gamma and delta. Some wavelets show the time or frequency features individually. In this study, feature extractions with discretion wavelet transform (DWT) and Artificial Neural Network (ANN) for classification are used. In this study, both time and frequency features are extracted at same time. Also DWT captures transient features, which are essential to understand the left hand, and right hand features are used in different channels. Thus, the EEG signals were decomposed into D5-D8, Which shows the gamma band, Beta band, Alfa band, and Theta band respectively.

Methods : The features were extracted by DWT and then were classified with ANN; the features were categorized to separate the right hand from the left features. In the case of ANN feed forward obtains by dot product of each neuron and their parameters, here three hidden layers are used. Neurons in ANN are able to perform highly parallel computations for data processing, ANN are special popularity classifies for train the nonlinear models. Database was recorded for BCI competition (Graz data set B), that including nine subjects, females in range of ages between 21 to 35, and males in the range of ages between 21 to 27. The sample frequency is 250 Hz. 3 EEG channels are used (C3, CZ, C4) respectively. The trail is done in five sessions; the first two sessions are data without feedback. Each subject participates in two sessions. The signals are pre-processed with high-pass filtering and linear regression.

Results : In the present work ANN is used in the classification. Therefore average sensitivity for the right hand classification using ANN, increase to 66.84%. The result illustrates that in without feed back sessions as amplitude

increase, the sensitivity increases to a significant amount. The result shows that by applying the ANN computational cost reduced to significant amount.

Conclusion : Since The EEG signals do not have useful information above 30Hz, the highest sensitivity occurs at Alfa (D7) band approaches to 73.5%. However in ANN the feature selection must be calculated, while evolutionary algorithms have an effective performance in selecting the features in ANN.

Keywords : EEG signal processing, Discretion wavelet transform, Brain Computer Interface

Count: 476
Abstract ID: 593
subject: Computational Neuroscience: Modeling and Simulation
Presentation Type: Poster

Modeling and Simulation of Near-Infrared Light Reflectance from Brain Tissue Using Perturbation Theory

Submission Author: Hadi Borjkhani

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Background and Aim : Functional infrared spectroscopy is a method for investigating brain activity in a non-invasive manner. In this imaging method, light source and light detector are embedded on the surface of the head consequently re-emission of light from human skin surface contains optical information from the depths of the human body when optical sources and light detectors are spaced apart.

Methods : To study the transmission and reflectance of the light between pairs of source and detector with respect to the configuration of the optodes (source and detectors) on the surface of the medium and also to find out the three-dimensional distribution of photon inside it, an appropriate model of photon transport need to be used. The models that have been developed for this task, are based on radiative transfer theory. The derivatives of the Radiative Transfer Equation (RTE) are stochastic or deterministic. There is no analytical answer to solve this equation. Therefore, simpler models of this equation are extracted. With some assumptions and simplification Diffusion Equation (DE) is extracted from RTE. DE is a practical model and there is an analytical solution for it. The DE solution should be applied to inhomogeneous media similar to brain tissue properties. The intensity of the photons that undergo many scattering events and being detected by the detector is called reflectance. Reflectance can be obtained by solution of DE is Slab geometry with $\mu_a=0.01[mm]^{-1}$ and $\mu_s=1[mm]^{-1}$ and S=40mm and refractive index $n_r=1.4$.

Results : The reflectance of each channel has been measured for a single inclusion inside media. Unitary perturbation is considered for presented results. The perturbed reflectance due to inclusion inside medium can be obtained by: $R^{pert}(\rho)=R^0(\rho)+\delta R^a(\rho)+\delta R^D(\rho)$ (1) Where, $R^0(\rho)$ is the reflectance inhomogeneous media, $\delta R^a(\rho)$ and $\delta R^D(\rho)$ are absorption and scattering effect of the inhomogeneity sphere, respectively. The inclusion has been moved in the location under the source and detector surface to measure the relative perturbation $(\delta R^a)/R^a$ (Contrast) versus xz-plane in the specified y-axis.

Conclusion : Analytical solution of the perturbative Diffusion Equation in a Slab media similar to human head makes it possible to study light propagation due to absorption and scattering of brain tissue. Adequate modeling of light propagation in a human head is important for quantitative near-infrared spectroscopy and optical imaging. Using the theory of perturbation, the exact form of the propagation of light is obtained.

Keywords : Light Propagation;fNIRS;Slab Geometry;Reflectance;Contrast

Count: 477
Abstract ID: 591
subject: Computational Neuroscience: Modeling and Simulation
Presentation Type: Oral

Comprehensive Approach for Synthetic fNIRS Data Generation

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Background and Aim : Functional Near-Infrared Spectroscopy (fNIRS) is a non-invasive optical technique that displays brain activity. Near-Infrared light can easily penetrate to human skin and skull and reach cerebral cortex. Attenuation of the reflected light inside the brain monitors brain activity. Two dominant chromophores contribute to light absorption in near-infrared wavelength are Oxy- and Deoxy-hemoglobin (O_2 Hb and HHb). With respect to the hardware implementation of the fNIRS technique, there are three different methods (continuous wave, frequency domain, or time domain) to detect fNIRS signals. The procedure of the preprocessing, reconstruction and feature extraction of the fNIRS data are still challenging and the subject of interest. Functional studies are generally accomplished by repeating a specific task during several timing windows. The expected hemodynamic response is identified where the O_2 Hb concentration increases and at the same time the HHb decreases. It is not easy to detect functional activity due to hemodynamic variation in superficial layers, movement artifacts, physiological and Instrumentation noise. In order to discriminate the hemodynamic activation, statistical methods need to apply for raw fNIRS data. So the simulation of this data would be helpful for comparison between different statistical method and validation of them in the processing of fNIRS signals.

Methods : Synthetic fNIRS data is generated with respect to the duration of task and rest. Synthetic hemodynamic response function (HRF) and the event or task duration has been chosen to be different to produce more realistic data. Convolution of the boxcar function with HRF, plus physiological noise and noise of the data acquisition system, represents the desired data. Boxcar function s(t) is the pulse width modulated signal. The HRF(t) was modeled as a linear combination of two different gamma variant time-dependent function.

Results : The HRF profile with a peak amplitude of almost 1555 nM was chosen for O2Hb while the HHb profile is the same as HRF for O2Hb but with an inverted amplitude by 33% attenuation and regulated latency.

Conclusion : This abstract represents a comprehensive approach for simulation of brain hemodynamic response. Synthetic fNIRS dataset can mimic real multichannel fNIRS measurement, consequently different statistical analysis

can be applied to the synthetic fNIRS dataset and it can be used to compare the performance of different processing methods.

Keywords : fNIRS;Synthetic Data;Oxy- and Deoxy- Hemoglobin

Count: 478
Abstract ID: 161
subject: Computational Neuroscience: Modeling and Simulation
Presentation Type: Oral

Accuracy of estimating time to contact in transversal motion and head-on motion

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Background and Aim : In everyday life, there are many situations that require us to either avoid or intercept a moving object, even when they are not continuously in view. These objects may be on the collision path to the observers (head-on motion) or just pass laterally, from one side to the other, in front of them (lateral motion). Examples of head-on motion include hitting or catching a ball or driving in a street alongside other vehicles, while confronting vehicles when crossing a street is an example of transversal motion. Estimation of time to contact (TTC), which is the time it takes for an object to reach an observer or a particular place, is critical in these situations.

Methods : We aimed to study the TTC estimation in transversal motion and head-on motion in a 3D environment, similar to the real world. We asked participants to estimate TTC of a target car hitting an end line after it disappeared from sight.

Results : Some studies have shown that TTC estimates for each target car speed tends to be biased toward the mean TTC across all target car speeds. We did not observe such pattern in our experiments, maybe because we did not provide participants with the feedback on estimation accuracy. Such feedback can result in forming priors for the subjects centered around the mean TTC which would bias estimates toward the mean in each trial. Furthermore, there are other studies that reported overall underestimation of TTCs similar to our results [25, 36]. In summary, we provided a mathematical explanation based on biological evidences about why the accuracy of TTC estimation for transversal motion is better than for the head-on motion. Future studies should address the influence of the distance between the observation point and the contact point on TTC estimation accuracy. Furthermore, the neural basis for tracking objects in both transversal motion and the head-on motion and the brain areas involved in them needs to be studied.

Conclusion : Our results showed that accuracy of TTC estimation for transversal motion was significantly better than for the head-on motion (Figure 4(e)). We proposed a mathematical explanation based on biological evidences for these results. We showed that if an object has a constant speed in the head-on motion, its movement is perceived as accelerated. Previous studies have shown that human observers are not able to estimate the value of acceleration in ordinary situations, and use only the information about time, position, and speed of an object to estimate TTC

[29, 30]. This fact together with the fact that human observers perceive constant-speed head-on motions as accelerated, but constant-speed transversal motions without acceleration led us to understand why the accuracy of TTC estimation in the transversal motion is better than in the head-on motion.

Keywords : head_on motion, transversal motion, time to collision, parallax theorem

Count: 479
Abstract ID: 134
subject: Computational Neuroscience: Modeling and Simulation
Presentation Type: Oral

Brain activity reconstruction by finding a source parameter in an inverse problem

Submission Author: Amir Hosein Hadian Rasanan

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Background and Aim : An inverse problem is a general framework that is used to convert observed measurements into information about a physical object or system. Inverse problems arise in many branches of neuroscience and cognitive science, including study of natural language processing, machine learning, medical imaging (such as computed axial tomography and EEG/ERP). Source determination in an inverse problem from the over-specified data plays a crucial role in several physical phenomena. This technique has been widely used to determine the unknown properties of a region by measuring data only on its boundary or a specified location in the domain. These unknown properties, such as the neuronal activity sources corresponding to a set of measured data (electric potential or magnetic fields), are important to obtain information on the brain activity, but they usually cannot be measured directly, or the process of their measurement is very expensive. In this work we study the following nonlinear inverse problem of simultaneously finding unknown function w(x, t) and unknown coefficient p(t) from the following parabolic equation: w_t = \Detal w(x, t) + p(t) w(x, t) + \Phi (x, t) , t \in [0, T] , x \in R

Methods : In this work an accurate and efficient method is proposed for solving the nonlinear parabolic inverse problem concerning diffusion equation with source control parameter. The proposed method is based on applying the backward Euler finite difference scheme for time discretization and shifted-Chebyshev collocation method for spatial approximation. As result of applying aforementioned method on the problem a system of linear algebraic equations is obtained which is solved using LU decomposition.

Results : Numerical results of applying proposed method on the problem showing that the proposed method is extremely accurate and fast while the maximum of absolute error is about 10-e9 for p(t) and 10-e12 for w(x, t) and 10-e2 for 5% noisy data for w(x, t).

Conclusion : Computational experiments confirmed that the proposed numerical method can approximate control parameter with high accuracy which is crucial in brain activity reconstruction.

Keywords : Collocation method;Inverse problem;Control parameter;Brain activity reconstruction;

Count: 480
Abstract ID: 135
subject: Computational Neuroscience: Modeling and Simulation
Presentation Type: Poster

A computational frame work for simulating Fitzhugh-Nagumo equation with time-dependent coefficients: Application to epileptic seizures

Submission Author: Amir Hosein Hadian Rasanan

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Background and Aim : Studying neurons and its mathematical modeling started in 50s by Hodgkin and Huxley which was the study about the nerve axon of a squid. Generally, axon is a long, slender projection of a nerve cell that typically transmits electrical signals. Electrical pulses are caused by maintaining the electrical balancing by ions inside the cell, particularly potassium, sodium and chlorine. One of the most widely studied neuronal systems with excitable behavior is neural communication by nerve cells via electrical signaling. In recent years, neural communication and computational neural science have become a considerable and substantial subject which many physicists and mathematicians have paid much attention to the Fitzhugh-Nagumo equation (FHN). In this work, we consider u_t + a(t)u_{x}-b(t)u_{xx}-c(t)u(1-u)(r-u) = 0, which is the general form of standard FHN which has various applications in neurophysiology.

Methods : In this work, a computational frame work based on shifted-Legendre polynomials collocation method and quasi-linearization algorithm is proposed to simulate FHN equation with time-dependent coefficients. This method converts nonlinear dynamical system into sequence of linear partial differential equation (PDE) and then by using collocation method a linear system of algebraic equation is obtained for each PDE which is solved to obtain approximated solution.

Results : Implementing the proposed method on the time-dependent coefficients version of FHN gives us good accuracy, which is about 10-e4 for absolute error.

Conclusion : In this study we proposed a computational frame work for simulating Fitzhugh-Nagumo equation with time-dependent coefficients which can evaluate it without time discretization and has acceptable accuracy.

Keywords : Fitzhugh–Nagumo equation;Time-varying coefficient;Collocation method;QLM;

Count: 481
Abstract ID: 138
subject: Computational Neuroscience: Modeling and Simulation
Presentation Type: Oral

Synchronization and desynchronization of coupled Fitzhugh-Nagumo systems: Application to epileptic seizures

Submission Author: Mohammad Hemami

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Background and Aim : The interaction between synchronization and desynchronization of neural brain activity is an important figure in the understanding of functional disorders such as epileptic seizures. In this work, we select and analysis the dynamic of Fitzhugh-Nagumo system to study synchronization and desynchronization in complex networks. In the meantime, the model proposed by Fitzhugh (called Fitzhugh-Nagumo model) is very popular in comparison other models (HH, HMR, …) due to its simplicity. In the FHN model, the potential diffusion in the neuron depends only on the flow of sodium and potassium on the transmembrane surface. With these assumptions, the model can be simulated by an electronic circuit, and by analyzing that generalized FHN equation is obtained. Generalized FHN equation is considered to be the reaction-diffusion equation, which is expressed as a system of PDE as follows: $du/dt=D\ \nabla^2 u+1/\epsilon\ f(x,u)$ and $dv/dt=g(x,v)$ where u, v, D,ϵ, f and g are membrane potential, recovery variable, diffusion coefficient, velocity coefficient, reaction function and recovery function, respectively.

