30th سی اُمین کنگره
نورولوژی والکتروفیزیولوژی بالینی ایران
Congress of Neurology & Clinical Electrophysoilogy of Iran

زمان : ۲۶ الی ۲۹ اردیبهشت ۱۴۰۲ 16-19 May 2023

مکان: هتل المپیک Olympic Hotel, Tehran, Iran

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Best Case Report & Best Iranian Neurologist

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Oral Presentations

Radiologic aspects of NPH

Aidin Taghilou

Imaging diagnostic aspects of NPH: This issue is always a controversial issue, both clinically and radiologically, and imaging findings are ambiguous in many cases and overlap with other diseases. Findings such as disproportionate dilatation of the ventricles compared to the cerebral sulci, changes in the angle between the lateral ventricles, Dilatation of the temporal horn of the lateral ventricles, and... are seen in structural imaging. A more advanced method for diagnosing this disease and differentiating it from other causes, such as cerebral atrophy is to examine the dynamics of the cerebrospinal fluid and determine the curves and speed of flow through the brain cavities. The combination of structural and dynamic findings increases the sensitivity and specificity of radiological diagnosis. In this article, we have a look at the imaging findings of NPH patients.

Monoclonal Antibodies in dementia treatment

Fatemeh khamseh

The head of the scientific committee of the Iran Dementia and Alzheimer's Association

Monoclonal antibodies have been studied as a potential treatment option for dementia, specifically Alzheimer's disease (AD). Aducanumab and lecanemab are two monoclonal antibodies that have shown promising results in clinical trials. Aducanumab is a monoclonal antibody that targets beta-amyloid plaques, a hallmark of Alzheimer's disease. It binds to beta-amyloid and facilitates its clearance from the brain. In phase III clinical trial, aducanumab demonstrated a significant reduction in beta-amyloid plaques, as well as a slowing of cognitive decline, compared to a placebo. The U.S. Food and Drug Administration (FDA) granted accelerated approval for aducanumab in June 2021, making it the first drug to be approved for Alzheimer's disease in nearly 20 years.

Lecanemab is another monoclonal antibody that targets beta-amyloid plaques. It works by binding to a specific form of beta-amyloid called N-terminally truncated beta-amyloid. On January 6, 2023 lecanemab gained accelerated approval from the US Food and Drug Administration (FDA)

While both aducanumab and lecanemab have shown promising results in clinical trials, there is still much to learn about their long-term safety and efficacy. Additionally, they are expensive and may not be accessible to all patients. More research is needed to fully understand the potential benefits and drawbacks of monoclonal antibodies in the treatment of dementia.

In this lecture, I will also talk about aducanumab and lecanemab administration, adverse effects, especially ARIA (Amyloid-related imaging abnormalities) and strategies to manage ARIA.

How can physician prevent cognitive decline in low-income countries

Zahra Vahabi

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Over the past 40 years, methods of dementia prevention have varied from finding a drug that halts the progression of Alzheimer's disease to preventing dementia through multidisciplinary lifestyle interventions. Dementia is a leading cause of disability in older adults and promoting healthy brain aging is seen as key to reducing the burden of age-related disability. The World Health Organization recently released the first guidelines on reducing the risk of cognitive decline and dementia. According to recent estimates, about 40% of dementia cases worldwide can be attributed to 12 modifiable risk factors: low educational attainment; hypertension and obesity in middle age; Diabetes, smoking, excessive alcohol consumption, physical inactivity, depression, poor social communication, hearing loss, traumatic brain injury and air pollution show clear preventive potential. Dementia and physical disability are strongly associated with shared risk factors, and shared underlying mechanisms may support the possibility of integrated preventive interventions. The FINGER trial is the first large randomized controlled trial to show that a multidisciplinary lifestyle-based intervention can prevent functional and cognitive decline in at-risk older adults in the general population. shared. In the global FINGERS network, the multi-domain FINGER concept is currently being tested and adapted around the world, proving evidence and tools for effective and easy-to-implement prevention strategies. Collaboration between researchers,

policymakers and health professionals, the involvement of older people, and the use of new technologies to support self-management are necessary to facilitate implementation of research results.

Management of Behavioral and Psychological Symptoms in Dementia

Fatemeh Mohammadian Rasanani

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Dementia is an umbrella term for several progressive diseases that affect cognitive and behavioral abilities and significantly interfere with everyday activities. The most common type of dementia is Alzheimer's disease (AD) which accounts for 60-70% of cases.

More than 90 percent of cases diagnosed with dementia experience neuropsychiatric symptoms known as Behavioral and Psychological Symptoms of Dementia (BPSD). BPSD includes mood disorders (depression, anxiety), psychosis (delusions and hallucinations), behavioral agitation (aggression), and other symptoms (sleep and eating disorders). The presence of BPSD is associated with increased care costs and impaired quality of life, so it increases the overall burden of dementia on patients, caregivers, and society. (1)

The first step when encountering BPSD is a thorough assessment. This comprehensive evaluation should consist of accurate medical and psychiatric history including substance use, the underlying cause of dementia, and the patient's cognitive and functional baseline. However, focusing on specifying and characterizing the BPSD and the context surrounding the behavior are also critical issues. The next step in managing BPSD is addressing any medical problems that may be contributing. It should be noted that a number of medical issues, particularly infections, might manifest as BPSD in patients with dementia.(2)

There are two main approaches in the management of BPSD: non-pharmacological and pharmacological; the latter is usually considered when the symptoms are severe and there is a risk of self-harm or to caregivers.

Antipsychotics, anti-depressants, and mood-stabilizer drugs have been considered for controlling psychosis and behavioral agitation symptoms. Among them, Antipsychotics are the most commonly prescribed medications despite their frequent side effects. (3) Risperidone is the only approved for use no longer than 6-12 weeks due to the increased risk of mortality. (4)Previous trials were conducted for use of Anti-depressants, especially citalopram for the treatment of BPSD, but due to associated risks (QT-prolongation and late onset of action) it is not considered the best option. There are also small trials conducted for other types of medications, such as carbamazepine, prazosin, and diphenhydramine but due to limited evidence and potential side effects, they're not being prescribed. Therefore, appropriate treatment strategy choice in favor of the patient and caregiver is a challenging issue in controlling BPSD.(5)

Legal aspects of Dementia for Neurologists

Mohammadali Arami

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Dementia causes many non-medical problems for the patient and family and involves doctors and especially neurologists. It is very important that the neurologist is aware of the possibility of these side effects from the beginning so that he can help in solving problems and disputes if necessary.

Neurologists play the main role in the diagnosis and treatment of patients with Alzheimer's disease, and therefore they are questioned by the courts. The neurologist must have sufficient evidence to make a correct diagnosis. He has performed the necessary tests and provided usable and valuable information to the members of the Forensic Medicine Commission. Clinical examination and the course of the disease are the most reliable documents, and important points about the patient's cognitive function should always be evaluated and written.

If the above tips are followed, the neurologist has fulfilled his responsibility.

Primary Progressive Aphasia

Mostafa Almasi-Dooghaee

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Frontotemporal dementia (FTD) is a relatively common dementia in young adults. It estimates that FTD is the second most common degenerative dementia in adults younger than 60 years old. The various clinical variants of FTD, enhance its importance that is because of involvement of different types of specialties with FTD patients.

The two major variants pf FTD includes behavioral variant and language variant. The language variant composed of three major categories which differentiate with their special characteristics in language examination. the language variant of FTD was named “Primary Progressive Aphasia” that prompt two major characteristics of this syndrome: being “Progressive” and the major problem of “Aphasia” in patients.

Non-fluent agramatic variant (nf/a PPA), semantic variant (sPPA) and logopenic variant (lpPPA) are the three major subtypes of PPA. The forth subtype is Primary Apraxia of Speech. The letters and words in the later variant may become distorted and pronounciate in irregular manner.

We want to discuss about the characteristics of PPA and its variants.

Sleep in Epilepsy

Savadi Osgouei

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Presentation of case: A young man with recurrent abnormal movement in sleep

Discussion: About 1 % to 2% of the population has epilepsy, and 1 out of 10 people will have a seizure during their lifetime. Approximately 20% of patients with epilepsy will have seizures solely while asleep.
Nocturnal seizures should be distinguished from other nocturnal events such as parasomnias.
The most difficult problem is to distinguish between frontal lobe seizures and parasomnias.
Sleep disorders such as sleep deprivation and sleep apnea may exacerbate seizures. Nocturnal frontal lobe epilepsy (NFLE) represents a type of partial epilepsy in which seizures appear mainly or almost exclusively during NREM sleep.
Seizures are usually described as episodes of paroxysmal motor behaviors characterized by bizarre hyperkinetic patterns or dystonic postures with a high frequency of nightly episodes, internight repetition, and stereotypy.
Home video recording could be useful, but video PSG is required for the diagnosis.
A natural history of the episodes that appear to increase in frequency after childhood, the occurrence of more than one episode per night, and semiology of the attacks (stereotypy, diskinetic and distonic components, clear onset and offset) are indicative of epileptic seizures.
Epileptic and parasomniac attacks often co-occur in the same family and even in the same patients.
NFLE could be differentiated from REM sleep behavior disorder, which is characterized by a later age of onset, the relationship of the episodes with dream-enacting behavior, less stereotypy, and presence of REM without atonia during PSG recording.

Clinical manifestation in autoimmune epilepsy

Seyedeh Faezeh Mousavinia

MD- MPH, Neurologist, Epileptologist, Neurology Department, Shohadaye Tajrish Hospital, Shahid Beheshti University of Medical Sciences)

Autoimmune encephalitis (AE) refers to inflammatory, non-infectious, immune-mediated encephalitis, a serious auto-immune disorder with epileptic phenotypes ranging from acute symptomatic-seizures to autoimmune-related epilepsy.

Most patients with AE develop acute symptomatic seizures, including cases of status epilepticus. Autoimmune-associated epilepsy applied to a minority of cases, often due to the development of structural abnormalities after inflammation vanishes (e.g., mesial temporal sclerosis) or an enduring antigenic trigger (e.g., cancer in paraneoplastic cases).

A wide range of heterogeneous anatomic-clinical syndromes have been described. Explosive onset of drug-resistant epilepsy (especially focal onset seizures) combined with cognitive, psychiatric, language, sleep and autonomic symptoms support the test for autoimmune antibodies.

Some seizure types are pathognomonic of an autoimmune etiology, including faciobrachial dystonic seizures and seizures that arise from perisylvian (insular-opercular) regions.

The recognition of seizures secondary to AE represents a chance for early immunotherapy initiation (an etiology-driven seizures management) and better outcome, so several criteria and scoring have been proposed to select patients with a high risk of positive Abs testing. Also, more knowledge of typical seizure semiology leads to a cost-effective selection of autoimmune tests.

A Definition and Classification of Status Epilepticus

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The proposed new definition of SE is as follows: Status epilepticus is a condition resulting either from the failure of the mechanisms responsible for seizure termination or from the initiation of mechanisms, which lead to abnormally prolonged seizures (after time point t1). It is a condition which can have long-term consequences (after time point t2), including neuronal death, neuronal injury, and alteration of neuronal networks, depending on the type and duration of seizures.