Methods : In this research, the combination of a meshfree Radial basis function method and an operator splitting method for simulating potential diffusion at the surface of the transmembrane in neuron based on the FHN equation has been implemented. Using the operator splitting method, the system of partial differential equation is converted to a system of ordinary differential equations and then converted to a system of algebraic equations by meshfree Radial basis function method.

Results : The simulation for one-dimensional and two-dimensional FHN model has been implemented using the aforementioned method, and the results are acceptable at CPU-time and reasonable accuracy.

Conclusion : The results of this study shows that the suggested method can be a very significant and powerful, alternative to the classical and the prevalent methods that are now used in computational cognitive neuroscience.

Keywords : FHN equation; RBF method; OS method; Epilepsy

Count: 482
Abstract ID: 253
subject: Computational Neuroscience: Modeling and Simulation
Presentation Type: Oral

Effect of Brain Tissue Segmentation Errors on EEG Forward Solutions

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Background and Aim : The goal of EEG source localization is to non-invasively localize active sources within the brain by first solving the so-called forward problem, in which the electric potentials produced by the active sources are computed at measurement sites on the scalp. For accurate EEG forward modeling, one requires a realistic head model reconstructed through modelling of the brain's volume conduction and geometry. The realistic head model is created using the magnetic resonance (MR) images of the head. For this purpose, the brain and non-brain tissues consisting of gray matter (GM), white matter (WM), cerebrospinal fluid (CSF), skull and scalp are segmented from the 3D MR images. Due to the complexity of the human brain and the limits of the imaging systems, errors such as back-to-back connections, which are known as topological defects in the segmented brain, are inevitable. The purpose of this study is to investigate the effect of the topological brain segmentation defects on EEG forward solutions.

Methods : We created three head models including a reference and two test models by first segmenting five brain tissues consisting of skull, scalp, GM, WM and CSF from the head MR images of a healthy adult. The reference head model was created by correcting the topological brain segmentation defects including back-to-back connections using Freesurfer software. The first test head model was created by applying the topology correction on only one hemisphere of the segmented brain. The second test head model was created without any corrections on the segmented brain. In each head model, a conductivity was assigned to each brain tissue based on the reference values reported in the literature. The forward problem was then solved by the Finite Element method, in which several hypothetical dipolar sources were placed everywhere in the cortex in the same positions in the three head models. The forward solutions were then compared using the relative difference measure (RDM).

Results : Our results clearly demonstrated that the topological brain segmentation defects can affect the accuracy of the EEG forward solutions, which can accordingly affect the accuracy of the EEG inverse solutions.

Conclusion : In this paper the effect of topological brain segmentation errors on the EEG forward modeling was studied. The results showed that in order to create an accurate realistic head model required for accurate EEG forward modeling, the topology correction should be performed to remove the segmentation errors.

Keywords : EEG signals, Source localization, 3D Head model, Segmentation, Topology correction, Finite element method

Count: 483
Abstract ID: 154
subject: Computational Neuroscience: Modeling and Simulation
Presentation Type: Oral

In Silico Evaluation of the Interaction of Gabapentin with Monoamine Oxidase B by Docking Method

Submission Author: Fatemeh Khojasteh

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Background and Aim : Nowadays, several drugs are applied in treatment of Parkinson's disease. Safinamide, an anti-Parkinson drug, acts as a reversible highly selective inhibitor of MAO-B (monoamine oxidase B). Gabapentin, an antiepileptic agent, acts through increasing Gamma-AminoButyric Acid (GABA) synthesis and release; also, gabapentin has antagonistic effect on N-Methyl-D-aspartic acid (NMDA) receptor of glutamate. In this study we proposed to evaluate the effect of gabapentin on MAO-B by docking method, in silico. This could be the first step to estimate the inhibitory effect of gabapentin on MAO-B.

Methods : Protein structure of human MAO-B was selected from Protein Data Bank with PDB Id: 3PO7. The molecular structures of safinamide (CID_131682) and gabapentin (CID_ 3446) were obtained from PubChem. The chain B from dimeric structure of MAO-B was selected as the target for docking process. Protein editing and production of PDB files were performed by Chimera 1.8., MGLTools 1.5.6 and AutoDockTools-1.5.6.; besides, AutoDock4 were used for docking process.

Results : The results revealed that the best down binding energies (?G) resulted from in silico interaction of safinamide and gabapentin with MAO-B (chain B) were -10.95 kcal/mol and -6.84 kcal/mol, respectively. Moreover, inhibition constant (Ki) of safinamide and gabapentin were 9.39 nM and 9.61 µM, separately.

Conclusion : The best down binding energies (ΔG) resulted from in silico interaction of safinamide with MAO-B (chain B) was lower than gabapentin. Furthermore, the resulted Ki of safinamide was lower than gabapentin. Therefore, it seems that binding affinity of safinamide with MAO-B (chain B) is higher than gabapentin. The results suggest that gabapentin cannot act as an inhibitor of MAO-B. Noticeably, animal model studies are required to support these in silico results.

Keywords : Safinamide; Gabapentin; Docking; Monoamine Oxidase B

Count: 484
Abstract ID: 655
subject: Computational Neuroscience: Modeling and Simulation
Presentation Type: Poster

Map-based modeling of dynamic brain network systems for explaining the creativity: The default mode, salience and central executive networks in interactive connection

Submission Author: Nima Mafakheri Fariman

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Background and Aim : The neuroscience studies suggest that the default mode network, executive network and salience network intricate in divergent thinking tasks. Default mode network activity relates with self-generated, ongoing, and spontaneous thought, including mental simulation, mind-wandering, social cognition, autobiographical retrieval and episodic future thinking. The executive control network activity is associated with cognitive processes that involve outwardly directed attention including working memory, relational integration, and task-set switching. Salience network functions to segregate the most relevant among internal and extra-personal stimuli in order to guide behavior.

Methods : We select an experimental and visual method with computational approach in chaos theory that can illustrate qualitative characteristics by means of iterative equations. The general pattern indicated by this method can show the creative process.

Results : Creativity as a causal and fundamental process arise from collective dynamic activity of neural networks across large-scale systems of the brain. Creative thinking is a goal-directed, complex and evolutionary process that contrary to analytical deterministic problem solving, finds the uncertain and nonrandom events, which all can happen in dynamics and psychodynamics possibly. In the recent two decades, neuroscientists have begun to understand the creativity process, and findings suggest that creativity arises from the antagonistic relationship and bipolar feedback between default mode network and executive network that both can be switched by salience network. Although the neuroscientific trials have discovered the biologic basis of creativity, the mathematical approach to describe the creative process is yet on the first steps. To illustrate the creativity a mathematical phenomenological model is

suggestible using unpredictable characteristics in chaotic interconnectedness. Our map-based model relies on iterative equations and is capable to show the special brain activity terms (flux, action, opposition, structure) that can be interpreted intuitively in terms of actual biological aspect of realistic process.

Conclusion : In brief, this approach would expand the perspective of our understanding about brain activity during creative processes by development of time series analyses that reveal coexistence of opposites, emergence of bifurcations, diversity and complexity. We would be able to apply some empirical studies of self-reference, self-directed and impulsive processes including multiple levels of biological organization with this model.

Keywords : Dynamic brain network, System, Map-baesd modeling, Creativity, Process, bipolar feedback

Count: 485
Abstract ID: 192
subject: Computational Neuroscience: Modeling and Simulation
Presentation Type: Poster

A New Approach to Modeling Parkinson's Disease with Sine-Circle Map

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Background and Aim : Parkinson's disease (PD) is a chronic and progressive movement disorder which is known with symptoms such as tremor, rigidity, etc. Recently it has been shown an increased interest in modeling to more cost-effectiveness PD recognition and medication. Sarbaz et al. extracted some features from the gait data of normal and parkinsonian subjects. They used Sine Circle Map (SCM) as the black box model according to the basal ganglia. In this model, Parkinsonian and healthy subjects were distinguished by a meaningful parameter distributed in the significant intervals. This model is unable to investigate the relation between brain and muscles. The proposed study based on SCM will attempt to consider this relation.

Methods : In the healthy state, there is a fine interaction between brain and muscles. As long as the brain sends a command to the muscles through the spinal cord, the muscles react, and feedback is sent to it by proprioception and the vestibular system. Thus, a loop can be considered between muscles and brain that the feedback plays a vital role in it. Some treatments such as Physiotherapy and Occupational Therapy in PD, attempt to feedback correction which affects, on the brain. So, in this study, we point to the proprioceptive feedback damage as the other reasons of PD occurrence. Accordingly, PD modeling needs at least two parameters which regard interaction between brain and muscles. SCM is a non-linear iterated map which produces different behaviors. The SCM equation is of the form, $x(n+1) = x(n) + \Omega - k/2\pi \sin(2\pi x(n)) \bmod [1]$ Arnold tongue is a 2D bifurcation diagram with the variation of K and Ω that exhibits all behaviors of SCM outputs. Arnold tongue diagram brings to mind interactions between k and Ω. In a PD situation, some muscles have shown erratic oscillatory movements. Therefore, this state is considered by a non-periodic output of the model. Moreover, the healthy state is also considered by a lock frequency or periodic behavior which muscles' oscillation amplitude alleviates over time with the brain anticipation.

Results : Concerning the tremor data of www.physionet.org (Beuter et al.), we have computed fractal dimension and Lyapunov exponent. Results confirm the idea and show chaotic behavior in the tremor of the parkinsonian patients. Furthermore, Sarbaz et al. achieved three intervals of Ω that separated parkinsonian and healthy subjects. The implementation of this result indicates that this new approach is reasonable by consideration particular values

for K, which means that results demonstrate intervals of Ω for parkinsonian and healthy subjects in the correct regions, in the non-periodic and lock frequency or periodic respectively.

Conclusion : From the above facts, we can conclude that in this study the behavioral approach to modeling is used for Parkinson's disease. In this connection, by processing the data of tremor-recording in parkinsonians and determining its coordination on the Arnold tongue diagram based on K and Ω, the state of disease is indicated. Therefore, influencing treatment regard to model parameters is investigated thus it could be like a guideline.

Keywords : Parkinson's disease; Modeling; Sine Circle Map

Count: 486
Abstract ID: 141
subject: Computational Neuroscience: Modeling and Simulation
Presentation Type: Poster

An efficient numerical algorithm for simulating of coupled Fitzhugh-Nagumo systems: Application to epileptic seizures

Submission Author: Mohammad Mahdi Moayeri

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Background and Aim : An important aspect for explaining of mental disorders especially epileptic seizures is the interaction between synchronization/desynchronization of brain neural activity in Fitzhugh-Nagumo systems. The Fitzhugh-Nagumo (FHN) model is a famous model investigated the propagation of the potential in a neuron. This model is derived from the pioneering and fundamental Hodgkin-Huxley model, the set of four ordinary differential equations to describe the change in the potential across the membrane of a nerve cell in the giant axon of the squid. In fact, electrical signals is derived from the effects of the permeating of the various chemical ions, such as potassium ions and sodium ions, the lipid bilayer and pump. By using the Cable theory, Kirchhoff's laws, the following system is obtained from the FHN model: $du/dt=D\ \nabla^2 u+1/\epsilon\ f(x,u)$ and $dv/dt=g(x,v)$, where u, v, f and g are membrane potential, recovery variable, reaction function and recovery function, respectively. In addition, D and ϵ are diffusion and velocity coefficients.

Methods : Since the FHN model is complex, it is needed an effective numerical algorithm to simulate the FHN model. In this study, a numerical method based on operator splitting combined with shifted-Chebyshev collocation and finite difference methods is proposed to simulate the aforementioned model in two and three dimensions. By the proposed method, the FHN model is converted to a system of linear algebraic equations; then, the solution of the model is approximating by solving this system of linear algebraic equations.

Results : The solution of the one and two dimensional time dependent FHN models are approximated by the proposed method. Then, we discuss about the speed of the pulse and its convergence in one dimension model and the trajectory of the tips in two dimensional one.

Conclusion : The results indicate that the proposed approach can be an effective and useful method to simulate complex models in computational cognitive neuroscience.

Keywords : Fitzhugh-Nagumo model; Collocation method; Operator splitting; Epilepsy

Count: 487
Abstract ID: 112
subject: Computational Neuroscience: Modeling and Simulation
Presentation Type: Poster

Interaction of Rasagiline and Carbidopa with Aromatic L-amino Acid Decarboxylase: In Silico Evaluation

Submission Author: Shabnam Nadjafi

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Background and Aim : Dopamine is the main neurotransmitter, involving in Parkinson's disease. Rasagiline, an anti-Parkinson drug, acts via selective irreversible inhibition of MAO-B (monoamine oxidase B) enzyme to block dopamine breaking down. Also, carbidopa is used to inhibit undesirable side effects of levodopa in treatment of Parkinson's disease. Carbidopa produces the effect by entering tissues except central nervous system and inhibiting of dopa decarboxylase enzyme. According to usage of these two drugs in controlling Parkinson's disease, we intended to evaluate the effect of rasagiline on aromatic L-amino acid decarboxylase by docking method. This in silico study may be the preliminary step about evaluation the inhibitory effect of rasagiline on dopa decarboxylase.

Methods : Protein structure of human aromatic L-amino acid decarboxylase was selected from Protein Data Bank with PDB Id: 3RCH. The molecular structures of rasagiline (CID_3052776) and carbidopa (CID_34359) were obtained from PubChem. As aromatic L-amino acid decarboxylase structure consists of two chains, the chain B was chosen as the target for docking procedure. Chimera 1.8 was used for protein editing and forming the PDB files. The input files were presented by MGLTools-1.5.6 and AutoDockTools-1.5.6. Docking procedure was conducted by AutoDock4.

Results : Docking results revealed that the best down binding energies (?G) resulted from interaction of carbidopa and rasagiline with aromatic L-amino acid decarboxylase (chain B) were -8.36 kcal/mol and -8.1 kcal/mol, respectively. Moreover, inhibition constant (Ki) of carbidopa and rasagiline were 742.81 nM and 1.15 µM, respectively.