This definition is conceptual, with two operational dimensions: the first is the length of the seizure and the time point (t1) beyond which the seizure should be regarded as “continuous seizure activity." The second time point (t2) is the time of ongoing seizure activity after which there is a risk of long-term consequences. In the case of convulsive (tonic–clonic) SE, both time points (t1at 5 min and t2at 30 min) are based on animal experiments and clinical research.

A new diagnostic classification system of SE is proposed, which will provide a framework for clinical diagnosis, investigation, and therapeutic approaches for each patient. There are four axes: (1) semiology; (2) etiology; (3) electroencephalography (EEG) correlates; and (4) age.

Temporal lobe epilepsy in the syndrome of horizontal gaze palsy with progressive scoliosis

Mostafa Asadollahi

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A 30-year-old female was referred to our epilepsy center for workup of refractory seizures. The patient has had focal seizures with impaired awareness since five years ago. She was left-handed, with normal cognition, short stature and significant thoracolumbar kyphoscoliosis. She had complete horizontal gaze palsy from the neonatal period. She was born at term to consanguineous parents via normal vaginal delivery without any complications. Her syndromic features were compatible with the diagnosis of horizontal gaze palsy with progressive scoliosis (HGPPS).

Brain MRI showed several findings: split pons sign, butterfly configuration of medulla, tent-shaped fourth ventricle, and mild generalized brain atrophy. Diffusion tensor imaging (DTI) revealed uncrossed corticospinal tract fibers. Results of whole exome sequencing also revealed a homozygote variant in ROBO3 gene which has not been previously reported. During 72 hours of video EEG monitoring, we recorded five habitual focal seizures in the form of oral automatism, left hand automatism, right-hand dystonic posturing and verbalization.

A brain PET scan showed decreased metabolic activity in right temporal lobe. The findings localized the seizure onset zone to the right anterior to mid-temporal region, and the patient became candidate for epilepsy surgery.

This is the first reported case of HGPPS presenting focal epilepsy. It is not clear to us whether HGPPS and TLE are two distinct disorders or have an etiologic association. The co-occurrence of different developmental anomalies is not unusual. However, neuronal migration defects in HGPPS may establish a basis for creation of other brain malformations, abnormal neuronal networks, and epilepsy foci.

Management of acute repetitive seizure

Mahyar Noorbakhsh

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Acute repetitive seizures or cluster seizures are a type of epileptic seizure characterized by the occurrence of multiple seizures in a short period of time, typically within 24 hours. These seizures can be very debilitating and can significantly impact the quality of life of those affected. Cluster seizures are often difficult to treat, and many people with this condition require a combination of medications and other therapies to manage their symptoms. Despite ongoing research into the causes and treatments for cluster seizures, much remains unknown about this condition, highlighting the need for continued research and improved treatment options for those affected.

Managing cluster seizures can be challenging as they often require immediate medical attention and may not respond well to traditional antiepileptic medications. Treatment options for cluster seizures include rescue medications such as benzodiazepines, vagus nerve stimulation, and ketogenic diet therapy. Additionally, identifying and addressing potential triggers for cluster seizures, such as stress or sleep deprivation, can help prevent their occurrence. Close monitoring and individualized treatment plans are essential for effective management of cluster seizures.

The prognosis for individuals with cluster seizures varies depending on several factors, including the underlying cause of the seizures, the frequency and severity of the seizures, and the individual's response to treatment. In general, individuals with cluster seizures have a higher risk of developing long-term complications such as cognitive impairment and behavioral problems. However, with appropriate treatment and management, many individuals with cluster seizures can achieve good seizure control and improve their overall quality of life.

Frontal lobe, anterior cingulate epilepsy simulates night terror type of parasomnia, case presentation

Mohammad Zare

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The patient is a 34 -year-old man who was hospitalized and monitored due to uncontrolled paroxysmal behavioral events during sleep. The first seizure occurred at the age of 4 with tonic posture and upward gaze in less than one minute. Then recurrent tonic colonic epilepsy repeated. At present, he is treated with multiple antiepileptic drugs as oxcarbazepine, Levetiracetam, and sodium valproate. In addition to these clinical pictures, other kind of seizure occurred with presentation of waking from sleep at night, rapid respiration, severe anxiety, fear, and inattention with duration of some seconds without post-ictal phase. its frequency was 3-4 every night. He was treated with citalopram and clonazepam without responsiveness. Neurological examination and routine laboratory tests were normal. For more evaluation, he was admitted for long term monitoring. After tapering and discontinuation of AEDs, interictal EEG showed slow theta activity at RT Frontal lobe region, and 13 epileptic events occurred. All of the seizures were similar and consistent of abruptly awaking, paroxysmal rapid respiration, fearing, facial grimacing (chapeau de gendarme sign, ictal pouting sign), inattention, and hyper motor movements for some seconds without postictal phase. interictal EEG was normal, but Ictal showed fast activity at FP2-F4, F8-T4, FP2-F8. The result of EEG monitoring findings was: Hyper motor type of epilepsy with the source of RT frontal, cingulate region. Brain MRI was normal, and Ictal SPECT was recommended.

Keywords: frontal lobe epilepsy, cingulate gyrus epilepsy -night terror - chapeau de gendarme sign- ictal pouting sign

Genetics in Epilepsy

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Epilepsy is a common neurological disease affecting approximately 0.5–1% of the population worldwide. Despite the development of new antiseizure medications, about 30% of patients still suffer from drug-resistant epilepsy. Genetic abnormalities could be detected in more than 70% of epileptic syndromes. Knowledge of the underlying genetic defect may suggest a special therapeutic strategy and may explain the improvement or aggravation of seizures following prescription of specific antiseizure medications. Providing useful genetic data could lead to the development of new medications specifically targeting mutated proteins and selectively addressing pathogenic mechanisms, which develops a new position for precision medicine in epilepsy. Various genetic tests are currently available to investigate the cause of epileptic disorders which should be chosen based on their own advantages and limitations. A detailed investigation of the patient's phenotype is necessary for the selection and interpretation of the test. Genetic counseling should be provided to patients and their families before the genetic test to explain the reasons for testing, interpretation of anticipated results, limitations and possible next stages if the initial assessment is not helpful. Generally, a neurologist should know which genetic test is indicated first in which epilepsies. Also, there are some points that should be considered by the referring clinician before interpretation of the genetic test result. This review aimed to focus on the above issues and provided some useful recommendations for clinical practice.

Evaluation of First Seizure and Newly Diagnosed Epilepsy

Saeid Charsouei

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Approximately 8% to 10% of the population will experience a seizure, and approximately 1 in 26 people will develop epilepsy in their lifetime.

Correctly identifying the epilepsy type and syndrome, careful history taken from the patient and witnesses, as well as the underlying etiology, is critical for choosing cost-effective, high-yield investigations, optimizing therapy, and understanding long-term prognosis.

The ILAE proposed a practical clinical definition for epilepsy: (1) at least two unprovoked (or reflex) seizures occurring more than 24 hours apart, or (2) one unprovoked (or reflex) seizure and a probability of further seizures similar to the general recurrence risk (at least 60%) after two unprovoked seizures, occurring over the next 10 years, or (3) diagnosis of an epilepsy syndrome.

An EEG is indicated in all patients with new-onset, unprovoked seizures that assist with determination of seizure and epilepsy type, choice of further investigations, and risk for seizure recurrence.

Neuroimaging is recommended for all patients with new-onset, unprovoked seizures, except those with a well-defined, drug-responsive idiopathic generalized epilepsy or self-limited focal epilepsy of childhood.

Routine blood, urine studies and lumbar puncture are commonly obtained but of low yield in patients with new-onset, unprovoked seizures.

Although immediate initiation of antiseizure medication after a first unprovoked seizure does reduce the risk of recurrence, it does not impact long-term epilepsy outcome or quality of life.

Approach to Myoclonus

Soheila Rezakhani

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Abstract: Myoclonus is a hyperkinetic movement disorder characterized by quick and involuntary jerks. Myoclonic jerks are sudden, brief, shock-like involuntary movements caused by muscular contractions (positive myoclonus) or interruptions of tonic muscle activity (negative myoclonus). The pathophysiological causes of myoclonus are very broad, but they can be classified into four groups. Physiological myoclonus is not pathological and is common in healthy individuals. Well known examples are sleep jerks and hiccups. Symptomatic myoclonus is the most common, accounting for about 70% of cases. This type of myoclonus is a manifestation of an underlying disorder. The main causes are post-hypoxic syndrome, Alzheimer's disease, drug-induced myoclonus, and toxic-metabolic myoclonus. In epileptic myoclonus, the second most common pathological etiological category, myoclonus is a manifestation of epilepsy; myoclonus might be the only symptom, but it can also be a component of a seizure or one of the seizure types. An important cause of myoclonus that is not included in the existing classifications is psychogenic myoclonus. Diagnosis of a psychogenic movement disorder is difficult because organic disease needs to be excluded and no specific diagnostic test is available. Neuro physiology can be helpful: a consistent characteristic premovement potential—(Bereitschaftspotential) on the averaged electroencephalogram gram (EEG)-activity over several jerks (back averaging)—makes diagnosis of psychogenic jerks likely, although the absence of this potential does not exclude a psychogenic origin.

Management of medications and internal disorders-related seizures

Majid Ghaffarpour

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Internal diseases and related medications contribute to the majority of the situation-related seizures, also known as provoked, reactive, or acute symptomatic seizures (ASSs), which are defined as seizures occurring at the time of a systemic disorder or in close relationship with a documented brain insult. These seizures account for approximately 34% of all afebrile seizures reaches to 55% if febrile seizures are also included.

Etiologically, ASSs are categorized into five groups: 1-Metabolic / toxic and withdrawal seizures (14%), 2-CNS infections (15%), 3- Head trauma (16%), 4-Cerebrovascular events that account for 16% of ASSs and 11% of epilepsy diagnoses and 5-Other causes such as endocrine and autoimmune disorders including autoimmune encephalitis and MS, eclampsia, cardiac arrest, electrolyte imbalance, brain tumors and drugs, which collectively account for 24% of ASSs.

Semiology of the acute symptomatic seizures, accompanying symptoms / signs, the necessity of treatment, first line anti-seizure medication, indication and type of AED therapy as well as its duration, are banked on the type of causative condition.

In this lecture we focus on the general considerations in the management of internal disorders and medication – related seizures, seizures caused by MS itself and medications used in these patients, a brief reference to primary and secondary prophylactic anti-seizure medication in cases with viral encephalitis and choice AEDs for management of renal/hepatic encephalopathy - induced seizures.

Keywords: Internal disorders, acute symptomatic seizures, MS, renal/hepatic encephalitis, viral infections.

Use of Genetics in Relation to neurological disorders

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Genetic approaches used in relation to neurologic disorders include those that were more commonly used between 2005 and 2010 and those that have become more accessible between 2010 and the present. The importance of genetic markers will be discussed.