Conclusion : The best down binding energies (ΔG) resulted from interaction of carbidopa with aromatic L-amino acid decarboxylase (chain B) was lower than rasagiline. Also, the resulted Ki of carbidopa was lower than rasagiline. Therefore, it suggests that binding affinity of carbidopa with aromatic L-amino acid decarboxylase (chain B) is higher than rasagiline. Thus, it seems rasagiline cannot produce inhibitory effect on aromatic L-amino acid decarboxylase and the effect of rasagiline in treatment of Parkinson's disease looks to be limited on inhibition of MAO-B. Certainly, experimental in vivo studies are necessary to confirm these in silico results.

Keywords : Carbidopa; Rasagiline; Docking; Dopa decarboxylase

Count: 488
Abstract ID: 150
subject: Computational Neuroscience: Modeling and Simulation
Presentation Type: Poster

Modulation of high frequency by low-frequency Oscillations in the basal ganglia and movement disorders.

Submission Author: Davoud Nouri

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Background and Aim : Modulated high-frequency oscillations by low-frequency oscillations in the brain continue to provide important clues about healthy and pathological neuronal activities. More specifically, modulation of beta frequency oscillations (i.e. 15-30 Hz) by delta frequency oscillations (1-3 Hz) is an indication of healthy basal ganglia. It has been shown that beta power of the Local Field Potential (LFP) data recorded from GPe in the basal ganglia is positively correlated with delta power in the healthy state. However, such positive correlation does not exist in Parkinson's disease (PD) state. This is accompanied by reduction in information processing capability of the basal ganglia. The underlying mechanism of such positive correlation between delta-beta band neuronal activities in the healthy basal ganglia and how it is affected in the pathological state are still unknown. Here we show how delta band oscillations of the STN and GPe can modulate beta oscillations in a subthalamo-pallidal network model. Using our simulation results we also show that pathological PD-like beta oscillations in the network model lead to delta-beta decorrelation in the network model, similar to the experimental LFP data.

Methods : The network model we use comprises 2000 inhibitory (i.e. GPe) and 1000 excitatory (i.e. STN) neurons. Neurons were implemented as Leaky-Integrateand-Fire (LIF) neuron type. STN neurons excite GPe neurons while receiving inhibitory input from GPe. STN neurons receive excitatory synaptic inputs from other STN neurons. GPe neurons receive inhibitory synaptic inputs from other GPe neurons. Excitatory uncorrelated spike trains are used as external input to provide baseline activity of each population in the network model. Uncorrelated Poisson spike trains (representing indirect pathway striatal activity) were used to inhibit GPe neurons. We used inhomogeneous Poisson spike trains with firing rate pattern of a sinusoidal signal of 3 Hz as delta band stimulation of the network model. Spectrograms were computed by convolving the STN (or GPe) population firing rate in the network model with a standard Morlet wavelet.

Results : Results show that excitation of the STN and inhibition of the GPe in delta frequency band can lead to the beta oscillations in the network model. The network beta oscillations emerged at the certain phase of the delta stimulation pattern (e.g. mainly around the peak). Using our simulation results, we show that as beta power increases (i.e. during the progress of PD) the delta power decreases, consequently. In other words, strengthening the striatal inhibitory input to GPe in the network model leads to increase in pathological beta power and subsequently decrease

in delta power. Therefore, in PD state of the network model the delta-beta relationship does not exist anymore, similar to the experimental results.

Conclusion : Using our simulation results, we conclude that delta-band excitation of STN (presumably through cortical drive) and inhibition of GPe (presumably through striatal drive) leads to the same relationship between delta and beta band oscillations in the network model as the experimental LFP results. Moreover, similar to the experimental results, we observed in our simulation results that the delta-beta relationship disappears in PD state of the network model.

Keywords : Basal ganglia; cross-frequency coupling; nested oscillations; cortico-basal ganglia network; Parkinson's disease

Count: 489
Abstract ID: 634
subject: Computational Neuroscience: Network Models
Presentation Type: Poster

Multi-scale Brain Structural Connectivity Analysis Using Diffusion Tensor Imaging Data

Submission Author: Maedeh Sadat Khalilian

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Background and Aim : Understanding the structural basis of the brain is crucial to explore functional interactions between brain networks. The first step to investigate the brain structural organization is to reconstruct the structural connectivity matrix through parcellation. Then, the brain structural topology can be characterized by graph metrics. Recent researches have shown that increasing the number of parcels yields more information about the brain structure. However, it can make the brain networks complicated for structural connectivity analysis. In this study, we assessed the effect of the spatial scale on network metrics using DTI data.

Methods : We analyzed DTI data from ten healthy subjects from Human Connectome project database (age between 20 to 59 years). The data was preprocessed for eddy current correction and deterministic fiber tracking using DSI-studio software. We then used FreeSurfer to create an initial atlas-based parcellation including 68 structurally defined parcels. Then, we increased the number of parcels at five scales (100, 200, 400, 800 and 1000 approximate equal-sized parcels). Next, to create the structural connectivity matrices we estimated the edge weights by counting the number of fibers between cortical regions in the brain. Finally, global network topological properties were evaluated and compared at different spatial scales.

Results : By increasing number of parcels, the parameters like pat length was increased while global network efficiency was decreased.

Conclusion : Our results demonstrated that the number of parcels can have a significant effect on the brain structural organization.

Keywords : Parcellation; Brain network; Spatial scale; DTI; Tractography

Count: 490
Abstract ID: 44
subject: Computational Neuroscience: Computational Tools
Presentation Type: Poster

Complex functional brain network analysis of methamphetamine users in relation to the risk taking before and after the transcranial direct-current stimulation (tDCS): a QEEG and Graph theory study

Submission Author: Mostafa Gilani

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Background and Aim : Recent neurobiological and neuropsychological studies have shown that risk-taking behaviors and addictions share many structural and functional aspects. Moreover, brain stimulation studies using bilateral transcranial magnetic stimulation or transcranial direct current stimulation (tDCS) have obtained various results showing the causal relationship between brain regions and decision making. In this study, we used transcranial direct-current stimulation over the dorsolateral prefrontal cortex (DLPFC) of two samples of subjects (3 dependent METH users (according to the DSM-IV criteria) and 3 control subjects) to investigate the effects of the left and right cortical stimulation on risky decision making task, the balloon analog risk task (BART).

Methods : All subjects randomly received a left anodal/right cathodal stimulation (LAnC), a right anodal/left cathodal stimulation (RAnC), and a sham (placebo) stimulation, each run a few minutes apart. An EEG (5 minutes with closed eyes) was recorded before and after TDCS. Participants were asked to perform the BART immediately before and after each stimulation. For the EEGs, two graph parameters, the clustering coefficient and general efficiency for frequency bands of Delta, Theta, Alpha1, Alpha2, Beta1, Beta2, and Beta3 were computed. For the EEGs, two graph parameters, the clustering coefficient and the general efficiency for frequency bands of Delta, Theta, Alpha1, Alpha2, Beta1, Beta2, and Beta 3 were computed.

Results : Our results reveal that the activation of the DLPFC (left and right) results in a reduction of risky behaviors at the BART task both in control subjects and METH dependent users. METH users increased safe behavior after right DLPFC anodal stimulation, while risk-taking behavior increased after left DLPFC anodal stimulation. Control subjects' performance was only affected by the anodal stimulation of the right DLPFC, resulting in an increase of safe bets. The result does not show any significant difference between the clustering coefficient and the general efficiency before and after TDCS

Conclusion : These results support the hypothesis that excessive risk propensity in dependent METH users might be due to a hypoactivation of the right DLPFC and an unbalance interhemispheric interaction. In conclusion, since risky decision-making seems to be, at least in part, responsible for maintenance and relapse of addiction, we argue that a neuromodulation-based approach could represent a valuable adjunct in the clinical treatment of addiction.

Keywords : Methamphetamine, Graph Theory, Complex Functional Brain Network

Count: 491
Abstract ID: 337
subject: Computational Neuroscience: Computational Tools
Presentation Type: Oral

Routing information flow by using distinct neural synchrony frequencies: 'functional labeled line' in higher primate cortex

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Background and Aim : Visually-guided behavior requires to several neural circuits\cortical mechanisms to transfer the sensory input into motor associated areas. The neuronal coordination have an important role in optimally performing visuo-motor behavior. But the exact neural mechanism underlying these interactions is unclear.

Methods : We partitioned trials into fast and slow subsets according to animal's reaction time (RT) in change detection task. Then, spike phase coupling (SPC) was calculate for each subset in order to to measure the degree of single neuron spikes were coupled to the LFP phase.

Results : Here, we found that MT neuron's action potentials are highly synchronized to the phase of high-gamma (180-220 Hz) LFPs in monkey's dorsal visual pathway when animal's response was faster. This phenomenon which was irrespective of the spectral leakage of spike waveforms into the LFP, observed only among neurons with their receptive fields covered by the target visual stimulus. This observation suggests that the high-gamma synchronization locally route information to upper cortical areas. Further the absence of high-gamma synchrony in slow behavioral response trials reflects a functional role of high-gamma oscillatory activities in synchronizing neuronal inputs in area MT. Given that the spike-phase synchrony plays a similar role in areas of ventral visual pathway but in different frequency range (40-70 Hz), we hypothesize that two visual pathways (dorsal vs. ventral) use different frequency bands for transmitting information into higher level areas, enabling them to distinguish the information sources. Our modeling shows that neurons in upper level areas may take advantage "functional labeled lines" to disambiguate the source of information comes from downstream areas.

Conclusion : our study suggests that neurons in upper level areas may take advantage “functional labeled lines” to disambiguate the source of information comes from downstream areas

Keywords : MT area, spike phase synchrony, macaque

Count: 492
Abstract ID: 415
subject: Computational Neuroscience: Other
Presentation Type: Poster

Effects of immobilization stress on sleep stages and spindle characteristics

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Background and Aim : Sleep spindles oscillations measurement increasingly consider as a technique for quantifying EEG and analyzing the micro architecture of sleep, on the other hand sleep and stress are interacted with each other through multiple ways. In present study we investigated the effects of multiple stresses consist of immobilization in a narrow, stony place on sleep structure

Methods : The male Wistar rats (n=14) were subjected to 2hours of immobilization per day in narrow, uneven and stony place for 3 consecutive days. The electroencephalogram (EEG) were recorded with three stainless steel screw electrodes placed over the skull and the electromyogram (EMG) were recorded from dorsal neck muscles by two Teflon coated wire (stainless steel) electrodes. The sleep stages were recorded during 2 hours before and 2 hours after stress .The sleep spindles density and the unique temporal frequency components of spindle events were exploited before and after stress through calculating power of sigma band (10-20 Hz) frequency. The procedure was developed as a MATLAB script

Results : Analysis of sleep spindles density and structures reviled significantly increase in power frequency of 12-20 Hz. but spindles density did not changed. However the mean frequency of spindles reduced after stress.

Conclusion : the special immobilization stress could change sleep spindle architecture.

Keywords : Sleep, REM, NREM, Stress, Immobilization, sleep spindles

Count: 493
Abstract ID: 51
subject: Neurorehabilitation and Regeneration: Psycho-cognitive Rehabilitation
Presentation Type: Poster

The effectiveness of computer-based cognitive rehabilitation on improving the attention of the Elderly

Submission Author: Akram Abbariki

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Background and Aim : Elderly is associated with significant changes in memory, attention, intelligence, perception, metacognition, problem solving, and other cognitive abilities. The purpose of this study was to investigate the effect of cognitive rehabilitation on improving the attention of the elderly.

Methods : This study was semi-experimental with pre-test and post-test. The population included elderly people in Kermanshah city. Of them, 30 patients were selected and divided into control and experimental groups. Research Instruments included The Cognitive Abilities Questionnaire of nejati. Captain Log's cognitive rehabilitation program at 12 session of 50- 60 minute twice a week for the study group was developed.

Results : Covariance analysis indicated that the effectiveness of computer-based cognitive rehabilitation caused improving of the elderly(P<0/001).

Conclusion : The results of this study showed that computer cognitive rehabilitation can be used as an appropriate method for improving attention in the elderly

Keywords : computer-based cognitive rehabilitation; attention; elderly.

Count: 494
Abstract ID: 357
subject: Neurorehabilitation and Regeneration: Psycho-cognitive Rehabilitation
Presentation Type: Poster

primary and secondary Alzheimer The effect of probiotic supplementations on cognitive function in patients with

Submission Author: Azadeh Agahi

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Background and Aim : : Alzheimer's disease (AD) is a most common neurodegenerative disorder.

Methods : This clinical trial was conducted among 48 AD patients. The patients were randomly divided into two groups (n=23 in control group and n=25 in probiotic group) treating with capsules 500mg containing maltodextrine (control group) and probiotic supplementation (probiotic group)for 12 weeks. Mini-mental state examination (MMSE) and TYM test score was recorded in all subjects before and after treatment.

Results : After 12 weeks intervention, compared with the control group, the probiotic treated, patients with mild degree of Alzheimer disease showed an improvement in the MMSE,TYM score ($P < 0.0001$).

Conclusion : Our the current study demonstrated that, probiotic consumption for 12 weeks positively affects cognitive function in mild degree of AD.

Keywords : Alzheimer, cognitive function, probiotic

Count: 495
Abstract ID: 78
subject: Neurorehabilitation and Regeneration: Psycho-cognitive Rehabilitation
Presentation Type: Poster

Effectiveness of (Transcranial Direct Current Stimulation) TDCS to reduce symptoms of obsessive-compulsive disorder

Submission Author: Sara Akbari

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Background and Aim : Obsessive-compulsive disorder (OCD) is a highly prevalent and devastating psychiatric condition and is a severe mental illness. OCD symptoms are often resistant to available treatments. Abnormalities within the orbitofronto-striato-pallidothalamic circuitry, especially orbitofrontal cortex (OFC) hyperactivity and cerebellar hypoactivity have been observed in patients. Non-invasive brain stimulation studies have indicated that transcranial Direct Current Stimulation (tDCS) may be a useful alternative to alleviate treatmentresistant.symptoms in various neuropsychiatric conditions.