The newer approaches benefit from the potential of NGS (next-generation sequencing). It will be clarified that different approaches target genetic alterations that differ in size. The genetic approaches will be explained. The approaches that will be discussed include karyotyping, FISH (fluorescent in situ hybridization), aCGH (array comparative genome hybridization), MLPA (multiplex ligation-dependent probe amplification), specific mutation screening, specific gene screening, gene panel screening, whole exome sequencing (WES), whole genome sequencing (WGS), and short tandem repeat analysis. The older and newer approaches will be discussed in the context of identification of the genetic basis of some neurological disorders.

Examples of applications of some approaches in our laboratory will be presented. The latter pertains to PD, ALS, BVVL, CMT, NPD, sarcoglycanopathies, encephalopathies, and NBIA.

Nuclear Medicine in Dementia: Current Practice and Future Trends

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Various scintigraphic techniques have been developed for early and accurate assessment of dementia syndrome as well as extent and severity of functional abnormalities and possibly evaluation of response to different therapeutic modalities for each disease.

Brain perfusion Single Photon Emission Computed Tomographic (SPECT) acquisition with radiotracers like ^{99m}Tc-ECD is widely used for detection of hypoperfused areas in different dementia syndromes (Alzheimer's Disease, Dementia with Lewy bodies, Parkinson's disease dementia, Frontotemporal dementia and its variants (behavioral and primary progressive aphasia,). Brain SPECT can help neurologists and psychiatrists significantly in detection of equivocal cases and assessment of severity and extension of hypoperfused regions to select best therapeutic modalities and provide physicians with prognostic information.

Brain ^{18}F-FDG-PET/CT scan, because of its superior spatial resolution and ability to detect hypometabolic areas (which precede hypoperfused regions in SPECT imaging) is currently available for better delineation of affected cerebral regions by each disease as well as discriminating MCI converters from non-converters.

CSF-cisternography with radiopharmaceuticals like ^{99m}Tc-DTPA can help physicians for diagnosis of NPH as a treatable secondary cause of dementia.

Fortunately by new radiotracers like ^{18}F-Florbetapir (for amyloid imaging) and ^{18}F-THK-5105 for phosphorylated tau imaging, there is a wide window of hope to preclinically diagnose those who will be at risk for development of AD in future, taking preventive steps by both pharmacologic and non-pharmacologic interventions.

Neurological Disorders in Famous People

Mohammad Reza Gheini

Sina Hospital, Tehran University of Medical Sciences

Cognition is one of the most important functions of the brain. Creativity which is the main character of famous people including painters, musicians, writers, poets, other artists, philosophers, and scientists, has a close relationship with cognition. The brain function of famous creative people is exceptional and may be considered out of normal range of function of usual people. So, it is predictable that brain function may also be abnormal in different aspects, and some of the neurologic disorders may be more common in creative people. The list of famous people with neurologic and psychiatric disorders are so long. So, I select some of the more discussed artists, philosophers, and Scientists.

There is great discussion about the cause of end life disease of Friedrich Nietzsche (1844–1900). Was he suffering from tertiary neurosyphilis, known as, General Paralysis of the Insane?

Epilepsy is one of the most common disorders in famous people. I will discuss the role of epilepsy in creativity of great novelists such as Gustave Flaubert and Fyodor Dostoevsky.

The great philosopher Immanuel Kant had a peculiar personality, he also suffered from headaches and died with dementia.

One of the most common neurological disorders in artists is synesthesia; I discuss the role of this disorder in creativity.

Spinal Instability: Imaging Presentations on Lumbar MRI, CT-Scan and Radiography

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Learning Objectives:

Upon completion of this presentation, participants will be able to:

1) Recognize classic definition(s) and methods of evaluation of spinal instability

2) Review important imaging features of spinal instability.

Presentation Summary:

Low back pain is a socioeconomic problem encountered all over the world. In Iran, we do not have any information about the annual cost of low back pain. However, in Germany this cost is about 52 billion Euros, and in the USA, more than 150 billion US dollars. About 80% of people experience low back pain at some point during their lifetime, and it is reported annually in 36% of patients. Fortunately, 90% of low back pain cases have no specific etiology.

The main cause of low back pain is Mechanical Spinal Instability (MSI). MSI is defined as the abnormal movement in the motion segment beyond normal limits. Also, from a radiological point of view, MSI is usually divided into two main subgroups: Microinstability (without radiologic presentation) and Macroinstability (with radiologic presentation).

The main etiologies of MSI are degenerative, traumatic, and neoplastic causes. In this presentation, we will only focus on the degenerative etiology, which is the most common. To diagnose MSI, depending on the patient's situation and clinical data, MRI, CT and Palin X-Ray imaging are used. However, unfortunately, MRI is not sensitive for the detection of spinal instability and misses about 33% of the cases. This is also true for CT-Scan. The gold standard imaging technique is taking dynamic radiographs of the spine in the flexion-extension position. In this technique, abnormal movements in the Sagittal Translation (>4 mm) or segmental Angulation (>15 °) are investigated.

Unfortunately, in daily practice, Neurologists, in spite of their neurologic knowledge, are not involved in the direct management of low back pain. However, their collaboration with Neuroradiologists and awareness of imaging presentations of spinal instability will give them a more central role in the better management of low back pain, especially the nonsurgical forms. This will also be very beneficial in the selection of surgical candidates, and the prevention of unwanted surgical and interventional procedures.

Normal Pressure Hydrocephalus: Updates

Soroor Advani

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Normal pressure hydrocephalus (NPH) is a neurological condition that affects the brain's ventricles and leads to cognitive decline and gait impairment. Despite advances in diagnostic tools and treatment options, NPH remains a challenging condition to diagnose and manage. It is estimated to affect 5-10% of patients with dementia, making it an important condition for clinicians to recognize and manage.

This presentation will provide an update on the current state of knowledge about NPH, including its epidemiology, clinical presentation, pathophysiology, and diagnosis. It will review the latest diagnostic tools, including neuroimaging and lumbar puncture, and discuss the role of biomarkers in improving diagnostic accuracy.

The presentation will also explore current treatment options for NPH, including shunt surgery, and review the latest research on non-surgical management strategies, such as pharmacological interventions and physical therapy. Finally, the presentation will highlight the ongoing challenges in managing NPH, including the difficulty in distinguishing it from other neurological conditions, the risk of complications associated with shunt surgery, and the lack of effective pharmacological treatments. The presentation aims to provide a comprehensive update on the current state of knowledge about NPH and to stimulate discussion on future research directions to improve the diagnosis and management of this complex condition.

Nutrition and neurological diseases

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Despite advances in therapeutic success, neurologic diseases are still not fully under control. Therefore, alternative strategies are being sought out. Recent epidemiological findings have highlighted the association between healthy diets with a lower risk of CNS pathologies, making dietary interventions a popular research hotspot. Compared to therapeutic strategies, dietary interventions are generally less expensive, non-invasive, and potentially have fewer side effects.

There are two major categories of nutrition intervention approaches in remediating neurologic conditions, including dietary supplement and dietary restriction (DR). The former sort comprises of seven subtypes, namely, plant extracts (e.g., gallic acid, chlorogenic acid, resveratrol, epigallocatechin-3-gallate, curcumin, apigenin), vitamins (e.g. VitB6, VitB12, VitC, VitD, VitE, folic acid), amino acids (e.g., serine, glycine, tryptophan, tyrosine), minerals (Calcium, Zinc, Iron, cupper, lithium, Selenium), fibers (e.g. β-glucan, inulin, pectin, cellulose), prebiotics (e.g., chitosan oligosaccharide, oligofructose) and essential fatty acids (e.g. DHA, docosahexaenoic acid; ARA, arachidonic acid; EPA, eicosapentaenoic acid). DR includes dietary patterns (Ketogenic diet, Mediterranean diet, DASH (Dietary Approach to Stop Hypertension) diet, MIND diet, gluten-free diet, and intermittent fasting. They have beneficial effects for neurological diseases, including amelioration of neurodegeneration, improvement of cognitive deficit, reduction of infarct size, suppression of seizures, promotion of myelin production, reduction of α-synuclein level, reduction of amyloid β-protein level, and recovery of basal ganglia function.

In conclusion, adequate intake of specific nutrients or food groups showed remarkable clinical benefits for CNS disease. On the other hand, dietary restrictions that limit certain dietary components were also reported to exert health-promoting effects on the brain.

Awake Craniotomy

Mohammadali Arami

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Awake craniotomy is one of the advanced methods in neurosurgery. The main indication of this technique is monitoring the main and vital functions of the brain, as well as brain mapping of the speech centers and other important and vital brain centers.

This is a teamwork method that, in addition to a surgeon, requires an anesthesiologist with experience in this field and a neurologist who is proficient in speech examinations and evaluation and diagnosis of speech disorders during brain stimulation or manipulation. It is necessary to carefully examine the patient before the operation and practice the procedure. Depending on the surgical site, different tests are used, including counting and calculation, naming, repeating, reading, etc.

A standard awake craniotomy can minimize the complications of brain surgery in critical areas.

Educational cases with subacute headaches

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Although the majority of headaches in clinical practice are primary headache, clinicians need to be mindful of subacute headaches because the underlying conditions can be life-threatening and may require a completely different therapeutic approach. It is essential to take time to perform a structured history for any new or subacute headache not to overlook the secondary headache red flag.

Case 1

A 37-year-old woman presented with bifrontal and occipital pulsating headache, with moderate intensity, steadily progressive for one month. The patient explained that laying down made the pain worse. She complained of facial paresthesia and episodes of transient blurred vision. Neurologic examination demonstrated bilateral optic disc swelling. Brain imaging was normal. Advanced CSF testing helped in the diagnosis of the neuro brucellosis-associated pseudotumor cerebri.

Case 2

A 28-year-old male presented with bilateral Frontotemporal headache, steadily progressive for 9 months. He reported waking up almost every morning with a moderate pulsatile headache. His vision went blurry intermittently. Neurologic examination demonstrated asymmetric bilateral optic disc swelling. Brain MRI showed diffuse pachymeningeal and faint leptomeningeal enhancement. Advanced CSF testing helped in the diagnosis of fungal meningitis associated with meningeal leukemic infiltration.

Case 3

A 61-year-old woman presented with a one-month history of right frontotemporal head pain. She experienced continuous pain of moderate intensity with some episodes of severe exacerbation. Episodes of exacerbation lasted for days accompanied by cranial autonomic symptoms. She also reported a one-month history of nasal mucopurulent discharges. We considered hemicrania continua(HC) to be a probable diagnosis and prescribed indomethacin at an initial dose of 25mg thrice daily. Our patient's headache ameliorated within two days. Imaging studies showed the aggressive type of fungal sphenoiditis. She underwent trans-septal sphenoidotomy. We believe that fungal sphenoiditis caused our patient to experience secondary HC syndrome.

We will discuss our educational cases during an expert meeting panel.

Identifying risk factors and clinical features in populations who are prodromal for ∝- synucleinopathies

Ahmad Chitsaz

professor of neurology, Isfahan university of medical sciences

Identifying risk factors and clinical features in populations who are prodromal for ∝- synucleinopathies Background: ∝- synucleinopathies, including Parkinson disease (PD), multiple system atrophy (MSA) and dementia with lewy bodies (DLB) are disorders marked clinically by Parkinsonism and pathologically by deposition of ∝- synucleinopathies in neurons. The pathology underlying these disorders begins years before the clinical syndromes and prodromal phase may manifest with signs or symptoms. Objective: risk factors for ∝- synucleinopathies included two categories:
1- exogenous behavioral and environmental risk factors like head trauma, regular exposure to pesticides and organic solvents, rural living occupation of farming and well-water drinking, use of caffeine, nicotine and calcium channel blockers reduced risk of PD biological risk factors for ∝- synucleinopathies include male sex and genotype. Mutation in SNCA, VPS 35, PINK 2, for PD and in GBA for DLB, genetic risk factor for MSA are not defined.
Sign and symptoms of prodromal ∝- synucleinopathies:
The ∝- synucloinopahy prodromal may be conceptualized as a syndrome with non-motor and motor manifestations, non-motor prodromal signs of ∝- synucleinopathies:
Olfactory dysfunctions: is a key feature for identifying individuals at risk for ∝- synucleinopathies. Autonomic dysfunction is the earliest manifestations of ∝- synucleinopathy.
Motor abnormalities: include subtle changes in voices, facial expression changes, and limb bradykinesia, then rigidity and gait changes.
Biomarker of ∝- synucloinopahthies: SPECT use for identify individuals with prodromal features of ∝- synucleinopathies.

Guideline for Intraoperative Neurophysiology

Mohammadali Arami

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Neurological monitoring during brain, spinal cord, and spine surgery is one of the important work areas of neurologists as clinical neurophysiologists. It is necessary that the scientific associations determine and announce the guidelines for conducting these investigations based on scientific standards.

The guide for neurophysiological examinations during surgery for monitoring the nervous system includes the characteristics of the performing personnel, indications for conducting examinations, appropriate tests for surgery, standards of devices and consumables, interpretation of test results, and finally, documentation of the actions performed. Also, the guide presents the standards for performing and interpreting each test separately.

In preparing this guide, the guidelines of international scientific associations have been used.

Update on treatment of trigeminal neuralgia

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According to International Headache Society, Trigeminal neuralgia (TN) is a “unilateral disorder characterized by brief electric shock-like pains, abrupt in onset and termination, and limited to the distribution of one or more divisions of the trigeminal nerve”

Antiepileptic drugs, muscle relaxants, and neuroleptic agents are widely used for the treatment of TN. It should be noted that they were not originally developed for treating trigeminal neuralgia. Carbamazepine was studied in adequate placebo-controlled clinical trials in the 1960s and is still considered the most effective drug. New treatment options include local botulinum neurotoxin type A injections and a novel sodium channel blocker that selectively blocks the Na v1.7 sodium channel.

Non-pharmacological treatment includes: non-invasive electrical stimulation with either transcranial direct-current stimulation or repetitive transcranial magnetic stimulation which both require further evaluation and study to improve applicability.

Surgical options remain a valid choice for patients not responding to medical treatment and include gamma knife surgery, Gasserian ganglion percutaneous techniques, and microvascular decompression. It is important to improve better patient selection for appropriate treatment.

Keywords: trigeminal neuralgia, pharmacological treatments, non-pharmacological treatment, surgical treatment

Imaging features of Idiopathic Intracranial Hypertension

Aidin Taghilou

Imaging findings in IIH: This disease, which is also known as pseudotumor cerebri, is a syndrome caused by increased intracerebral pressure without the presence of hydrocephalus. There are different causes for this disease, including increased production or decreased absorption of cerebrospinal fluid and even increased cerebral venous pressure. Imaging is mainly used to rule out other differential diagnoses, and findings, such as increase in diameter of the optic nerve sheath, tortuosity of the optic nerve, compressive effect on the back of the orbit, protrusions of the subarachnoid space around optic nerves, and ectopy of the cerebellar tendons help to diagnose this disease. Today, using flow analysis of Cerebrospinal fluid to some extent explains the underlying pathology in this disease. In this article, we have a look at the structural and dynamic findings of cerebrospinal fluid in this disease.

Facial pain

Elham Jafari

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Facial pain has generally been separated from headache based on anatomic definitions. The face and head are both innervated by the trigeminal nerve; headache is largely via the first division and orofacial pain via the second and third trigeminal branches.

Contrary to headache disorders, in which primary headache disorders predominate, facial pain is more commonly due to secondary causes, most commonly a dentoalveolar disorder. Identification and exclusion of a dentogenic focus is essential to establish a correct orofacial pain diagnosis. Myofascial pain and temporomandibular joint pain are also diagnosed and treated by dentists.

Once secondary orofacial pain is excluded, the next step is to classify the orofacial pain based on the timing and patterns. The history taking should focus on the duration, location and radiation of pain, its quality and severity, aggravating/relieving factors, associated symptoms, and other accompanying pain conditions. Facial presentation is present in 10% of the patients with primary headache disorders, and the V2 dermatome is most commonly involved. These patients usually respond well to the corresponding headache disorder treatment. If the diagnosis of acute facial pain is uncertain, a trial of migraine and/or TAC-specific therapy may be warranted.

Conclusion: Non-dental orofacial pain disorders are not uncommon. Inadequate recognition of these disorders usually leads to unsatisfactory and unmet treatment needs.

Imaging in Headaches

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Headache is one of the most common human afflictions. For physicians not experienced in headache disorders, it might be difficult sometimes to decide in which patients neuroimaging is necessary to diagnose an underlying brain pathology and in which patients cerebral imaging is unnecessary.

In most cases, headaches are benign and idiopathic and resolve spontaneously or with minor therapeutic measures. Imaging is not required for many types of headaches. However, patients presenting with headaches in the setting of “red flags” such as head trauma, cancer, immunocompromised state, pregnancy, patients 50 years or older, related to activity or position, or with a corresponding neurological deficit, may benefit from CT, MRI, or noninvasive vascular imaging to identify a treatable cause.

This review addresses the initial imaging strategies for headaches associated with the following features: severe and sudden onset, optic disc edema, “red flags,” migraine or tension-type, trigeminal autonomic origin, and chronic headaches with and without new or progressive features.

Keywords: cluster headache, diagnosis, headache, migraine, neuroimaging,

Ophthalmologic Findings in IIH

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Abstract: Idiopathic intracranial hypertension, also known as pseudotumor cerebri, is characterized by elevated intracranial pressure, absent focal neurologic signs, and normal cerebrospinal fluid (CSF) composition. Several approaches have been used to analyze the papilledema, either functionally or morphologically. Headaches occur in nearly all (90%–94%) patients with PTC—they are characteristically pressure like, throbbing, and usually unremitting and occur with retro-ocular pain and may be accompanied by nausea. Vision loss, mostly is transient in nature and occurs in approximately 68%–85% of patients. (severe visual loss and tunnel vision is not frequent) Transient ischemia of the optic nerve due to pressure is thought to explain the transient vision changes. Other common symptoms include photopsia (54%), eye pain (44%), diplopia (38%)

Ophthalmologic signs of IIH consist of:

- Diminished visual acuity
- Visual field loss
- Papilledema on funduscopic examination in 40% of patients. Papilledema is the most reliable clinical sign predicting the correct IIH diagnosis in patients with suspected IIH. A minority (5-10%) of patients with IIH may have no papilledema.
- Choroidal folds,
- Neurosensory retinal detachments from fluid tracking from the optic disc to the fovea
- Macular exudates or hemorrhage, venous stasis retinopathy, BRAO and choroidal infarction
- Hyperopic shifts related to optic nerve sheath-related globe flattening with an elevation of peripapillary retina
- Cranial nerve palsies, usually of the abducens nerve (CN VI).
- Absence of SVP(spontaneous venous pulsation)

Overview of Idiopathic Intracranial Hypertension:

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Idiopathic intracranial hypertension (IIH) is caused by an elevation of intracranial pressure (ICP). The condition mainly affects obese young women of childbearing age. Its prevalence ranges between 0.5 and 2 per 100,000 of the general population and is expected to increase further given the worldwide increase in obesity. The underlying cause of the disease, as well as the gender preference and its pathophysiological relation to obesity, remain largely unknown. Several mechanisms have been proposed as the underlying cause of IIH, such as an overproduction of cerebrospinal fluid (CSF), outflow obstruction, elevated pressure in the venous sinuses, and more recently a dysfunction in the glymphatic pathway as well as hormonal alterations.

The two most prominent symptoms of IIH are progressive visual deterioration resulting from papilledema and chronic headache, although additional symptoms, including cranial nerve palsies, cognitive deficits, tinnitus and olfactory dysfunction, are frequently also part of the clinical presentation. IIH-related headache is defined in the Headache Classification of the International Headache Society (ICHD-3) . While the ICHD has had an enormous impact on advancing the understanding and treatment options of many headache disorders, as it allowed the creation of homogenous patient groups resulting in improved diagnostic accuracy and more effective clinical trials, ICHD has had less of an impact in IIH-related headaches. The reason is a rather unspecific definition of IIH-related headache resulting from its highly variable clinical presentation that may frequently mimic or overlap with primary headaches, in particular migraine.

While the cornerstone of treating the underlying disease is weight loss, acetazolamide is typically used to lower ICP in most cases of IIH, relieving pressure on the optic nerves and allowing time for weight loss to occur. Topiramate is gaining increasing popularity as a therapeutic option for IIH, in light of its actions as an anti-migraine and appetite suppression agent, as well as its ability to inhibit carbonic anhydrase. Surgical management of IIH is required when there is a rapid or progressive decline in visual function. Surgical treatments include CSF shunting (including ventriculoperitoneal (VP), lumboperitoneal (LP), ventriculojugular and vetriculoatrial shunts), venous sinus stenting and optic nerve sheath fenestration (ONSF). The treatment offered is often dependent on the local expertise available. These should occur in conjunction with weight loss.

Key Words: IIH, Headache, ICHD3, Acetazolamide

Headaches during pregnancy

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Headaches are one of the most common discomforts experienced during pregnancy and may occur at any time during pregnancy, but they tend to be the most common during the first and third Trimester.

During the first and third Trimester the cause of headaches is stress, change in hormones, increase in blood velum, and migraine.

Headaches during the second and third trimester tend to be related more to preeclampsia and high blood pressure or cerebral vein thrombosis or increased intracerebral pressure, or related to poor posture and tension from carry extra weight or fatigue and insomnia.

When should you be worried about headaches during pregnancy? When headache is severe or just doesn't go away or thunder club headache, or when patient has a headache with dizziness, fever, edema or neurologic symptoms and signs of headache after trauma.

If need to take medicine for pain relief, Paracetamol is safe during pregnancy. Pain-relieving medications can usually cause headaches if you take them too often so don’t take them more than three times a week.

If paracetamol does not help the patient can take codeine. Most Triptans and NSADs are not considered safe in pregnancy. Metoclopramide can use safely for nausea and vomiting.

Cervicogenic Headache

Mansoureh Togha

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Cervicogenic headache is one of the less known headache types. The prevalence of cervicogenic headache ranges from 0.4-2.5% in the general population and 36.2% in people with headaches. Women are affected more than men.