Methods : This survey is a semi-experiment study with Random selection in control and experimental groups, with pretest and post test .statistical society of this survey is 18 to 45 years old. sampling methods are 40 persons who were diagnozed to suffer from obssessive disorder after clinical interview by psychiatrist based on DSM5 diagnosis criterion chach 16 or higher grade in(Y-BOCS) Questionnaire randomly assigned into four groups (three experimental groups and one control group). 30 patients with treatment-resistant OCD received 10 sessions (twice a day) of 2 mA tDCS applied with the anode over the right cerebellum the cathode over the left OFC and over the Pre-SMA cortex area and cathode over the left Occipital Exactly the same operation without electrical stimulation on sham intervention group down implemented

Results : method of analysis was covariance. The results showed that direct current electrical stimulation protocols reduced symptoms of OCD in patients into three groups and O1 cathod,O2 anode protocol was the best

Conclusion : While the cerebellum's role in motor function is well recognized, the nature of its concurrent role in cognitive function remains considerably less clear. The current consensus paper gathers diverse views on a variety of important roles played by the cerebellum across a range of cognitive and emotional functions. As all contributors agree that the cerebellum plays a role in cognition, there is also an agreement that this conclusion remains highly inferential. Many conclusions about the role of the cerebellum in cognition originate from applying known information about cerebellar contributions to the coordination and quality of movemen. Early invasive electrical stimulation studies suggested that enhancement of cerebellar vermal activity might prove valuable in symptomatic treatment of refractory neuropsychiatric diseases via modulation of emotion and affect. Some research showed the

changed spontaneous neuronal activity of the parietal cortex and cerebellum may also play an important role in the pathophysiology in patients with OCD.

Keywords : direct current electrical stimulation protocol;obsessive compulsive disorder;OCD.

Count: 496
Abstract ID: 93
subject: Neurorehabilitation and Regeneration: Psycho-cognitive Rehabilitation
Presentation Type: Oral

Designing a Device to Enhance Reaction Time and Improve Decision Making in Athletes, based on Cognitive Neuroscience

Submission Author: Morteza Aliashrafi

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3. Institute for Cognitive Sciences Studies, Brain and Cognition Clinic, Tehran, Iran

Background and Aim : Reaction time and decision making are two crucial factors in sports. In order to strengthen and improve them, a device was designed based on cognitive science approaches in the Brain and Cognition Clinic (BCC).

Methods : The device includes mechanical, electronic and software components that are based on cognitive neuroscience theories. In addition to the goal of training and enhancement, according to information recording, the task can assess some athletic cognitive abilities. We used The Integrated Visual and Auditory (IVA), and Cambridge Neuropsychological Test Automated Battery (CANTAB) tests to assess attention, speed, accuracy, and decision making before and after using the device.

Results : Comparing the pretest and posttest has shown significant improvement in an athlete who used this device.

Conclusion : According to results, besides, to enhance cognitive abilities the device can also be used to assess attention, speed and response control.

Keywords : Cognitive Enhancement, Cognitive Neuroscience, Reaction time, Decision making, Attention

Count: 497
Abstract ID: 18
subject: Neurorehabilitation and Regeneration: Psycho-cognitive Rehabilitation
Presentation Type: Poster

Neuroprotective effect of monophosphoryl lipid A, a detoxified lipid A derivative, in photothrombotic model of unilateral selective hippocampal ischemia in rat

Submission Author: Sayed Masoud Hosseini

Sayed Masoud Hosseini[1]

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Background and Aim : Finding a neuroprotective strategy to rescue patients suffering from acute brain damage is of great interest. Monophosphoryl lipid A (MPL) is a derivative of lipopolysaccharide (LPS) that lacks many of the endotoxic properties of the parent molecule, and yet has similar protective effect. Here, we report the first evidence that MPL preconditioning, similar to LPS preconditioning, can induce neuroprotection against cerebral ischemia.

Methods : MPL (0.5, 1, 5 μg/rat) was injected unilaterally into the left cerebral ventricle of male rats, and 48 h later, rats were subjected to ipsilateral selective hippocampal ischemia using a modified version of the photothrombotic method. The neuroprotective effects of MPL and LPS were evaluated by measuring infarct size and assessing cognitive function. The expression level of some inflammatory and anti-inflammatory cytokines involving in TLR4 signaling pathway was also measured.

Results : Cognitive impairment and infarct size were obvious in control group receiving normal saline intracerebroventricularly and then selective hippocampal ischemia, compared to the sham group. Immunologic preconditioning with MPL or LPS significantly reduced infarct size and improved cognitive function. Additionally, immunologic preconditioning resulted in inflammatory mediators, NF-κB and TNF-α, down-regulation but anti-inflammatory mediators, IRF3, IFN-β, and TGF-β, up-regulation.

Conclusion : Our data showed that both MPL and LPS preconditioning may reprogram the TLR4 signaling pathway to produce a cytokine profile which eventually leads to neuroprotection against ischemia injury. MPL, unlike LPS, is safe and well tolerated in clinic, thus it could be considered as a new approach in prevention or even treatment of cerebral ischemic insult consequences.

Keywords : Preconditioning, Hippocampal ischemia, TLRs reprogramming, Stroke

Count: 498
Abstract ID: 314
subject: Neurorehabilitation and Regeneration: Physiotherapy
Presentation Type: Poster

Anodal transcranial direct current stimulation (a-tDCS) in neurological rehabilitation of patients with low level of consciousness: Clinical reports

Submission Author: Parisa Arzani

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Background and Aim : In recent decades, by increasing the quality of medical treatments, the number of patients are growing who survive after brain damage but are suffering from a chronic decrease in consciousness. To manage these conditions, there are various pharmacologic and non-pharmacologic treatments, including Zolpidem, Amantadine, deep brain stimulation through implants, spinal cord stimulation. Nowadays transcranial direct current stimulation (tDCS) has been developed as a technique for brain neuroplasticity. The purpose of this study is to present a report about the effect of tDCS on improving the behavioral and motor function of patients with low level of

Methods : The stimulation was applied for 20 minutes (1 mA), once a day for ten days. Patients were 42-73 years old with low consciousness. The anode electrode was placed on the left side of the dorsolateral prefrontal cortex and the cathode electrode on the supraorbital region of the right. . Before, immediately after 10 sessions and 1 month after the completion of the intervention, the coma recovery scale-revised (CRS-R) was evaluated and recorded.

Results : Friedman test showed that there was no significant change in the level of consciousness in the second assessment (immediately after the end of 10 days of intervention) ($p = 0.1$) but in the third assessment, one month after the completion of the treatment, a significant improvement was observed in the level of consciousness was observed in patients ($p < 0.05$).

Conclusion : The results of this study showed that tDCS have long-term positive effects on the level of consciousness of patients with brain damage, although in short time these changes are not statistically significant. These results promise to increase consciousness by using tDCS in the early stages of injury and accelerating the recovery of these patients.

Keywords : transcranial direct current stimulation, low level of consciousness, neurological rehabilitation

Count: 499
Abstract ID: 338
subject: Neurorehabilitation and Regeneration: Physiotherapy
Presentation Type: Poster

Kinematic synergies are able to control the Center Of Mass position in individuals with chronic stroke

Submission Author: Masumeh Hessam

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Background and Aim : Standing posture is one of the most common postures that humans by which interact with the environment. Successful stabilization of the multi-segmented body which requires coordinated action of the body's many components (e.g. joints) to maintain upright posture is a prerequisite for all voluntary movements, including sitting, dressing, walking on surfaces and crossing the street. How the Central Nervous System (CNS) controls multiple joints and choose a movement pattern from the infinite number of patterns, has been an interesting question of motor science since the design of this problem by Bernstein in 1967. Since the ability to maintain stable balance while standing decreases with stroke, the purpose of the current study was to apply an uncontrolled manifold (UCM) approach to examine how individuals with stroke utilize the variability of multiple body segment movement to control the center of mass (COM) during quiet stance.

Methods : This study was performed on 10 individuals with stroke and 10 healthy matched subjects. The participants stood barefoot on the ground with their arms resting comfortably at their sides, for twenty 10 s trails. A 7 camera motion capture system (Qualisys Inc, Sweden) was used to record joints kinematics. Using the UCM approach assumes that the CNS arranges the inter trials covariation of elemental variables (joints angles) to stabilize a task-specific value of a performance variable (COM coordinates). According to this method, the variance of joint angles across trails decomposed into two components: (i) the VUCM that lead to no changes in performance variable and (ii) VORT that directly changes the performance variable. Using these two components, an index of synergy is defined to quantify the stability of the task-specific performance variable (COM coordinates). The higher proportion of synergy index the stronger the synergy.

Results : The comparison between the two groups showed that individuals with stroke have lower synergy index (1.05) to maintain COM position than healthy people (2.14).

Conclusion : The results of this study showed that kinematic synergies to maintain COM position in individuals with chronic stroke were weaker than healthy people and represents less flexibility in movement patterns in these individuals.

Keywords : Uncontrolled Manifold, Center of mass, Quiet stance, Synergy, Stroke

Count: 500
Abstract ID: 196
subject: Neurorehabilitation and Regeneration: Physiotherapy
Presentation Type: Poster

Relationship between Multiple Sclerosis Walking Scale-12 score and Clinical Measures of Mobility in People with Multiple Sclerosis

Submission Author: Farshad Molhemi

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Background and Aim : Multiple Sclerosis Walking Scale-12 (MSWS-12) is a self-reported questionnaire that measures the impact of the disease on the patients' ability to walk. Although, good psychometric properties and short administration time have made this questionnaire a popular and practical tool for assessing walking ability in clinical and research setting, it has not indicated if this self-reported walking ability scale has any correlation with other clinician-and patient-reported measures of mobility. So, the aim of this study was to examine the relationship between MSWS-12 score and clinical measures of walking and balance in people with Multiple Sclerosis (PwMS).

Methods : Twenty-nine PwMS participated in this study. Walking and balance ability were assessed using Self-reported questionnaires including the Persian version of MSWS-12, Activities Specific Balance Scale (ABC), Fall Efficacy Scale-International (FES-I), and Modified Fatigue Impact Scale (MFIS). Also berg Balance Scale (BBS), Timed Up and Go (TUG), and Six Spot Step (6SST) were used to evaluate objective walking and balance performance. Disability level was assessed by self-reported Expanded Disability Status Scale (EDSS).

Results : The results showed that there were significant high correlations between MSWS-12 and ABC, FES-I, BBS, TUG, 6SST, and EDSS ($p<0.01$). MSWS-12 had significant moderate correlation with MFIS ($p<0.01$).

Conclusion : The results reveal that the Persian version of MSWS-12 is a valid and inclusive tool for assessing mobility in PwMS.

Keywords : Multiple sclerosis, Multiple Sclerosis Walking Scale-12, Outcome Measures, Mobility

Count: 501
Abstract ID: 194
subject: Neurorehabilitation and Regeneration: Physiotherapy
Presentation Type: Poster

Correlations between Limits of Stability and Functional measures of balance in people with multiple sclerosis

Submission Author: Saeideh Monjezi

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Background and Aim : Limits of stability (LOS) test is an instrumented test of balance. Individuals with multiple sclerosis (MS) showed impaired limits of stability scores as compared with healthy subjects. But correlation between this instrumented test and functional tests of balance which can use easily in clinical setting did not reported before. So, the aim of this study was to examine the correlation between limits of stability test and functional measure of balance in people with multiple sclerosis.

Methods : thirty-two persons with MS completed both instrumented (LOS) test and functional tests of balance including Timed Up and Go (TUG), Cognitive Timed Up and Go (CTUG), 10 meter Walk (10MW) and Cognitive 10 meter Walk (C10MW).

Results : The End Point Excursions in LOS test had significant correlations with TUG ($P<0.001$, $r=-0.688$), CTUG ($P<0.001$, $r=-0.624$), and (C10MW: $P=0.001$, $r=-0.547$). Furthermore, there were significant correlations between the Movement Velocity in LOS test and TUG ($P=0.003$, $r=-0.505$), as well between Maximum Excursions and TUG ($P<0.001$, $r=-0.608$).

Conclusion : A significant correlation observed between different components of the LOS test and functional tests of balance suggesting that both the functional measures and instrumented measures provide reliable information and could be used to assess balance performance in people with MS.

Keywords : Multiple sclerosis, Balance, Limits of stability, Functional measures

Count: 502
Abstract ID: 647
subject: Neurorehabilitation and Regeneration: Speech and Language Therapy
Presentation Type: Oral

The Efficacy of Combined Inhibitory Control plus Errorless Naming Treatment on Word Retrieval Deficits in Patients with Aphasia

Submission Author: Rezvan Akbari Manie

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Background and Aim : The relation between word retrieval deficits and inhibitory control (IC) as the hallmark component of executive function in persons with aphasia (PWA) is controversial. IC issues are common in aphasic persons who demonstrate word retrieval deficits. The current project had the aim to develop a treatment protocol which simultaneously considers word retrieval and IC mechanism.

Methods : A pilot double blind randomized clinical trial was carried out on 14 PWA. Patients were randomly divided into experimental group (Combined Treatment (CT)) and control group (Errorless Naming Treatment (ENT)). Patients in both groups received 12 treatment sessions. The Paralell Pictutre Naming Tests (PPNT), word/ non word repetition task (WR/NWR), semantic and phonologic word-picture matching task (WPMs and WPMp) considered as the main outcome measures. The Stroop task (interference score) and Persian Communicative Effectiveness index (P-CETI) were considered as secondary outcome measures. All of the outcome measures were assessed before and after the treatment and at one month follow up.