This type of headache usually associated with delayed diagnosis and inadequate management in comparison to the other types of headache. The term cervicogenic headache was first implicated by Ottar Sjastaad, a Norwegian physician, in 1983.

Cervicogenic headache is the result of the disorders in one of the cervical structures including the bone, disc, and soft tissue.

Cervicogenic headache usually starts from the occipital region unilaterally, and the pain is then referred to the vertex, anterolateral part of the skull, forehead and eye. The pain may be expressed as a deep or stabbing, or compressing headache. It might be episodic and short-term or continues. The pain usually starts from the neck and migrates towards the head. The neck pain may be more severe initially, but headache will eventually be the chief complaint of the patient, masking the origin of the pain. The pain may last from hours to weeks, but its duration is usually longer than migraine headache. The pain may be aggravated by postural factors like inappropriate head position on the pillow (prone sleeping) or prolonged fixed neck position at work.

Pathophysiology: It seems that trigeminal and afferent cervical branches converge in the trigeminocervical nucleus, where afferent sensory branches of C1, C2, and C3 converge with secondary neurons. Therefore, the sensory activity of an afferent nerve is felt as pain in the distribution of another afferent nerve.

Treatment: Different treatment options may be used:

- Non-invasive methods: medical treatment, physiotherapy modalities
- Invasive methods: greater occipital nerve block, epidural steroid injection, cervical muscle injection, laminectomy, etc.

NSAIDs are the most effective oral drugs in the treatment of cervicogenic headache. Evidence supports the use of physical methods like transcutaneous electrical nerve stimulation (TENS), low-level laser, and cryotherapy in these patients.
Greater occipital nerve block is a minimally invasive approach associated with a favorable response. Little evidence supports the benefits of botulinum toxin injection in the cervical muscles and occipital region.
More invasive treatments like laminectomy, spinal stimulation, rhizotomy may be used according to the cause of cervical problems and response to less invasive treatments.

Approach to patients who are at Prodromal Phase or at risk of Alpha-synucleinopathies

Ahmad Chitsaz
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Identifying individuals at the earliest stage of synucleinopathies is Crucial for beginning disease- modifying treatments (DMT).

Prodromal criteria for Parkinson disease (PD), dementia with Lewy bodies (DLB) and multiple system atrophy (MSA) have improved diagnostic accuracy in early disease stage, so we can Predict the likelihood of an individual developing PD, DLB, and MSA, and also distinguishing MSA from PD and DLB. The main clinical hallmarks of MSA are REM sleep behavior disorder (RBD) and autonomic dysfunction (particularly orthostatic hypotension and urogenital symptoms).

Clinical features can help distinguish MSA from PD and DLB are Preserved of olfaction, absence of significant cognitive deficits,

Urinary retention and respiratory symptoms in MSA. Ancillary test results, including neuroimaging, SPECT, biofluid markers (Serological and cerebrospinal fluid: CSF) may further weigh to quantify the likelihood of phenoconversion into Alpha – synucleinopathies .

Conclusion: Now new hope that a breakthrough may eventually become possible, if identify subject in the prodromal phase where underlying molecular pathology is still be reversible and intervention with DMT at an early, Pre-diagnostic stage become Possible.

Non- EEG- Based Ambulatory Seizure monitoring – smartwatch inspiring module and Accelerometer/ gyroscope

Ahmad Chitsaz

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Abstract:

Accurate monitoring of seizures is important to evaluate recurrence risk and response to treatment outside the hospital seizure tracking relies on Patients' and families' self-reporting. Which is unreliable? Although long-term video-EEG is the gold standard for evaluating epilepsy, it is time-consuming and costly.

The use of non-EEG-based seizure detection devices utilizing sensors and modalities provided to monitor patients continuously in the out Patient setting, these include wrist-worn, arm-worn devices, chest-worn and mattresses. For seizure detection, analyzing signal recording done by using artificial intelligence learning algorithms Machine learning (ML) algorithms are trained to automatically detect signal Patterns of epileptic seizures.

Monitoring data from mobile devices can detect generalized tonic-clonic seizures. Automatic seizure detection may help prevent sudden unexpected death (SUDEP) and statues epileptics and can differentiating epileptic and psychogenic non-epileptic seizures (PNES).

Conclusion: Automatic epileptic seizure detection of a broad variety of seizure types using ML and wearable data is feasible. Proper tracking of seizures improves outcomes, injury prevention and decreasing the risk of SUDEP. A portable, noninvasive non-stigmatizing tool that detects seizure can improve quality of life.

Keywords: Ambulatory seizure monitoring- smartwatch

Dopa-Responsive Dystonia Spectrum

Seyed Amir Hassan Habibi

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Generally, we know DRD as a diurnal and benign disorder without any complication.

And Its classic features are summarized as childhood or adolescent onset dystonia associated with marked diurnal fluctuation and improvement by sleep or rest, and a dramatic and sustained response to Dopaminergic drugs. There are other groups of disease that mimic DRD and its phenotype but has some extraordinary features and other disorders that partially behave like DRD.

We want to illustrate some of these disorders. DRD is a syndrome of selective nigrostriatal dopamine deficiency caused by genetic defects in the dopamine synthetic pathway without nigral cell loss. DRD-plus patients have more severe features that are not seen in DRD because of the severity of the genetic defect.

DRD look-alike to include the additional cases that responder to levodopa in some part.

A group of 1) neurodegenerative or nonneurodegenerative disorders without involving the nigrostriatal dopaminergic system or 2) neurodegenerative disorders involving nigrostriatal dopaminergic system, that could present with dystonia responsive to dopaminergic drug

Peripheral Movement Disorders

Kaveh Shafiei

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The movement disorders usually are caused by a brain lesion, and, more specifically by damage or dysfunction in the basal ganglia. This presentation briefly discusses the issue of peripheral movement disorders due to lesions outside the central nervous system. The hemifacial spasm is a well-known example of this interesting group of dyskinesia, but there are a few more which worth attention such as Jumapy stumps, Belly dancer's dyskinesia, and Painful and moving toes.

Movement Disorder at an Art masterpiece.

Kaveh Shafiei

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"A Clinical Lesson at the Salpêtrière" is possibly the most celebrated painting in the history of neurology and movement disorders. The painting represents an imaginary scene of a contemporary scientific demonstration, based on "Thusedays class" of Jean-Martin Charcot , who is well known as the father of neurology at the Salpetriere hospital, Paris in the mid-nineteenth century. Georges Gilles de la Tourette, Joseph Babinski, Pierre Marie, and many other prominent figures who shaped modern neurology have been shown in a theatrical scene. In this presentation, I try to show you what massage this painting has been trying to deliver.

Treatment of mild to moderate MS

Hormoz Ayromlou

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Seven DMTs are currently approved as first-line therapy in RRMS without any restrictions: Interferon (IFN)-beta 1a IM, IFN-beta 1a SC, IFN-beta 1b SC, Peginterferon-beta 1a, GA, teriflunomide, and dimethyl fumarate (DMF). Five other DMTs are approved as first-line therapy but with certain restrictions. Fingolimod and ocrelizumab are approved for initial treatment of RRMS in the USA but can only be used in Europe for patients failing first-line therapies or those with active or highly active disease from onset. Siponimod was approved for CIS, initial treatment of RRMS, and active SPMS.

Suboptimal responders with breakthrough disease: This term has been interchangeably used with treatment failure, or treatment non-responders. We prefer to avoid both terms as they imply that the specific DMT being used has failed, while a certain degree of disease activity is expected with most currently available MS therapies. Certain confounding factors need to be considered before labeling a patient as a suboptimal responder, including poor adherence to therapy and an adequate DMT trial for at least 6–12 months. The advent of more potent therapies has made the "No Evidence of Disease Activity' outcome measure, as defined by the absence of relapses, new MRI lesions and disability progression, more attainable and raised our level of concern about ongoing clinical or radiological disease activity in patients on DMTs. Although we still lack a clear definition of breakthrough disease, most current criteria are based on clinical relapses, MRI activity, and accumulation of disability. With the advent of immune reconstitution therapies (IRT), such as alemtuzumab and cladribine, that require treatment for short periods of time, resulting in long term durable effects, the definition of suboptimal response needs to be revised.

It is recommended that breakthrough disease on chronic DMTs should be considered after one year of treatment in patients with ≥ 1 relapse and/or disability progression or ≥ two active MRI lesions (Gd+ and/or new T2W) after 1 year of adequate treatment and using as baseline an MRI performed six months after treatment initiation. In patients with moderately active disease and suboptimal response to first-line therapies as defined above, treatment escalation to fingolimod, siponimod, natalizumab, ocrelizumab, or cladribine should be considered. It is recommended to have a reference MRI 6 months after treatment initiation for comparison (re-baseline MRI). Rituximab can be used off-label as an escalation therapy for all levels of activity, in special populations such as refugees or in countries where other appropriate options are not available. In patients with evidence of breakthrough disease on any of the second line medications, a lateral switch should be considered based on the risk stratification strategy mentioned above before resorting to third-line medications that are either used off-label such as cyclophosphamide and autologous hematopoietic stem cell transplantation, or have a poor safety profile such as mitoxantrone.

MS in Pediatric Population

Seyed Mohammad Baghbanian

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Pediatric-onset multiple sclerosis (POMS) is defined as the first multiple sclerosis (MS) attacks occurring before 18 years old. 3–5% of patients develop MS prior to the age of 18 years. The diagnosis of MS in a pediatric/adolescent patient is based on the 2017 McDonald diagnostic criteria, as in adults, once the possibility of ADEM or NMOSD has been ruled out. There is limited expertise about the efficacy and safety of current disease-modifying agents. Interferons and glatiramer acetate are preferred initial choices for DMTs based on observational evidence, with the requirement of a switch to a more effective DMT if breakthrough MS activity occurs. Recently, the development of randomized controlled MS trials in youth has led to the first agent approved by the US FDA for the treatment of pediatric MS—fingolimod. Fingolimod is the only FDA-approved treatment for pediatric multiple sclerosis in the United States. On 18 June 2021, teriflunomide received its first approval in this indication in EU pediatric patients aged ≥ 10 years. The U.S. Food and Drug Administration (FDA) has rejected an application requesting the expansion of Aubagio (teriflunomide) for the treatment of children and adolescents, ages 10 to 17, with relapsing forms of multiple sclerosis (MS). The long-term safety and efficacy observed in CONNECTED were consistent with adults, suggesting pediatric and adolescent patients with MS might benefit from DMF treatment. Ocrelizumab can be considered a safe and effective treatment option in highly active P-RRMS.

Safety monitoring of first-line DMDs: IFN and GA

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The “first” first-line agents in the treatment of multiple sclerosis are beta interferons and glatiramer acetate. More than 25 years of clinical trial and real-world experience with these disease modifying therapies have demonstrated the long-term safety and tolerability of these therapies.

However, after the approval of beta interferons, cases with autoimmune diseases, including idiopathic thrombocytopenia, hypo- and hyperthyroidism, and autoimmune hepatitis, have been reported. In addition, depression, hematological abnormalities, including lymphopenia, neutropenia, anemia and leukopenia, have been reported, which necessitate clinical and laboratory monitoring.

Although no laboratory monitoring is generally recommended during glatiramer acetate therapy, Cases of hepatic injury, some severe, including liver failure and hepatitis with jaundice, have been reported. Thus, laboratory monitoring should be considered at least in some special conditions such as comorbidities and previous history of drug-induced liver injury associated with other drugs.

In this manuscript, safety monitoring of beta interferons and glatiramer acetate and the latest updates on this issue is reviewed.

Safety Monitoring of Anti CD20 Mabs in Treatment of MS

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The growing use of AntiCD 20 mabs (Ocrelizumab, Rituximab, Ofatumomab, Ublitoximab) emphasizes on the knowledge of proper application and monitoring of the safety and efficacy of these kinds of DMDs in the treatment of MS.

Ocrelizumab was approved in 2017, however, Rituximab is frequently used as an off-label therapy.Approval of ofatumumab reduced the injections in a hospital or clinic- base setting, and recently, Ublitoximab has been approved as a relatively producing lower adverse related events and also a lower dosage-applicable agent.

The most important issues in the safety of the B cell depleting drugs are; Injection related reactions(IRRs), Infection risk, and malignancy.Also, some fewer or rare adverse events might be reported in using these drugs.

In this discussion we try to demonstrate the requirements of safety monitoring of these DMDs by looking at some data from Clinical trials and in the real world.

Key words:Anti Cd20,Mabs,MS,safety

Treatment of NMOSD and MOGAD

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Neuromyelitis optica spectrum disorders (NMOSD) is a series of severe inflammatory-demyelinating-necrotizing disorders that mainly involves the optic nerve and spinal cord.
Myelin oligodendrocyte glycoprotein antibody-associated disease (MOGAD) is a distinct CNS inflammatory disease with symptoms and imaging findings that distinguishes them from NMOSD and multiple sclerosis.
Here, the main goal is to review the treatments of two diseases.

Acute attack
As with other inflammatory diseases, acute attacks of NMOSD and MOGAD are treated with injectable corticosteroids, and the response to treatment is acceptable in most cases. Contrary to previous, some recent evidence shows that earlier treatment has a better outcome. In a severe and debilitating attack, simultaneous treatment with corticosteroids and plasmapheresis is recommended. Although the data are limited and contradictory on the use of IVIG, in very severe and refractory cases, it may be considered after plasmapheresis.

Preventive management
Preventive treatments include drugs that target a specific part of the inflammatory system involved in the pathogenesis of the diseases.

NMOSD**:**
Eculizumab-a monoclonal antibody that inhibits complement C5 protein, Satralizumab-a humanized monoclonal antibody against the interleukin-6 receptor; and Inebilizumab-an anti-CD19+ monoclonal antibody has been shown to be significantly effective in clinical trials. Also, Tocilizumab-a humanized monoclonal antibody against the interleukin-6 receptor, and Rituximab-a chimeric monoclonal antibody that targets CD20+ B cells, have had significant effects in some studies.

MOGAD:
Considering that a significant number of patients are monophasic, the decision for long-term treatment should be made carefully. Treatment includes Maintenance IVIg, mycophenolate mofetil, Azathioprine, Rituximab, and IL-6 targeting treatments (tocilizumab, satralizumab for refractory cases).

Pitfalls in Diagnosis of Multiple Sclerosis (case 1)

Dr. Nastaran Majdinasab

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Misdiagnosis MS is common and occurs chiefly for 1 of the following 5 reasons:
1- There is no pathognomonic clinical feature or diagnostic test
2- Differential diagnosis includes a long list of conditions that can be mistaken
3- clinical presentations are variable
4- MS is not common enough for extensive experience with it to accumulate outside specialized centers
5- There is pressure to diagnose quickly in order to initiate DMT early

Despite accepted McDonald's Criteria for diagnosis the rate misdiagnosis remains high and may even be rising.
A challenge applied to patients who have experienced a “monophasic clinical episode. similar to a typical MS relapse which is the hardest part of the diagnostic process. In a recent survey, more 15% of MS specialists misidentified syndromes of complete myelopathy and complete gaze palsy as typical of MS relapse, even though both of these syndromes were specifically described as inconsistent with MS in McDonald Criteria. Use criteria also requires knowledge of the size, location, and morphology of lesions on MRI. It is likely that the incorporation of the more specific radiographic signs of demyelination into the diagnostic criteria, such as central vein sign or paramagnetic rims, will greatly decrease the risk of misdiagnosis. Recognition of these signs, requires optimization of MRI sequences not yet available.

A practical and easy-to-use approach to diagnose the following 3 key questions:
- Is clinical presentation suggestive relapse?
- Are MRI findings consistent with demyelination?
- Do findings of CSF analysis support diagnosis?
This presentation describes Pitfalls by case

MS In elderly population

Vahid Shaygannejad

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Defined as age-related alterations naturally occurring in the immune system, it particularly influences tolerance, response, and adverse effects of disease-modifying treatments for MS.

This process leads to a reduction in the number of virgin T cells. Other effects include an inverted CD4 + /CD8 + cell ratio, severe alterations in NK cell functioning, and reduced tissue repair capacity in the brain.

The number of older people with MS is increasing due to; Population aging, advances in disease-modifying treatments, and Improved health and social care of these patients.
Aging of the immune system increases the risk of *infections*, *tumors*, and *autoimmune diseases* in elderly individuals.
Neurodegeneration is accelerated in patients with MS due to the nervous system's loss of remyelination capacity.
LOMS, defined as onset of MS after the age of 50 years, comprises 2.7–12%of MS patients. In numerous clinical studies, older age at disease onset has been associated with a worse prognosis, with a 10–34% per decade risk of developing SPMS.
The subset of patients with LOMS comprised 4.7% of the patient population (132 patients). Almost 50% had PPMS.
Immuno-senescence, which includes altered T-cell and B-cell responses as well as a decreased capacity for neurodegeneration and diminished oligodendrocyte function, might lead to *inadequate remyelination* with *inability* to produce the *classical RR stage*.
It is suggested that the efficacy of immunomodulatory DMTs on MS disability progression strongly decreases with higher age, predicting a loss of efficacy at an average age of 53.
Furthermore, high-efficacy drugs seemed to lose their proven higher efficacy, as compared to low-efficacy drugs, in patients aged 40.5 years and older.

Myasthenia Gravis: Novel Treatments

Ali Asghar Okhovat

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As a chronic disabling condition with a commonly fluctuating course, myasthenia gravis (MG) usually needs unpredictable hospitalizations, difficulties reconciling work and home life, and, subsequently, psychological or psychiatric disorders.

while traditional treatment regimens are based on relatively non-specific pharmacologic strategies (usually pyridostigmine alone or combined with corticosteroids or non-steroidal immunosuppressants) with a problematic tolerance and safety profile, novel drug alternatives are urgently required. Through the last decade, MG treatment has undergone significant changes, mainly due to the advent of multiple new biological drugs to improve disease outcomes. Clinical trials have reported positive results for some of these drugs with specific immunological targets.

New drugs for MG include molecules targeting B cells, plasmablasts, complement inhibitors, and neonatal fragment crystallizable receptor (FcRn) antagonists. In this presentation, my goals were to analyze the recent literature and evidence on these innovative therapies and briefly discuss the therapy's efficacy on clinical outcomes, acute exacerbations, adverse events, tolerability, and quality of life. These drugs include:

B-Cell Inhibitors: anti-CD20 (Rituximab, Ofatumumab), anti-CD19 (Inebilizumab), and anti-CD40 (Iscalimab).

Drugs targeting plasma cells: Proteasome inhibitors (Bortezomib), Biologic drugs against plasma-cells anti-CD38 (Mezagitamab, Daratumumab).

Indirect B-cell inhibitors: anti-IL6 (Tocilizumab, Satralizumab), anti-TNF (Etanercept), B-cell-activating factor (Belimumab) and Bruton's tyrosine kinase inhibitor (Tolebrutinib).

Complement inhibitors: Eculizumab, Ravulizumab, Zilucoplan.

FcRn inhibitors: Efgartigimod, Rozanolixizumab, Nipocalimab, Batoclimab, Oralinomab

Role of Muscle MRI in Diagnosis of myopathies

Behnaz Ansari

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Structural MRI is one of the most important imaging modalities in the diagnosis of muscle pathology. Axial T1-weighted and fat-suppression T2-weighted sequences are used in the routine clinical setting. Contrast-enhanced MRI is only recommended in infectious and tumors. Whole-body MRI is useful to show distinctive generalized involvement patterns. Muscle MRI can support the pathogenicity of a variant of uncertain significance (VUS) and also it may be helpful for the evaluation of subclinical muscle involvement in individuals with either nonspecific symptom. Advanced and quantitative muscle MRI can be useful biomarkers in neuromuscular disease in clinical trials. Assessment of the pattern of involvement based on MRI can support the clinical diagnosis, for example tongue bright sign in Pompe disease, central stripe in channelopathy, rimmed muscles and central cloud in collagenopathy and cuneiform pattern in myopathy associated with anti-mitochondrial antibody.

Diagnostic Approach to Myasthenia Gravis

Bahram Haghi Ashtiani

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Myasthenia gravis (MG) is a rare autoimmune disorder that affects the neuromuscular junction and results in fluctuating weakness of skeletal muscles. The diagnosis of MG requires a systematic approach, taking into account the clinical history, physical examination, neurophysiological tests, and serological assays.

Clinical evaluation is the cornerstone of MG diagnosis, and a comprehensive history and physical examination should be performed to evaluate the patient's symptoms and signs. The onset and duration of symptoms, their progression, and their response to treatment are essential components of the clinical history. The examination should focus on assessing the distribution, symmetry, and degree of weakness in various muscle groups. The presence of ptosis, diplopia, dysphagia, dysarthria, and limb weakness should be evaluated carefully as they are the hallmark features of MG. Some tests like the Ice test and Tensilon test are useful for patients suspicious for MG.

Neurophysiological testing plays a vital role in the diagnosis of MG. Repetitive nerve stimulation (RNS) and single-fiber electromyography (SFEMG) are two commonly used tests to evaluate neuromuscular transmission. RNS measures the degree of muscle response to repetitive stimulation of the motor nerve and can detect a decremental response in patients with MG. SFEMG can identify the small fluctuations in muscle fiber response seen in MG, making it a highly sensitive test for the diagnosis of MG.

Serological assays play a critical role in the diagnosis of MG, especially in identifying the specific subtypes of MG. The acetylcholine receptor (AChR) antibody assay is highly sensitive and specific for the diagnosis of MG, with up to 85% of patients with generalized MG testing positive for AChR antibodies. Muscle-specific kinase (MuSK) antibody testing should be considered in seronegative MG patients, and LRP4 and agrin antibodies are also emerging as new markers of MG.

In some cases, diagnostic imaging may be helpful in diagnosing MG. Imaging studies like CT or MRI are used to detect the presence of a thymoma, which is found in up to 15% of patients with MG.

In summary, the diagnosis of MG requires a multidisciplinary approach, including a thorough clinical evaluation, neurophysiological testing, and serological analysis. Imaging studies can also be helpful in identifying potential causes of muscle weakness, such as thymoma. Early diagnosis is essential to ensure prompt treatment and improve patient outcomes.