Results : Both groups had improved regarding PPNT, WR/NWR, WPMs, WPMp, interference and P-CETI scores over the time ($P < 0.05$). The Main effects of the Time × Group interactions were not significant for each outcome. But, the improvements in WR score in follow up and NWR score in post-treatment assessments were significantly greater in the CT. The large effect sizes were found for PPNT and NWR scores in post- assessment. Furthermore, the moderate effect sizes were reported for WPMp, interference scores and WR in follow up assessment for CT group.

Conclusion : The results of this preliminary study showed that CT led to a greater improvement in word retrieval performance in PWA than those of the ENT group. Despite the apparent clinical differences between the two treatment groups, this difference in recovery is not significant.

Keywords : aphasia, word retrieval deficits, inhibitory control system, errorless naming treatment.

Count: 503
Abstract ID: 21
subject: Neurorehabilitation and Regeneration: Speech and Language Therapy
Presentation Type: Oral

The Effect of Morphosemantic Treatment on Verb Tense Inflection in Persian-speaking Patients With Agrammatism: A Single-Subject Study

Submission Author: Farzane Dashti

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Background and Aim : One of the relatively common symptoms in non-fluent aphasia is agrammatism. Agrammatism is characterized with low syntactic complexity and deficits in verbs inflection especially tense markers. Verbs as the main core of sentences have vital function on effective communication. In persian, verbs have two main structures of the root and the inflectional morphemes. There are two kinds of the past and the present root. The inflectional structure of verbs in Persian is comprised of several patterns namely those of participle, voice, infinitive, tense, mood, aspect and person plus number. : The current study aimed at evaluating the effect of morphosemantic method on verb tense inflection in Persian-speaking aphasic patients with agrammatism.

Methods : The participants were two aphasic males with agrammatism and verb inflection deficits. In the current study, a comprehensive set of tools was used to evaluate different aspects of the patients' problems. A researcher-made demographic questionnaire, the Persian version of the Western Aphasia Battery, Persian Aphasia Battery Test, Persian Aphasia Naming Test, picture verb naming test for patients with aphasia (a common-clinical tool), verbal apraxia test, oro-motor control assessment form (a common-clinical tool), Edinburgh handedness scale, a researcher-made verb inflection test and Elder Mini-cog cognitive screening test. The current study had a single-subject ABA design. The material were 46 black and white line-drawing pictures related to 23 verbs including 10 training, 10 expansion, and three exemplar verbs drawn in present and past tenses. During three phases, the percentage of correct verb inflection in the training and expansion verbs was measured and also the graph examination of level, trend and slope, C statistic, 2-standard deviation band, effect size (percentageof non-overlapping data) and d statistic were used to analyze the data.

Results : Both participants demonstrated significant changes in training and expansion verbs during therapeutic sessions in comparison to the baseline ($P<0.05$). they showed an upward trend over the course of treatment for training verbs and an increase from baseline level to the treatment level. The effect of therapy was maintained for a three-week follow-up and in both participants maintenance effect yielded large effect size.

Conclusion : Therapy for verb inflection in spontaneous speech is clinically important. The current study demonstrated that morphosemantic method can be used successfully for tense marker deficits in Persian-speaking patients with agrammatism. This therapeutic approach has high potential to generalize the improvement to the non-therapeutic targets in Persian because of the unique features of the Persian language

Keywords : Aphasia, Agrammatism, Treatment Efficacy, Single Subject Design

Count: 504
Abstract ID: 23
subject: Neurorehabilitation and Regeneration: Speech and Language Therapy
Presentation Type: Poster

Effect of Neurofeedback on the Speed and Accuracy of Reading Skills in 7-10 Year-Old Children with Learning Disabilities

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Background and Aim : Learning disorder has a heterogeneous nature reflected in the educational patterns, strengths, and weaknesses of information processing. Children with learning disabilities present high levels of alpha and beta wave activities which harm development of their mental activities. Neuro-feedback helps to reduce the proportion of alpha and theta waves and thus can result in improving the reading, writing, and mathematics skills. The aim of the present study was to determine the effect of neuro-feedback on the speed and accuracy of reading skill in 7-10 year-old children with learning disabilities.

Methods : The present study was carried out following quasi-experimental design. The participants consisted of 15 children with learning disabilities with the age range of 7-10 years old. Participants received 15 sessions of neuro-feedback (two sessions per weeks with 30 minutes duration). The reading accuracy and speed evaluated by NAMA reading test, before and after neuro-feedback treatment coarse. Data was analyzed using Wilcoxon test.

Results : Findings revealed that the reading speed was significantly differed between pre and post neuoro-feedback treatment coarse ($p<0.001$) for reading speed, But the reading accuracy was no significantly differed ($p>0.001$).

Conclusion : The findings indicate that neuro-feedback improves the reading speed of children with learning disabilities, but it seems to achieve major changes in reading accuracy skills, more sessions is required.

Keywords : Learning disorders, Neuro-feedback, Speed reading, Reading accuracy

Count: 505
Abstract ID: 321
subject: Neurorehabilitation and Regeneration: Speech and Language Therapy
Presentation Type: Oral

Narrative Discourse Analysis in Persian-Speaking Patients with Multiple Sclerosis

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Background and Aim : Language production is the result of a combination of many different processes, such as the basic functions of language and the general function of knowledge. Cognitive impairment is apparent in about half of the patients with Multiple Sclerosis (MS), which is associated with social interactions, reduced job performance, and quality of life for these patients. Therefore, the purpose of this study is to investigate narrative discourse in MS patients.

Methods : This study was a descriptive-analytic and cross-sectional study. Participants included 15 patients with MS and 15 healthy controls who were matched for age and education level. For investigating the narrative discourse, a Persian narrative discourse test was used and the results were recorded on the basis of the test checklist. Data analysis was performed using descriptive statistics and independent t-test using SPSS24 software.

Results : In this study, the mean and standard deviation based on the patient and healthy groups were compared with each other. The analysis of the findings showed that there is a significant difference in the variables studied including the syntactic complexity (p=0/02), conjunction (p=0/009), coherence (p=0/02) and verbal output errors (p=0/04) between the healthy group and the patient.

Conclusion : Based on this study, analysis of narrative discourse can identify subtle language and communication problems in MS patients help. Discourse analysis also led to a greater understanding of the linguistic structures of narrative discourse in these patients and it is suggested that further studies be done in this regard.

Keywords : Multiple Sclerosis, Language, Narrative Discourse

Count: 506
Abstract ID: 651
subject: Neurorehabilitation and Regeneration: Speech and Language Therapy
Presentation Type: Poster

Assessment of Language Function in Dementia

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Background and Aim : Impairment in language is a common finding among individuals with dementia and can be a presenting symptom, particularly in Alzheimer's dementia and primary progressive aphasia. Early recognition of language dysfunction can help with an accurate diagnosis, management, and prognosis.The objective of the present study was to develop and validate the Persian version of the PALS (PALS-P) as a clinical language assessment test.

Methods : In this cross-sectional study, PALS was translated and adapted into Persian according to the international guidelines. A total of 30 subjects (10 subjects with PPA and 20 control subjects without dementia) were recruited to evaluate the intra-rater reliability and discriminant validity of PALS-P. Results: The intra-rater

Results : The intra-rater reliability of the PALS-P within a 14-day interval was excellent for each subtest (ICCagreement range =0.81-1.0). PALS-P results were statistically significant among groups, suggesting its discriminative validity.

Conclusion : This preliminary study indicates that PALS-P was successfully developed and translated. It seems to be a valid and reliable screening tool to assess language skills in Persian speaking subjects with progressive aphasia.

Keywords : Language impairment, Dementia, Progressive Aphasia

Count: 507
Abstract ID: 164
subject: Neurorehabilitation and Regeneration: Speech and Language Therapy
Presentation Type: Poster

Speech Improvement of Left Hemispheric Post-Stroke Patients after Melodic Intonation Therapy Program

Submission Author: Neda Sadat Royaee

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Background and Aim : Inability to speak is a serious problem among LH-stroke patients. In fact most of individuals who suffered LH-stroke, encountered aphasia, therefore, they often require an effective way to improve their speech ability. Melodic intonation therapy (MIT) is a singing-based therapy which could assist aphasic patients to improve their speech ability through using melodic phrases, and musical elements of speech such as intonation, rhythm, and stress. Present study aimed to investigate the impact of MIT on speech improvement of LH post-stroke patients.

Methods : Participants in this study include three native Persian, right-handed, LH-stroke patients who suffered from aphasia. They underwent the MIT, 2 days per week for 2 months. Outcomes measure was tested by Persian Aphasia Battery (PAB). It utilized in three levels as a pre, post, and follow-up test.

Results : The result represented that MIT could effect on most variables which are evaluated by PAB, such as Spontaneous speech, free discussion, oral expression, naming ability, targeted questions, intoned items, and sequential items.

Conclusion : Hence, it is concluded that MIT could impact on speech improvement of aphasic patients significantly.

Keywords : aphasia; left hemispheric stroke; melodic intonation therapy; speech; rehabilitation

Count: 508
Abstract ID: 424
subject: Neurorehabilitation and Regeneration: Speech and Language Therapy
Presentation Type: Poster

Effects of Oromotor exercises on the recovery of swallowing function in elderly

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Background and Aim : The elderly are at an increased risk of development of dysphagia, due to the illnesses that affect the swallowing mechanism. Dysphagia is a prevalent difficulty among aging adults and contributes to a variety of negative health status changes; most notably, an increased risk of malnutrition and pneumonia. Thus, the early and effective interventions are necessary to prevent these consequences. In this study, we surveyed the effectiveness of Oromotor exercises, as muscle strengthening training, on swallowing function among elderly individuals.

Methods : 24 elderly persons participated in our quasi-experimental study. The inclusion criteria were: age>60, no history of pneumonia and neurologic diseases (e.g. stroke, PD, MS), and a diagnosis of dysphagia. Participants were divided into two groups: those with strengthening muscle trainings and those with usual care (control) After basic clinical assessments, the first group received MASSKO, EMST, the Shaker exercise, and lip strengthening. In the control group, usual care was initiated five times per week for one month. The outcome measures of this study were scores obtained from Northwestern Dysphagia Patient Check Sheet, Dysphagia Handicap Index and Mann Assessment Swallowing Ability. Statistical analyses were performed by independent and paired t-tests. The significance level was set to 0.05.

Results : Both groups had similar demographic and clinical characteristics before the treatment (P>0.05).However, the first group with muscle strengthening trainings presented a better performance in swallowing function (P< 0.05 among main outcome variables).

Conclusion : Our results displayed the effectiveness of muscle strengthening trainings on swallowing function. It might suggest the important role of these exercises in recovery from dysphagia and prevention of complications like aspiration pneumonia.

Keywords : Dysphagia; Speech Therapy; Elderly

Count: 509
Abstract ID: 113
subject: Neurorehabilitation and Regeneration: Speech and Language Therapy
Presentation Type: Oral

Development and Validation of short-form parallel picture naming tests: a test for clinical practice in Persian-speakers with MCI and AD

Submission Author: Behnoosh Tahanzadeh

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Background and Aim : Short picture naming tests are the most common tools for screening naming difficulties in clinical settings. This paper reports the preparation steps and psychometric properties of two parallel short-form picture naming tests for Farsi-speaking individuals with Mild Cognitive Impairment (MCI) and Alzheimer's disease (AD).

Methods : Two short forms of parallel picture naming tests (PPNTs), each with 30 black and white line-drawings was elicited from two long picture naming tests in Persian. The validity and reliability of both short forms were tested on three gender-, education-, and age-matched groups of Farsi-speakers: 50 normal elderly individuals, 25 individuals with MCI and 25 individuals with the AD. Finally, the construct and criterion validity, internal consistency, parallel form reliability, cut-off score, and difficulty level of each form were calculated. Test-retest reliability of each form was also analyzed for a group of 10 individuals with the AD.

Results : There was no significant structurally difference between both short forms. These short naming tests could discriminate individuals with different level of cognitive impairments. The short forms were internally homogeneous. The total score of 30-item PPNT-A was significantly correlated with the PPNT-B. The best cut-off point, at which both forms reached the highest level of sensitivity to the AD, was observed to be 26. Both forms had a direct positive correlation with cognitive ability and education.

Conclusion : The 30-item PPNTs (A & B) could be applied as valid and reliable tools for screening naming impairments following a cognitive decline, especially among patients with the MCI and AD.

Keywords : Naming, language, dementia, Alzheimer disease, test, reliability, Psychometrics

Count: 510
Abstract ID: 223
subject: Neurorehabilitation and Regeneration: Speech and Language Therapy
Presentation Type: Poster

The effect of traditional dysphagia therapy on the swallowing function in patients with Multiple Sclerosis: A pilot double-blinded randomized controlled trial

Submission Author: Maryam Tarameshlu

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Background and Aim : Dysphagia is common following Multiple Sclerosis (MS) and is associated with significant morbidity and mortality. The current rehabilitation program to swallowing therapy is Traditional Dysphagia Therapy (TDT), but there is a dearth of evidence about its effectiveness in MS patients. This study was aimed to determine the effects of the TDT on the swallowing function in MS patients with dysphagia.

Methods : A pilot double blind randomized clinical trial was carried out on 20 patients with MS. Patients were randomly divided into experimental group (TDT) comprising sensorimotor exercises and swallowing maneuvers, and Usual Care (UC) comprising diet prescription and postural changes. Patients in both groups received treatments for 6 weeks, 18 treatment sessions, 3 times per week, every other day. The Mann Assessment of Swallowing Ability (MASA) was the main outcome measure. The swallowing ability was assessed before treatment (T0), after the end of 9th session (T1), after the end of 18th session (T2), and after 6 weeks follow-up (T3). Penetration–Aspiration Scale (PAS) and Pharyngeal Residue Rating Scale (PRRS) as secondary outcome measures were applied at T0 and T2.

Results : Both groups had improved regarding MASA, PAS and PRRS scores over the time ($P < 0.001$). The improvements achieved in all outcomes were significantly greater in the TDT group than those of the UC group. The Main effect of the Time × Group interaction was significant for MASA score ($P < 0.001$). The large effect sizes were found for MASA score in both the TDT ($d = 3.91$) and the UC ($d = 1.11$) groups.