Congenital Myasthenic Syndrome

Farzad Fatehi

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Congenital myasthenic syndrome (CMS) is a rare inherited neuromuscular disorder characterized by weakness and fatigue in the voluntary muscles. Defects in the neuromuscular junction cause it, the connection between the nerve and the muscle that allows nerve impulses to trigger muscle contractions. There are currently more than 30 known subtypes of CMS, each caused by a different genetic mutation that affects the proteins' function in the neuromuscular junction. CMS's severity and specific symptoms can vary widely depending on the subtype and the individual case.

Symptoms of CMS typically appear in infancy or childhood. They may include difficulty breathing, feeding difficulties, poor muscle tone, delayed motor milestones, droopy eyelids, and weakness in the limbs, neck, and facial muscles. Symptoms may worsen with physical activity, stress, or illness and fluctuate over time. Diagnosis of CMS typically involves a combination of clinical evaluation, genetic testing, and electromyography (EMG) to assess the function of the neuromuscular junction. CMS treatment options are currently limited and primarily involve supportive measures such as respiratory support, feeding assistance, and physical therapy.

There is ongoing research into potential CMS therapies, including drugs targeting specific mutations, gene therapy, and stem cell transplantation. However, these treatments are still in the early stages of development and may not be widely available for some time.

CMS can significantly impact the quality of life for affected individuals and their families. However, with appropriate management and support, many individuals with CMS can lead fulfilling and productive lives. Close monitoring and regular follow-up with healthcare providers are essential for optimizing outcomes and managing potential disorder complications.

Challenging case presentation in Neuromuscular disorders

Fariba Zemorshidi

Neuromuscular fellowship

A 22-year-old woman presented with headache, recurrent tonic-clonic seizures, hallucination, and alternation in level of consciousness since three days before admission. The patient was very agitated, with excess sweating and tachycardia. In addition, she seemed to have a severe abdominal pain. She had no fever, neck stiffness, and focal neurological deficit. In her past medical history, she had undergone an appendectomy due to acute abdominal pain four months before admission. Routine laboratory evaluations including complete blood count, metabolic panel, electrolytes and liver function tests, and toxicologic tests revealed hyponatremia (sodium=125 mEq/L), and elevated transaminase, while other tests were in normal range. Brain Magnetic Resonance Imaging showed cortical and subcortical hyperintensities in bilateral occipito-pareital lobes in T2 and Flair sequences, compatible with posterior reversible encephalopathy syndrome. Her seizures were controlled by levetiracetam administration. A few days later, she developed profound muscle weakness especially in proximal muscles of the upper and lower extremities, areflexia and reparatory distress. The electrodiagnostic study showed low amplitude or absent CMAPs and normal SNAPs and reduced recruitment in needle EMG, compatible with acute motor axonal neuropathy. Cerebrospinal fluid evaluation showed a normal protein level without any cell. Plasma exchange was performed without any improvement. The combination of abdominal pain, PRES and acute motor neuropathy raised the suspicion of acute intermittent porphyria (AIP) in the patient. The urine evaluation of porphobilinogen in urine was in the normal range. However, the genetic evaluation showed the heterozygous stop-gain variant in the PPOX gene that confirmed the diagnosis of Variegate porphyria.

Progressive Muscle Weakness and severe Atrophy in a Patient with Long-standing Rheumatoid Arthritis

Payam Sarraf, Kiana Amani

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A 55-year-old male with a history of rheumatoid arthritis (RA) for approximately 20 years presented to our multidisciplinary ALS clinic with complaints of progressive weakness and atrophy of limbs, which had started in the distal left upper limb and gradually involved other limbs over the past two years. The patient did not report any swallowing or speech difficulties. Muscle strength was weak in multiple proximal and distal muscles. Based on the neurophysiological findings of neuropathic pattern in the previous center's electrodiagnostic study (EDX), the patient had been previously diagnosed with motor neuron diseases and had started treatment with Riluzole. Upon referral to our center, considering the rheumatological history and the specific pattern of muscle involvement, the patient underwent a thorough evaluation, resulting in a different diagnosis. We are about to discuss the challenging clinical and paraclinical findings of the patient.

This case emphasizes the importance of complete examinations and detailed evaluation in patients with neuromuscular disorders.

Standard treatment protocol of Myasthenia Gravis

Keivan Basiri

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Symptomatic treatment:

Pyridostigmine is the most commonly used acetylcholinesterase inhibitor and used alone in purely ocular and mild generalized MG or in combination with other immunosuppressant agents in more severe patients.

Immunomodulation:

CORTICOSTEROIDS. Corticosteroid treatment is effective in all subtypes of MG. Some patients experience a transient worsening of weakness from MG for the first 5 to 7 days after initiating corticosteroid therapy or with increases in patients already taking them. Although side effects pose significant challenges, corticosteroids are widely recommended as first-line therapy for patients with MG who require more treatment than pyridostigmine alone.

NONSTEROIDAL IMIMMUNOSUPPRESSANT Noncorticosteroid immunosuppressant medications include azathioprine, mycophenolate mofetil, methotrexate, cyclosporine, tacrolimus, and cyclophosphamide. These medications should be reserved for those who have not responded well to prednisone, who relapse on prednisone tapering, or who have clear contraindications to corticosteroid use.

RITUXIMAB. Rituximab is especially effective in anti-MuSK antibody-positive MG and should be considered as an early therapy in these patients.

Plasma Exchange and IV Immunoglobulin

Plasma exchange and IVIg can be used as a bridge treatment to prednisone or other immunosuppressants with slow onset of action; in patients who show poor response to or intolerance of multiple immunosuppressants; in preoperative therapy to optimize patient strength and in MG impending crisis and crisis

Thymectomy

Thymectomy is recommended in nonthymomatous patients with anti-AChR positive generalized MG up to age 65. Ideal candidates for thymectomy are young female patients with a short disease duration of 1 to 2 years.

A patient with ophthalmoplegia, fixed mydriasis, and bifacial weakness

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A 37 years old female presented with acute progressive diplopia. When she woke up next day, she noticed bilateral ptosis, facial numbness, and paresthesia in upper and lower extremities. After a few hours, she developed progressive weakness of her limbs so that she was unable to walk at the end of the day and admitted to the hospital.

The day after hospitalization, she suffered from dysphagia and nasal speech; next day she was intubated due to respiratory distress.

On admission, physical examination revealed bilateral asymmetric ptosis, fixed ophthalmoplegia, dilated unreactive pupils, bifacial palsy, reduced gag reflex, reduced motor strength and generalized areflexia.

Lab data: Normal CSF analysis: Normal Brain MRI: white matter lesions

She received three doses of botulism antitoxin with no improvement. In reevaluation of the patient, position, and vibration senses was impaired. EDX performed and PLEX started. Ptosis and weakness improved, pupil became partially reactive to the light, and patient was extubated. We will discuss differential and final diagnosis in neuromuscular session Thursday morning.

Case Presentation: Necrotizing Autoimmune Myopathy

Mahtab Ramezani

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Necrotizing autoimmune myopathy (NAM) is a rare subset of idiopathic inflammatory myopathies that presents with severe proximal muscle weakness, elevated creatine kinase, myofiber necrosis with minimal inflammatory cell infiltrate on muscle biopsy, and infrequent extra-muscular involvement. The etiology is unknown however, it has been linked to statin use, malignancy, and autoantibodies such as anti-signal recognition particle (SRP) and anti-hydroxy-3-methylglutarul-CoA reductase (HMGCR) antibodies. Herein, we report a patient who developed slowly progressive proximal and axial muscle weakness and showed scapular winging and Beevor sign in the examination. The CK level increased more than 10 times the upper limit of normal, and the muscle biopsy demonstrated necrotizing myopathy.

A combination of corticosteroids, immunosuppressants, and intravenous immunoglobulins is frequently required to control disease activity. No specific randomized clinical trial is available to define the best treatment strategy for keeping patients with IMNM in remission.

Myasthenic Crisis

Mohammad Yazdchi

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Myasthenia gravis (MG) is an autoimmune disease affecting the neuromuscular junction and causing fatigable ocular, limb, and bulbar muscle weakness.

It has a prevalence of approximately 1 in 5000.

Clinical exacerbations can be induced by some medications, surgery, and Infections.

Factors That Can Trigger or Worsen Myasthenia Gravis :

Surgery,Pregnancy and Postpartum Period, Heat , Stress , Viral Infections , Bone Marrow Transplantation

Medications:

Antibiotics: Aminoglycosides, Fluoroquinolones, Tetracyclines, Sulfonamides, Penicillins,Nitrofurantoin , Telithromycin , Magnesium, and magnesium-containing medications (eg, laxatives antacids), Botulinum toxin , Interferon alfa,D-Penicillamine

Cardiovascular medications: Quinidine, quinine, Beta-blockers, Calcium channel blockers

Anesthetics: methoxyflurane, Neuromuscular blockers e.g., succinylcholine

Checkpoint inhibitors: (eg, pembrolizumab)

Myasthenic crisis is a life-threatening exacerbation of myasthenia gravis that is defined as worsening of myasthenic weakness requiring intubation or noninvasive ventilation. The proportion of patients with myasthenia gravis who experience at least one myasthenic crisis may be as high as 10 to 20 percent, and the annual risk of myasthenic crisis among patients with myasthenia gravis is approximately 2 to 3 percent. In 13 to 20 percent of patients who present with myasthenic crisis, it is the first manifestation of myasthenia gravis. Most myasthenic crises occur in the first few years after the diagnosis of myasthenia gravis, when the disease is often in its most active phase.

Cholinergic crisis: A potential major side effect of excessive anticholinesterase medication is weakness, which can be difficult to distinguish from worsening myasthenia gravis. This paradoxical weakening with anticholinesterase medications is called "cholinergic crisis." However, cholinergic crisis is rarely, if ever, seen with dose limitation of pyridostigmine to less than 120 mg every three hours. Cholinergic crisis is so rare that it should not be the presumed cause of increasing weakness unless the doses taken are known to significantly exceed this range.

Evaluation and management:

- Admit to intensive care unit

●Frequently monitor respiratory muscle strength

●Electively intubate if clinical evaluation or tests of respiratory muscle strength suggest impending respiratory failure; temporarily stop anticholinesterase medications for intubated patients.

●Begin rapid therapy with plasma exchange or intravenous immune globulin (IVIG)

●Begin immunomodulating therapy with high-dose glucocorticoids; consider azathioprine or mycophenolate mofetil, if glucocorticoids are contraindicated or were previously ineffective

●Initiate weaning from mechanical ventilation when respiratory muscle strength is improving, but only after starting treatment with plasma exchange or IVIG.

- Intercurrent infections are often a contributing factor and should be sought and treated aggressively, as should any factors or drugs that may have precipitated or exacerbated the patient's weakness.