Conclusion : This pilot randomized controlled trial showed that the TDT significantly improved the swallowing function of the MS patients with dysphagia.

Keywords : Traditional dysphagia therapy, Swallowing disorders, Deglutition, Multiple sclerosis

Count: 511
Abstract ID: 175
subject: Neurorehabilitation and Regeneration: Speech and Language Therapy
Presentation Type: Poster

The Effect of LSVT and Other Voice Therapy Methods in Parkinson's Patients: A Review Study

Submission Author: Jalil Zareei

Jalil Zareei[1]

1. Jalil Zareei

Background and Aim : One of the treatment methods for improving voice and speech problems in peoples who have Parkinson disease is LSVT. In some studies, this voice therapy technique has a significant and long-term improvement in the vocal health of people with Parkinson's disease and in some studies it is compared with another methods. The reduced ability to communicate is considered to be one of the most difficult aspects of IPD by many patients and their families. Soft voice, monotone, breathy, hoarse voice quality, and imprecise articulation, together with lessened facial expression (masked faces), contribute to limitations in communication in the vast majority of individuals with IPD. In addition to the impact of this method on voice, a number of studies have also been conducted on its impact on articulation and clarity of speech. The purpose of this study is to review the studies that have examined the effect of LSVT in Comparison with Other Voice Therapy Methods in the Treatment of Voice and Speech Problems in Parkinson's Patients. Can the LSVT method reduce the communication and voice problems of people with Parkinson's disease? Is this method superior to other methods? What is the best way to treat Parkinson's problems?

Methods : This study is a systematic review study. For doing this study the Electronic databases such as Medlin PubMed, Iranian and foreigner famous journals in the fields of Parkinson such as Iranian Journal of Medical Sciences, Iranian Rehabilitation Journal (IRJ)… and Google scholar and some specific key words such as Parkinson, PD, Voice therapy, and LSVT had been used.

Results : Based on the research and key words the 61 articles were found that, from those 61 articles [1]because of lack of relevancy and other issues the 36 articles had been removed. And from obtained 28 articles, 4 of them omitted based on duplication and study's exclusion criteria, so finally 21 articles included to this study.

Conclusion : This study showed that LSVT method is effective in organizing regular sessions in loudness, pitch range elevation and range of motion of the productive organs. LSVT is better than the other two methods of deep brain stimulation and RET.

Keywords : Lee Silverman Voice Treatment, LSVT, PD, Parkinson Disease, voice therapy

Count: 512
Abstract ID: 640
subject: Neurorehabilitation and Regeneration: Medication and Stem Cell Therapy
Presentation Type: Oral

Protective effects of exercise and DMOG- preconditioned stem cells on amyloid- beta-induced memory impairment and neurotoxicity in adult male rats

Submission Author: Sara Soleimani Asl

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Background and Aim : Stem cell preconditioning with chemical and pharmacological agents has been shown to increase therapeutic efficacy. Herein we investigated the neurotrophic effects of aerobic exercise and prolyl hydroxylase inhibitor (DMOG) - preconditioned stem cells in Alzeimer disease (AD) model

Methods : MSCs were treated with DMOG for 24 h and transplanted in AD model intravenusly. Beside to cell transplantation, the rats went on treadmill exercise for one month. Learning and memory, BDNF expression, antioxidant capacity, neurogenesis and apoptosis were assessed Morris water maze, shutel box, ELISA, immunohistochemistary, western blot and real-time PCR methods, respectively.

Results : Transplantation of DMOG- treated cells caused to memory improvement compared to AD group via increase in neurogenesis and expression of nestin, SOX2, and NeuroD, Moreover, injection of preconditioned cells were more effective in expression of BDNF, Nrf-2, NQO1, total antioxidant capacity and decreased MDA and caspase 3 than non- treted cells. Treadmill exercise improved spatial memory and learning trough increase in BDNF and neurogenesis. Finally, treadmill and transplantation of treated cells together has the most neuroprotective effects.

Conclusion : Transplantation of DMOG-treated cells and exercise may have protective effects in AD via increase in neurotrophic factors, antioxidants, and neurogenesis and decrease in apoptosis.

Keywords : Beta amyloisd, MSCs, DMOG, antioxidant activity, Apoptosis, BDNF, Neurogenesis

Count: 513
Abstract ID: 85
subject: Neurorehabilitation and Regeneration: Medication and Stem Cell Therapy
Presentation Type: Poster

Dental Pulp Stem cell Transplantation Ameliorates Motor Function and Prevents Cerebellar Atrophy in Rat Model of Cerebellar Ataxia

Submission Author: Mahdi Tizro

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Background and Aim : Cerebellar ataxias include a range of neurodegenerative disorders hallmarked by deterioration of cerebellum. Cell replacement therapy (CRT) offers a potential remedy for the diseases associated with central nervous system (CNS). This study was designed to assess the neuro-restorative/protective effects of DPSCs implantation on rat model of cerebellar ataxia induced by 3-acetylpyridine (3-AP) as a neurotoxin.

Methods : To begin, human dental pulp stem cells (DPSCs) were extracted, cultured and phenotypically characterized. Then, experimental ataxia was induced in twenty male adult rats by single injection of 3-AP, and bilateral DPSCs transplantation was performed 7 days after 3-AP administration, followed by stereological analysis of cerebellar layers along with assessment of motor skills and inflammatory response.

Results : The findings showed that transplantation of DPSCs in 3-AP model of ataxia ameliorated motor coordination and muscle activity, increased cerebellar volumes of molecular and granular layers plus white matter, reduced the levels of inflammatory cytokines and thwarted the degeneration of purkinje cells against 3-AP toxicity.

Conclusion : Taken together, human DPSCs could be considered as a suitable candidate for CRT-based therapies with specific focus on cerebellar ataxia.

Keywords : Dental Pulp Stem cell ;Cerebellar Ataxia,motor function

Count: 514
Abstract ID: 679
subject: Neurorehabilitation and Regeneration: Other
Presentation Type: Poster

The Effects of Transcranial Photobiomodulation on Motor Performance

Submission Author: Atefeh Fekri

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Background and Aim : Transcranial photobiomodulation (TPBM) is a new noninvasive interventional method, which applies red to near infrared spectrum (600-1100nm) laser or light emitting diode (LED) source on the head and could penetrate the skull and improve the brain pathological conditions and cognitive functions. Recently, a few studies with motor approach studied the effects of this method on motor performance parameters. Therefore, the purpose of this review article is to study the possible effects of TPBM on motor performance.

Methods : Studies from 2000-2017 were searched in Pubmed, Scopus, Google Scholar and Science Direct databases. Considering the inclusion criteria, 8 studies selected to review. Among these studies, 6 articles have been done on animal models and 2 on human. Also, in 6 studies laser source with 800-1100nm wavelength spectrum and power density 10-300mw/cm2 and in 2 studies LED source with 610, 670nm wavelength and power density 1.7, 5.5mw/cm2 have been used.

Results : The results discovered that using TPBM, the motor performance including balance, coordination, muscle power, alertness, reduction in lesion size, and reaction time was enhanced.

Conclusion : Applying TPBM due to the structural and neurochemical changes such as an increase in oxidative energy metabolic capacity, blood flow, gene expression, and biological changes in neural cells may lead to the motor performance. This suggests that the use of TPBM may prevent and improve motor and functional deficits.

Keywords : TPBM, motor performance, functional deficits

Count: 515
Abstract ID: 358
subject: Social Neuroscience: Self perception and regulation
Presentation Type: Poster

The Effectiveness of Art-therapy on the Social Skills of Students with Intellectual Disability

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Background and Aim : The purpose of this study was to study the effectiveness of art-therapy program on social skills of adolescents with intellectual disability.

Methods : Effectiveness of this intervention was evaluated by a semi- experimental with pretest-posttest and control group. 10 students in the experimental group participated in this program, and the control group did not receive any treatment. Teacher form of the Social Skills Rating Scale (Gresham and Elliott, 1990) was used to measure their social skills.

Results : The obtained data were analyzed using Analysis of the Covariance. The findings showed significant differences ($p<0.5$) between the experimental and the control group in social skills. At the end, art-therapy training package for improving social skills of adolescents with intellectual disability was discussed.

Conclusion : At the end, art-therapy training package for improving social skills of adolescents with intellectual disability was discussed. Further discussions as well as suggestions for future research are presented.

Keywords : Slow-paced adolescents; art-therapy; social skills

Count: 516
Abstract ID: 381
subject: Social Neuroscience: Self perception and regulation
Presentation Type: Oral

Language Learning and Social Cognition: A Cross-linguistic Analysis of Children Who Know Two Languages

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Background and Aim : Generally, the concept of social cognition is defined as the way people in social contexts use, process and remember their behavior. The present study by means of the theory of mind tries to examine the cognitive achievement of children, and predict and explain one the most crucial humans' behavior known as language ability. It is believed that multiple external and internal factors affect children's social cognition. Since language acquisition in children is considered as social understanding and acquiring knowledge through interaction and conversation, in the current study, we examined "theory of mind", and "empathy and the perception of self" of 5 to 7 years old children.

Methods : The aim of this study was to analyze the effects of learning a second language on the social cognition of 20 preschoolers who learnt English as a foreign language. The method for collecting data of social cognition and linguistic repertoire was a direct assessment of the children's performance in real context and tests.

Results : Based on the findings, complex relationships among the variables were investigated showing learning a foreign language has a systematic and significant effect on social cognition.

Conclusion : The children with similar native language and with different age groups were compared across languages and significant differences on the social cognition tasks were investigated.

Keywords : Social cognition; Theory of mind; Perception of self; Second language

Count: 517
Abstract ID: 102
subject: Social Neuroscience: Self perception and regulation
Presentation Type: Poster

Effect of pivotal response treatment on emotion regulation in autism spectrum disorder

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Background and Aim : : Autism is a neurodevelopmental disorder that impresses on social interaction, verbal and nonverbal communication and stereotyped behavioral patterns. For people with autism spectrum disorder (ASD), difficulties in social-emotional understanding have been identified as the key problem areas. It seems there is a relationship between social and communication skills and emotion regulation. In this study we tried to examine effect pivotal response treatment on emotion regulation abilities of ASD

Methods : The research method was quasi-experimental with pretest-posttest. According to inclusion and exclusion criteria, 10 autistic participants (10 to 16 years old) selected. Sessions was administered individually, lasting for 60 minutes and 3 days a week for 12 weeks. Participants were tested before and after intervention by emotion regulation and social skills questionnaire (ERSSQ).

Results : Findings of study showed (according to c analysis between before and after of intervention in participants) there is significant changes in social cognition ability in children with ASD.

Conclusion : the result of these study indicated effect of pivotal response treatment on social skills and emotion regulation ability in autistic children. Therefore this method recommended for speech and language pathologist.

Keywords : emotion regulation, social cognition, autism spectrum disorder

Count: 518
Abstract ID: 602
subject: Social Neuroscience: Game Theory
Presentation Type: Oral

Do you share your personally useless information if others may benefit from it

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Background and Aim : Personally useless information refers to information that its beholder cannot benefit from it unless she shares it with those who can potentially exploit that information, to increase their outcome or success probability, in return for a portion of their confederate's outcome.

Methods : We present a study in personally useless information sharing behavior of subjects in non-strategic, non-competitive situations. The subjects played a game and got some information about the exact location (success condition) or probable locations (failure condition) of the reward. After playing the game, subjects could decide to share/not share their information to their confederate with different benefit percentages.

Results : The majority of subjects shared more when their benefit percentage increased. Nevertheless, even though sharing/not-sharing information imposes no cost on subjects and can be beneficial in 2/3 of the trials, there was a group of people who almost never shared their information. Some subjects were reluctant to share when they succeeded, and their information certainly put their confederates in success situation. Another group of subjects shared less when their information was more helpful for the receivers. According to reaction times(RT), the subjects who almost always share/not-share their information are intuitive in their shared/not-shared decisions while their RT increases significantly when their decision contradicts their innate bias. The reaction time for subjects at the middle of the spectrum is not significantly different in their share and not-shared decisions and is high in both conditions; i.e. they use reflective processes but still fail to be payoff maximizers.

Conclusion : The current study suggests that both sharing and not sharing can be intuitive and reflective processes does not necessarily make people rational.

Keywords : information sharing; dual process theory; reaction time; cooperation; social preference

Count: 519
Abstract ID: 289
subject: Social Neuroscience: Other
Presentation Type: Oral

Methamphetamine abuse and its anticipatory factors in women taking methamphetamine abusers

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Background and Aim : This study was conducted to determine the prevalence and predictor of methamphetamine abuse and its predictive factors in women in Kermanshah

Methods : This is a descriptive-descriptive study that was performed on 90 women admitted in psychiatric ward of Kermanshah. Stratified random sampling and data collection were conducted through interview and demographic questionnaire. SPSS version 25 was analyses using Chi-square and logistic statistical methods

Results : The results showed that more than 70% of women have experienced methamphetamine use. Location, spouses, friends and the beauty of the limb, the rising of sexual desire as the most important reason for the consumption of methamphetamine substances

Conclusion : The high prevalence of methamphetamine in women due to the beauty of the limbs is the need to raise awareness and attention to women in the form of workshops, training media programs (radio and television).

Keywords : Methamphetamine;Substance Abuse; Addiction

Count: 520
Abstract ID: 480
subject: Social Neuroscience: Other
Presentation Type: Poster

Effects of BDNF receptor antagonist on the extinctionand and reinstatement of morphine-induced conditioned place preference and mPFC BDNF levels

Submission Author: Marzieh Joneidi

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Background and Aim : It is likely that BDNF is necessary to plasticity induced by opiates in the dopaminergic neurons for the morphine-induced conditioned place preference.Therefore ‹this study examined the effect of intra-mPFC infusions of BDNF receptor antagonist (ANA-12)on extinctionand reinstatement of morphine-induced conditioned place preference (CPP), mPFC BDNF levels and apoptotic cells in rats.

Methods : In this study‹48 adult male Wistar rat (200-250 g) were used.The rewarding effects of morphine were investigated using a CPP paradigm consisted of 5-day schedule with three distinct phases: pre-conditioning, conditioning and post- conditioning. Bilateral guide cannulas were stereotaxically implanted into the central region of the mPFC in rats. Rats were then trained in the CPP after the recovery period. To assessthe effect of ANA-12 on extinction, after a conditioning test, ANA-12 is injected for three days and after 5 days of extintiction, atest was done. Also, on the day of reinstatement,an ANA-12 was injected and 15 minutes later a low dose of morphine was injected intraperitoneally.Then, the levels of BDNF and apoptotic cellsof the mPFC were assessed at the end of each treatment phase using ELISA methods, respectively.

Results : The results of this study indicated that intra-PFC injections of ANA-12 significantly attenuated the extinction andreinstatement of morphine-induced CPP. Also, administration of morphine significantly increased BDNF levels in vehicle receiving rats compared to the saline treated rats receiving vehicle following the extinction and reinstatement of morphine-induced CPP. While,intra-mPFC infusion of ANA-12 significantly decreased the mPFC BDNF levels of rats receiving vehicle following the extinction of morphine-induced CPP but not reinstatement of morphine-induced CPP.

Conclusion : This study demonstrated that central administration of ANA-12 in the mPFC attenuates conditioning score of the extinction and reinstatement of morphine-induced CPP, via a TrkB-mediated mechanism. This may have occurred, at least in part, by reducing the levels of BDNF that are induced by morphinein the extinction and no reinstatement.

Keywords : Morphine,ANA12,Extinctionan Reinstatement of morphine-induced conditioned place preference, mPFC, BDNF levels.

Count: 521
Abstract ID: 487
subject: Social Neuroscience: Other
Presentation Type: Poster

The antiepileptic effect of hespertine-loaded nanoparticles in pentylenetetrazol-induced chemical kindling model

Submission Author: Mitra Pourgholi

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Background and Aim : Epilepsy is one of the most common neurological disorders in the worldwide. Oxidative stress and inflammatory processes play main role in the development of disease. Several studies have shown the anti-inflammatory and anti-oxidant effects of hesperetin in various diseases. However, a major problem of hesperetin application low water solubility. Recently, the use of nanotechnology has been considered as ideal strategy for enhancement of aqueous solubility of hydrophobic drugs. Therefore, we attempt to examine the effect hesperetin-loaded nanoparticles on seizures behavior in animal model of kindling.

Methods : In this study, NMRI male rats (8-10 weeks) in the range of 25-35 g (animal room of Babol University of Medical Sciences, Iran) were used. Animals were pre-treated by hesperetin or hesperetin nanoparticles 10 days before PTZ injection and their application continued 1h before each PTZ injection. To induce kindling model, PTZ was administrated at dose of 36 mg/kg every other day. Expression levels of TNF-α and IL-6 were measured by real time PCR.

Results : Our data showed that hesperetin-loaded nanoparticles reduced the seizure behaviors. In addition, the expression levels of TNF-α and IL-6 downregulated in animals treated with hesperetin nanoparticles.

Conclusion : According to the results hesperetin-loaded nanoparticles might be regarded as a supplementary agent in patients with epilepsy.

Keywords : Epilepsy, Oxidative stress, Hesperetin, Nanoparticles, Inflammation, Pentylenetetrazole

Count: 522
Abstract ID: 139
subject: Special topics: Converging Technologies (NBIC: Nano-Biotech-Information-Cognitive), euroscience and Nanotechnology, Neuroscience and Biotechnology, Neural Tissue Engineering
Presentation Type: Poster

Diagnosis of Brain Abscess by Image Processing

Submission Author: Sogand Abbasi azizi

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Background and Aim : Brain abscess is a focal pyogenic infection of the brain's parenchyma. The most frequent intracranial locations (in descending order of frequency) are: frontal–temporal, frontal–parietal, partial, cerebellar, and occipital lobes. The major predisposing factors are: an associated contiguous focus of infection, trauma, and hematogenous spread from a distant focus. The variety ways of diagnosis is focusing on neuroimaging techniques, such as computed tomography (CT) or magnetic resonance imaging (MRI), allows one to confirm BA (Brain Abscess) diagnosis and determine the location and the number of lesions. The purpose of this study was to design and introduce a diagnostic software for brain abscess in MRI images.

Methods : This research was a software designing study that many MRI images that used in the past articles were analyzed with the software designer. The designed software was in MATLAB . In this study ; we used image processing techniques such as ; noise removing , edge denotation , separate of area with high density and contrast increasing for analysis . Based on the evidences from this analysis, radiologist could have the best diagnosis of the lesions. The results of all lesion diagnostics were analyzed and compared in the pathologist's report .

Results : Designed software enables the present MRI images analyzes them pixel by pixel. This software in addition evaluates the areas of lesions and shown them without viewer diagnosis completely . Final results of diagnostic software analysis showed high sensitivity .

Conclusion : Contemporary assessments of morphologic and physiologic traits of lesions by a computer aided diagnostic software can improve the radiologist's precision and decrease reading time of bulk images of MRI. Using this software to increase the accuracy of the lesions detection is suggested.

Keywords : MATLAB software , MRI images ,Brain Abscess

Count: 523
Abstract ID: 486
subject: Special topics: Converging Technologies (NBIC: Nano-Biotech-Information-Cognitive), euroscience and Nanotechnology, Neuroscience and Biotechnology, Neural Tissue Engineering
Presentation Type: Poster

Effect of Iranian Crack on brain-derived neurotrophic factor levels in addicted men

Submission Author: Abdolhakim Ghanarzehi

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Background and Aim : Recent studies have suggested that the pathophysiology of opiate addiction could be related to the brain-derived neurotrophic factor (BDNF). Iranian Crack is a new form of narcotic substance that widely used in Iran during last decade. The aim of this study was determination of the effects of Iranian Crack on serum BDNF levels in addicted men.

Methods : In this case-control study, participants were screened for eligibility, and then, serum levels of BDNF in 64 Iranian Crack addicts men were compared with 46 healthy subjects. BDNF levels in serum were measured by ELISA technique

Results : Results indicated that serum BDNF levels in addict men was significantly lower than healthy subjects ($p < 0.05$).

Conclusion : According to our results, serum BDNF levels were decreased in Iranian Crack-dependent patients when compared to healthy controls. this results suggest that BDNF may play a role in the addiction mechanism.

Keywords : Iranian Crack, Addiction, Brain-derived neurotrophic factor

Count: 524
Abstract ID: 26
subject: Special topics: Converging Technologies (NBIC: Nano-Biotech-Information-Cognitive), euroscience and Nanotechnology, Neuroscience and Biotechnology, Neural Tissue Engineering
Presentation Type: Oral

cigarette smoking and epigenetics changes in brain growth factors

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Background and Aim : BDNF expression in the brain is regulated by serotonergic and dopaminergic neurotransmitters, these neurotransmitters are involved in addicts and nicotine users. The number of daily intake is positively correlated with serum BDNF levels. BDNF expression is also regulated by epigenetic changes, which include DNA methylation, histone acetylization, and other chemical changes in the promoter region of the gene. According to the studies, increased CpG methylation in the gene promoter of BDNF is associated with its synthesis reduction in the neurons. Epigenetic changes in the BDNF promoter are associated with the pathophysiology of psychiatric disorders like learning fear, memory, and stress-related interactions. Studies show that cigarette smoke is a powerful environmental modifier of DNA methylation. Cigarette smoke contains a large amount of chemicals such as carcinogens, nicotine and carbon monoxide, which show DNA methylation during division and differentiation. In this study we amid for the first time to investigate the effect of cigarette smoking on epigenetics changes of three brain growth factors genes, BDNF, GDNF and NGF.

Methods : whole blood was taken from 227 people (137 cigarette heavy smokers and 90 nonsmokers as control) involved in this study. sodium bi sulfite and MS- PCR were perform for evaluation of epigenetic changes of BDNF, GDNF and NGF gene. The serum level of the growth factors and gene expression were determined with ELISA and real time PCR respectively.

Results : There was a positive correlation between cigarette smoking and methylation levels of the exon I of BDNF gene. The cigarette smokers had higher levels of BDNF gene methylation compared with the nonsmokers as control (p-value <0.05). The results from real time PCR showed BDNF gene expression was significantly lower than the control group (p-value <0.05). ELISA results confirm the results of real time PCR and the serum level of BDNF in cigarette smokers were significantly lower than that of controls people. There was not any significant difference between GDNF, NGF gene methylation, gene expression and serum level, between cigarette smokers and control group.

Conclusion : cigarette smoking changes the gene methylation of BDNF in exon I, the expression of BDNF and its serum level. These results have shown that cigarette smokers have lower level BDNF and it is may correlate to brain and psychiatric disease. More studies should be done to investigate this conception.

Keywords : cigarette smoking, BDNF,GDNF, NGF

Count: 525
Abstract ID: 527
subject: Special topics: Neuro-aesthetics, Art and Creativity
Presentation Type: Poster

The aesthetics of theory: a new direction at the neuroaesthetics

Submission Author: Gooya Bozorgi

Gooya Bozorgi[1]

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Background and Aim : Neuroaesthetics is a new field of research that is concerned with understanding the neurobiological bases of aesthetic experiences that often focused on studying of aesthetic perceptions of artistic and other creative activities. Although the theory is present in all the aesthetic experiences but less attention is paid.

Methods : In this paper by case study of a scientific theory and a folkloric theory, we investigated theory role at aesthetic experiences.

Results : The findings of this research reveal the value and importance of theory, from the point of view of aesthetics; and it shows that theoretical levels of mind in the aesthetic perceptions it is decisive.

Conclusion : Attention to theory as an independent element in aesthetics studies is key. It is a new direction at the neuroaesthetics: Entrance to the neuroaesthetics of theory

Keywords : theory; aesthetics of theory; neuroaesthetics of theory

Count: 526
Abstract ID: 439
subject: Special topics: Neuro-aesthetics, Art and Creativity
Presentation Type: Poster

Hypertrophy of insular and anterior cingulate cortex in asthma

Submission Author: Kolsoum Dehdar

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Background and Aim : Asthma is a chronic inflammatory disease of the airways that affects not only the airways but also the central nervous system (CNS). Psychiatric disorders, such as anxiety and depression, are common in asthma. These disorders may be associated with neuroanatomical changes in asthma patients. However, minimal neuroimaging data are available in asthma. Therefore, in the current study we examine insular and anterior cingulate cortex volumes, as the major components of emotional and cognitive processes also have a key role for the perception of dyspnea, in a rat model of asthma.

Methods : T2-weighted images were obtained using 3-T MRI scanner in NBML (Tehran, Iran). The region of interest (ROI) volumetry method was performed to indicate the volume of insular and anterior cingulate cortex in asthmatic (n=17) and control rats (n=14).

Results : we found that insular and anterior cingulate cortex volumes was significantly larger in asthmatic rats compared to controls ($p < 0.05$; $p < 0.05$, respectively). Asthmatic rats have an increase of effect size in insular ($d = 1.05$) and anterior cingulate cortex volumes ($d= 1.11$) in asthmatic rats comparison with controls.

Conclusion : findings of the present study reports that asthma is associated with hypertrophy in insular and anterior cingulate cortex volumes are the main components of the limbic system, which have important role in cognitive behaviors and implicated in perception of dyspnea. Therefore we believe that cognitive behaviors impairment in asthma might be due to the limbic structural changes.

Keywords : Asthma, insular, anterior cingulate cortex, volume, magnetic resonance imaging

Count: 527
Abstract ID: 538
subject: Special topics: Neuro-aesthetics, Art and Creativity
Presentation Type: Poster

Neuro-Aesthetic: Associative Learning and Pure Perception of Art

Submission Author: Ehsan Nematollahi

Ehsan Nematollahi[1]

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Background and Aim : The Neuro-Aesthetics term, broadly addresses the characteristics of the brain in terms of aesthetics, and argued that artistic production and perception must follow the principles of the neural organization. In a study that was previously presented by the author at the previous congress (6th Basic and Clinical NEURO SCIENCE Congress, 2017) , it was shown: How the points and vectors in vector space, interpreted as an interpretation of synaptic events in both artificial and biological networks ; and answer to these main questions that: first, how these networks, by changing the synaptic weight and creating the flexibility, make the artwork independent of their original model, and secondly, how the arts, after becoming independent From your creator, you create your own independence from self-reliance that they keep in themselves ??? The method that described there, while defining the proliferation of sensations (Oscillation, Continuity, Division) , presented An aesthetic approach to Neuro-Studies, by the artist that represented, invented and created of affects, within the scope of the visions that the artist mentioned for us ; and The scope of art, goes beyond the experience.

Methods : According to the mentioned findings The main question of this research is how we can draw more extensive studies of the role of neurons in the aesthetic artistic system, due to associative learning (Contiguity, Repetition, Similarity). Based on the bundle theory of perception, the combining elements of a unit, are interconnected in mind; and the result of the complexity of the components is entirely in our minds. In this way, we are faced with the predominance of the perception of components on the perception of the whole; And associative learning, are based on previously simple imagination, before compound imaginations. On the one hand, the primary components do not preserve their identity unchanged, and on the other hand, they have an independent identity over other components.

Results : Based on the Perceptual Reaction Theory, brain regions respond individually to the individual sensory topics. The pure perception of art, is the result of the reactivation of all mental forces that transformed them, instead of reversing values. In other words, instead of guiding their forces and operating them rigorously, they become Causing the Continuity (two-sensation resonance in each other, which results in the synthesis of absolute energy) with reactive forces that will not be possible, except in the context of associative learnings (in the area of proximity and similarity). To the extent that the study of the causal relations and the causation principle in the creation of art, will not be possible; except on the basis of the Continuity of associations.

Conclusion : The associative learning, whether by reacting to the organism or repeating the reinforced behavior, leads to a change in the basic behavior of the audience and the producer of the art, which based on the aesthetic experiences of art, and appear in the way of the intrinsic responses to a particular class of empirical stimuli. This, makes the pure perception of art, distinct and readable from complex behavioral patterns.

Keywords : Neuro-Aesthetic ; Association ; Continuity

Count: 528
Abstract ID: 118
subject: Special topics: Neuro-aesthetics, Art and Creativity
Presentation Type: Poster

The Emergence of a Creative Moment: Default Mood Network Vs Central Executive Network or System 1 Vs System 2?

Submission Author: Mohammad taghi Saeedi

Mohammad taghi Saeedi[1]

1. PhD candidate of Cognitive Neuroscience Division of Cognitive Neuroscience, University of Tabriz

Background and Aim : Previously, many studies have highlighted the role of the default mode network (DMN) in production of creativity. With the alternative network, the central executive network (CEN) being active, the process of producing creative ideas is blocked and cognitive control will dominate the behavior. By launching cognitive processes such as attentional control, cognitive inhibition, inhibitory control, work memory, and cognitive flexibility, the system triggers a problem-solving process using fluid intelligence. Therefore, the DMN is active when the brain is not focused on the outside world and the brain is in a wakeful rest, for example during daydreaming and mind-wandering. This is where neuroimaging findings have shown that DMN is associated with creative ideas and processes. On the other hand, psychologists to explain the processing systems of thinking have introduced decades of dual process theories. If system 1 is automated, fast and often deconstructive, which requires very little mental effort and attention System 2 is a controlled, slow and conscious process that requires a lot of effort and attention. Several studies now show the link between these two thinking systems with creative processes. So that by manipulating processing systems 1 and 2, people who are in the processing state of the system 1 show more creativity than in creativity tests. In light of what has been said, in this article, we review the description of the prior findings of the neuroscience in the field of creativity, along with the findings and suggestions derived from dual process theories, to provide an integrated explanation of the underlying processes of basic creativity.

Methods : In this respect, we will investigate 10 studies of the recent years.

Results : The results show that individuals with system 1 state are more creative, which is consistent with the role of DMN activity in neuroscience findings.

Conclusion : In this context, it has been emphasized in the role of system 1 features, including intuition, associativity, and being based on model recognition and non-verbal creativity.

Keywords : Creativity, Default Mood Network, Central Executive Network, dual process theories,System 1 Vs System 2

Count: 529
Abstract ID: 65
subject: Special topics: Neuroethics
Presentation Type: Poster

Feature Selection from Brain Stroke CT Images

Submission Author: Homeira Kabudvand

Homeira Kabudvand[1], hanie karimi[2]

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2. medical student at:tehran university of medical science

Background and Aim : Brain stroke occur when the blood supply to one's brain is interrupted or reduced.until now many methods for selecting feature have been studied we use Ant Colony Optimization based Binary . like most evolutionary algorithms, this algorithm begins with population , searching is done in a parallel form and then suitability of population's members is determined according to cost function; and until algorithm is converged this process will be continued

Methods : Our methods are based on three stages: 1- feature extraction, 2- finding feature vectors by binary Ant Colony, 3- classification by SVM

Results : We use a data set including 98 images . in this paper we have used Mean , Standard deviation, Six feature GLCM and GLRLM . In preprocessing stage, images are converted to gray images. 14 dimensions of features are extracted from each image; (totally 182 features) and for classifying images we use SVM (linear kernel model) [17]. 70% of data is for training (68images) and 30% of data is for testing (30 images). In testing form if brain stroke happens, result is 1; else it will be 0, and will be net result 0 or 1

Conclusion : Our method is tested successfully on the proposed dynamic optimization problems . we present a method by TACO and we obtain area of brain stroke; the extracted features are so useful and the optimal parameters are chosen for classification .The recognition results of this paper prove that the method we use, combined with SVM classifier can result well . The accuracy was 93.88% , result of our work is the accuracy was 94.90% . In the future the authors' aim will be extolling the system and increasing the accuracy of diagnosis, the aim is increasing certainty factors for clinical specialist and patients . our work is a guarantee for system. that both clinical specialist and patient can rely on software and its output.

Keywords : Feature Extraction , Classification , Touring Ant Colony Optimization(TACO) , Support Vector Machine.

Count: 530
Abstract ID: 565
subject: Special topics: Neurolaw
Presentation Type: Poster

Determination the Values in Neurolaw; A Cognitive Model

Submission Author: Mohammadjavad Hoseinpourfard

Mohammadjavad Hoseinpourfard[1]

1. Institute for Cognitive Science Studies, Tehran, Iran.

Background and Aim : Neurolaw, as an multilateral field which links the brain to law. The moral and ethics the most important obligations of neural aspects. So, it can help to achieve the better understanding of human behavior in order to regulate it accurately through incorporating neuroscience achievements in legal studies. This study try to provide a cognitive model in order to shows the relation between values in law such as moral, judge, and verdicts.

Methods : 17 available papers pertaining to the Neural laws and Neural ethics from 2000 to 2018 were aggregated, coded and used in the current study. The data were collected from the ISI web of knowledge, Scopus, Google Scholar, PubMed, MEDLINE, Wiley, and EMBASE. The search strategy included the “Law”, “Judge”, “Ethics”, “Moral”, “Neuroscience”, and “Neural science”.

Results : The third domain of research concerns values. The moral aspects, the rights, and the verdicts according to the three tired cognitive model as circle, triangle, and square; applied to show them. Neuroscience will lead, for increasing accuracy in decision making and judgment pertaining to it.

Conclusion : Neuroscience may support Neurolaw pertaining to moral aspect by reforming the decision making. According to the three tired model include moral, rights, and verdicts.

Keywords : Law; Judge; Ethics, Moral; Neuroscience; Neural science.

Count: 531
Abstract ID: 579
subject: Special topics: Public Awareness
Presentation Type: Poster

Retroperitoneal ancient schwannoma: A Very Rare Case Report

Submission Author: Khadijeh Abdal

Khadijeh Abdal[1]

1. (DDS, MSC) assistant professor , Department of Oral and Maxillofacial Pathology, Faculty of Dentistry, Ilam University of Medical Sciences, Ilam, Iran

Background and Aim : Ancient schwannoma is a uncommon neoplasm that originated of the peripheral nerve sheaths. Retroperitoneal ancient schwannoma is exteremly rare (about 0.7% to 2.6% of all schwannomas)and despite its benign nature, it can show malignant behaviors. There is nonspecific clinical symptoms and radiologic findings. Evaluation of histology and immunochemistry is necessary for diagnosis and complete surgical resection is the treatment of choice for schwannoma . Therefor , we report a a unique case of retroperitoneal ancient schwannoma in a 50-year-old male with a with complaints of a history of sever pain in the right flank area for 3 days ago afterwards evaluation of the histopathologic and immunohistochemical findings, it confirmed a ncient schwannoma. After surgery the patient has been kept under regular follow-up since last 15 months without any evidence of recurrence.

Methods : case report

Results : case report

Conclusion : case report

Keywords : : Malignant peripheral nerve sheath tumor, soft tissue sarcoma, malignant spindle cell tumor

Count: 532
Abstract ID: 80
subject: Special topics: Public Awareness
Presentation Type: Poster

The Serum Mineral Level: Mediatory Role on Discharge Disability in Babol Stroke Patients, Northern Iran

Submission Author: Shayan Alijanpour

Shayan Alijanpour[1]

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Background and Aim : stroke is one the most leading cause of mortality and disabilities associated with neurological disorders. Due to less availability of data on the associations between mineral serum level and stroke, this study was conducted.

Methods : This cross-section analytical study on stroke patients referred to the Ayatollah Rouhani Hospital of Babol over one year conducted. Demographic characteristic of patients, risk factors, types, admit score, and discharge scale of stroke were determined and mineral serum level of patients measured. A path analysis and logistic regression in spss v23 used.

Results : Of 216 stroke patients, and185cases (85.6%) were ischemic. The discharge scale of (64.4%) was mild, (22.7%) moderate and (12.9%) were sever or death. Patients with moderate and severe admit score, with hemorrhagic stroke type, hypertension and diabetes mellitus and lives in village have significantly more discharge scale. Low serum level of Magnesium and Calcium statistically significant with discharge disability status. Logistic regression modeling result for predicting H.T.N, ischemic type and discharge scale in studied patients. About H.T.N Ca, age older than 60 were the effective factors and about ischemic type; I.H.D, Mg and Ca were effective factors .In addition, Mg, H.T. N, admit score and ischemic type were the predictors of the discharge scale.

Conclusion : Hypomagnesaemia play role in discharge disability status and ischemic type directly this new clue can be valuable in determine prognosis.

Keywords : magnesium, calcium, vita D, ischemic stroke, stroke, prognosis

Count: 533
Abstract ID: 166
subject: Special topics: Public Awareness
Presentation Type: Poster

Proposal of a Parenting Model with an Emphasis on the Increased Self-Control based on Ego Depletion

Submission Author: Saadi Lotfali

Saadi Lotfali[1]

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Background and Aim : A variety of parenting methods and have been proposed in the literature. The present study attempted to propose a parenting model based on self-control with an emphasis on ego depletion. In fact, ego depletion refers to the idea that self-control or will is based on a limited number of mental resources in the form of energy. These resources can be consumed and reduced, and they can also increase.

Methods : In the present study, various scientific articles and sources pertaining to ego depletion and parenting were systematically studied. Parenting objectives represent the importance of children's self-control in conflict resolution, proper children's behaviors, resilience, establishment of proper family relationships, and proper functioning of children. Therefore, theoretical foundations and self-control methods based on ego depletion with parenting requirements were assessed here. Then, it was suggested to apply self-control techniques based on ego depletion in parenting methods among children; accordingly, a parenting model based on ego depletion was proposed.

Results : The adaptation and applicability of self-control recommendations based on ego depletion in parenting methods led to the development of a parenting model. The main factors in the parenting model included the production of a sense of value, or increased self-esteem, appropriate lifestyle with an emphasis on physiological factors, such as nutrition and physical activity, attention to future horizons, beliefs, etc., as t. It seems that the methods presented in this model are consistent with the child-rearing objectives.

Conclusion : As a new method in parenting, the main emphasis can be placed upon self-control. Since children's education and the increase of their knowledge about appropriate behaviors alone cannot be effective in controlling their behavior, it seems necessary to consider the sources of psychological energy effective in self-control based on the idea of ego depletion. Given the fact that self-control is a key factor in children's behavior and here is the possibility of using its methods based on ego depletion by parents, the application of this model is strongly recommended.

Keywords : Self-control, Ego depletion, Parenting

Count: 534
Abstract ID: 255
subject: Special topics: Public Awareness
Presentation Type: Poster

Prevalence of Parent's Perceptions of Sensory Processing Disorders among 5-11 Year-Old Children in Tehran

Submission Author: Fatemeh Shahbazi

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Background and Aim : Sensory processing in humans involves reception of a physical stimulus, transduction of the stimulus into a neural impulse, and perception, or, the conscious experience of sensation. These sensory disorders can negatively affect development and functional abilities in behavioral, emotional, motoric, and cognitive domains. The present study was designed to investigate the prevalence of parent's perceptions of sensory processing disorders among 5 to 11 year-old children in Tehran, Iran.

Methods : The current study was a descriptive and cross sectional study performed on 5 to 11 year-old children. Data collection instruments were a demographic and a sensory profile questionnaire. Data were analyzed using Kolmogorov-Smirnov, Mann Whitney Welch, and ANOVA tests.

Results : In the present study, 2191 cases were evaluated in terms of sensory processing factors. According to the findings, morbidity from sensory processing disorder in boys is higher than that in girls. Also, the most common disorder was observed in sensory sensitivity factor and the lowest was related to fine movement and perception. The results of Mann Whitney showed that the medians of sensory sensitivity, emotional reaction, and oral sensory sensitive, inattention and destructibility, sensory sensitivity, and fine movements/perception were significantly different between males and females ($P < 0.001$). In addition, findings of the present research showed that there exists significant relationships between age and all nine factors except for emotional response ($P <0.001$).

Conclusion : Due to the impact of the disorder on the children's quality of life and their adverse effects on the children's personal and social life, screening school-aged children and making attempts to treat it is necessary.

Keywords : Sensory Processing Disorder; Perception; Child

Count: 535
Abstract ID: 277
subject: Special topics: Neuro-Marketing, Neuro-economics
Presentation Type: Poster

Effect of different emotions on sound quality

Submission Author: Mohammadreza Azizkhani

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Background and Aim : The human voice consists of sounds produced by a person being using the vocal folds for carrying out acoustic activities and can be characterized by a number of attributes, the primary ones being pitch, loudness or sound pressure, timbre, frequency, and tone. This paper presents analysis of human variable emotions on the voice parameters.

Methods : We performed a systematic review of the literature with related keywords in PubMed, Science direct and Google scholar to gather information in articles published since 2016 and summarized here.

Results : Properties of voice may be modulated to suggest emotions such as anger, surprise, fear, happiness or sadness Pitch is an auditory sensation in which a listener assigns musical tones to relative positions on a musical scale based primarily on their perception of the frequency of vibration Pitch average increases in fear, anger, joy and surprise whereas it decreases in sorrow and disgust. people may tend to talk in loud voices when angry and use shrill or high-pitched voices when in a scared or panicked emotional state. On the contrary, when in a pensive emotional state, people tend to speak slowly and make longer pauses, thereby indicating an increase in time spacing between consecutive words of their speech. The analysis is fully language independent. it works well in different languages, including tonal languages.

Conclusion : It has been frequently observed that the tonal quality of the human voice changes while expressing various emotions. Deduction of human emotions through voice and speech analysis has a practical plausibility and could potentially be beneficial for improving human conversational and persuasion skills

Keywords : Voice analysis, Emotion, Pitch, Frequency