Medical and surgical consultation in MG Patients

Narges Karimi

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Myasthenia gravis (MG) is the most common disorder of the neuromuscular junction (NMJ), characterized by fatigable weakness affecting the skeletal muscle. Weakness may be localized to specific muscle groups or generalized, ranges from mild to severe, and is exacerbated by repeated muscle activity and relieved by rest, described as fatigability. MG exacerbation or crisis may arise from the stress of the surgical procedure, number of drugs interfering with the neuromuscular transmission or because of general anesthesia. Given the potential for MG exacerbation or crisis after surgical procedures, it is critically important to take appropriate measures to avoid or minimize the occurrence of these complications. Preoperative assessment should involve the patients' neurologist to ensure that their condition is optimized and in a stable phase and to plan postoperative care. The anesthetic management of MG should be individualized, taking into consideration the disease; its treatment; and the effects of surgery, anesthesia, and associated medications. There is accumulating literature on drugs, which can cause MG-like symptoms, unmask MG, cause MG exacerbation, and induce de novo MG. The symptoms can be mild to life threatening, even fatal. Although infections have to be treated aggressively in MG patients, certain antibiotics such as macrolides, aminoglycosides, and fluoroquinolones should be avoided if possible. Other drugs to avoid include quinine and class Ia antiarrhythmics. Magnesium supplementation should be carried out cautiously in inpatient myasthenic. It is necessary to consult with a neurologist in internal and infectious medicine, cardiology, or psychiatry departments for MG patients.

Myasthenia Gravis (MG) Mimics

Payam Khomand

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Myasthenia gravis (MG) is a prototypical neuromuscular disorder that can be difficult to diagnose and is frequently misdiagnosed for other diseases, particularly in cases of seronegative illnesses with obvious symptoms. Therefore,this can lead to delays in diagnosis and, subsequently, adequate treatment.

In fact, mimics often receive inappropriate and harmful therapy for a long time. Hence, this might have a negative effect on the patient's health and quality of life, as well as put them at chance for serious illnesses.

As a general, differential diagnosis includes disorders that affect the upper brainstem, cranial nerves, neuromuscular junction,

muscles, or local orbit anatomy, and non-neurological systemic diseases can produce fluctuating ptosis or eye movements that can occasionally be confused with MG.

Therefore, this lecture considers several myasthenia mimics or other diagnoses in detail that might be mistaken for MG

Update of CIDP treatment

Payam Sarraf

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Chronic inflammatory demyelinating polyneuropathy (CIDP) is a disabling but treatable disorder. However, it can be difficult to optimize its treatment. Multiple agents are used for the first and second line. First-line options are intravenous immunoglobulin, corticosteroids, and plasma exchange. Second-line therapies may be suggested as steroid-sparing agents or more potent therapy. Of note, symptomatic treatment of neuropathic pain and non-pharmacological managements should be considered.

Here in, I discuss the evidence for the various treatments and explain the utilities of the different. approaches.

ESUS: Definition, Diagnosis, and Management

Kavian Ghandehari

MD FLSP, Professor of Stroke & Cerebrovascular Disease, Director of Stroke Fellowship Program, Mashhad University of Medical Sciences

The following considerations have implicated cardiac sources as etiology of cryptogenic strokes. 1- Some cardiac sources of embolism are dynamic and intermittent, e.g. paroxysmal atrial fibrillation. 2- About 70% of patients with cryptogenic stroke have a superficial hemispheric infarct. 3-TEE identifies numerous potential causative factors and potential novel mechanisms of ischemic stroke. Identification of occult atrial fibrillation among those with cryptogenic ischemic stroke has been the focus of extensive research. The results of NAVIGATE-ESUS and RESPECT-ESUS argue against the contention that cardioembolic etiologies predominate ESUS and support a population of heterogeneous etiologies. Likely includes non-stenotic atherosclerosis of large arteries and their branches and overlapping etiologies. The patient selection in NAVIGATE-ESUS may not have adequately targeted high probability cardioembolism. ACARDIA trial is evaluating apixaban vs. aspirin in 1100 patients with recent cryptogenic stroke and atrial cardiopathy, defines as one of the following; large p wave terminal force in lead V1>4000µV/ms, left atrial diameter >3.8 cm for women or >4 cm for men, serum NT-proBNP>250pg/mL. Atherosclerosis, not ESUS, might be the main cause of deep ESUS which should be ruled out from the family of ESUS because of its non-embolic mechanism. A stroke caused by a high risk non-stenotic intracranial atherosclerotic plaque in branch atheromatous disease is misclassified as ESUS based on the current criteria of ESUS.

Keywords, ESUS, Cryptogenic

Update in Thrombophilia and Young Stroke

Ghabaee Mojdeh

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The thrombophilia is used to describe hereditary and/or acquired conditions associated with an increased predisposition to thrombosis.

Inherited thrombophilia includes defects in protein C, protein S, and antithrombin, genetic mutations such as factor V Leiden (FVL) and the prothrombin G20210A gene mutation (PTG), elevated levels of factor VIII, and ABO blood type.

Important acquired thrombophilia includes antiphospholipid syndrome (APS), paroxysmal nocturnal hemoglobinuria (PNH), myeloproliferative neoplasms (MPN) and the presence of a JAK2 mutation in the absence of an MPN phenotype.

The prevalence of inherited and acquired thrombophilia seems to be low in the general White population, ranging from ≈0.02% for antithrombin deficiency to 5% for FVL.

Pregnancy is a hypercoagulable state due partly to physiological changes in both the coagulation and fibrinolytic systems. Heritable and acquired thrombophilia can interact to further increase the risk of thrombosis; for example during pregnancy and the puerperium increase stroke risk by an estimated 16-fold (arterial, venous).

Combined FVL mutation &OCP, increases the risk of ischemic stroke 11-folds.

Inherited thrombophilia as factor V Leiden (FVL) (PTG) mutation might increase the risk of stroke in young adults, this may be limited to patients with concomitant PFO. In contrast, APLS, an acquired thrombophilia, is associated with an increased risk of arterial ischemic events, including stroke, particularly among younger people.

When deciding whether to pursue thrombophilia testing, the incorporation of factors such as young age, pregnancy, estrogen-containing contraception use, presence of PFO, and cryptogenic stroke mechanism may increase the diagnostic yield and clinical impact of testing.

Small Vessel Disease and Vascular Dementia

Mohammad Reza Gheini

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Cerebral small vessel disease (CSVD) is a contributing factor in 25 percent of strokes and 40 percent of dementias. Hypertension, cerebral amyloid angiopathy, radiation exposure, immune-mediated vasculitis and several genetic diseases are risk factors of CSVD. Genetic predisposition is one of the most important topics in studies of CSVD. In some ethnic groups, specific genetic predisposition for CSVD has been found.

In pathogenesis of CSVD, the role of neurovascular unit is very prominent. I will try to clarify the structure and function of the neurovascular unit and its importance in creating clinical manifestations of CSVD.

CSVD may be asymptomatic and only detected by MRI, but it may cause mild cognitive dysfunction, dementia, motor and gait dysfunction, and urinary incontinence.

Imaging is the main diagnostic tool for CSVD. Recent small subcortical infarcts, white matter hyperintensities, lacunes, cerebral microbleeds, enlarged perivascular spaces, and cerebral atrophy are signs of CSVD in MRI.

The most rational approach to treatment and prevention of progression of CSVD is to intensively control vascular risk factors, of which hypertension is the most important.

With the understanding of pathophysiology of the neurovascular unit, we may have better therapies.

Early identification of people at risk of vascular dementia with advanced imaging and genetic studies provides an opportunity to stop progression and prevention of cognitive decline.

2021 AHA/ASA Guideline for the Prevention of Stroke in Patients With Stroke and Transient Ischemic Attack

Seyed Amir Hejazi

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New indication in the label: In patients with moderate to high-risk Transient Ischemic Attack (TIA) or minor Ischemic Stroke (IS), Clopidogrel in combination with ASA is indicated in:

Adult patients with moderate to high-risk TIA (ABCD2 score ≥4) or minor IS (NIHSS ≤3) within 24 hours of either the TIA or IS event.

New posology in the label:

Adult patients with moderate to high-risk TIA (ABCD2 score ≥4) or minor IS (NIHSS ≤3) should be given a loading dose of clopidogrel 300 mg followed by clopidogrel 75 mg once daily and ASA (75 mg -100 mg once daily). Treatment with clopidogrel and ASA should be started within 24 hours of the event and be continued for 21 days, followed by single antiplatelet therapy.

The Effect of Lowering Dose of Rituximab On the Neuromyelitis Optica Spectrum Disorder Relapse Rate During COVID-19 Epidemic Period

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Background:
COVID-19 is a viral infection that was first detected in China and quickly spread all over the world. On March 2020, World Health Organization(WHO) has declared the COVID-19 outbreak a global pandemic. At the beginning of the pandemic, clinicians encountered the challenge of how immunosuppressive treatments would affect the course of COVID-19 In people with autoimmune diseases, such as Neuromyelitis optica spectrum disorders (NMOSD).NMOSD is an autoimmune astrocytopathy caused by inflammation in CNS. Major treatment in order to prevent relapse includes immunosuppressive and immunomodulatory. Rituximab and ocrelizumab are well-established immunosuppressives in DMTs. Some reports suggested treatment with Rituximab may increase the risk of COVID-19 infection and its mortality in NMOSD.On the other hand, reducing the dose or delay in treatment may lead to relapses.
Methods:
In this study, we will evaluate the relation between the dose of rituximab and the relapse rate of NMOSD during the epidemic period. This is an observational study on 151 NMOSD patients from whom 51 cases are seropositive. Some patients received a full dose of rituximab routinely (1000mg every 6 months), but others treated with half dose of rituximab during the epidemic.
Results:
The Pearson correlation coefficient showed negative and significant relation (r: -0.19, p: 0.022) between amount of drug and number of relapses in the seropositive group, but in seronegative cases, there is no valuable relation (p: 0.367).
Conclusion:
Every change in rituximab dose in seropositive patients can potentially lead to acute relapses. The level of CD19 and CD20 and general clinical condition of the patient should be considered.

Nasuhakola syndrome, a rare cause of progressive dementia

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A 36-year-old woman with chief complaint of progressive ataxia and memory loss, and slowness of movement in daily tasks from 8 years ago. She had no history of developmental or psychological problems, and family history was also unremarkable. At the age of 35, the patient suffered a pathological fracture of the left ankle, and an X-ray confirmed bone resorption in the left ankle. Even after orthopedic surgery, she could not move independently. In neurological exam, she has problems in multiple cognitive domains, predominantly in visuospatial, language, and memory domains. Bradykinesia and bradyphrenia is remarkable, along with asymmetric rigidity of upper limbs and right-hand tremor. Based on periventricular white matter lesions in brain MRI, she was referred to MS clinic to investigate demyelinating disorders. Spinal MRI was performed, and there was no demyelinating lesion in cervical MRI. In CSF sampling, OCB was negative. Considering these negative findings in spine and CSF, and also rapidly progressive dementia in a young patient, we must exclude other differential diagnosis, and patient was referred to neurogenetic clinic. And in her study, in whole exon sequencing Nasu-Hakola syndrome was documented. Conclusion: we must consider rare genetic disorders as a differential diagnosis of demyelinating disorder in progressive symptoms in a young adult.

Efficacy of hydroalcoholic Petroselinum crispum L. leaf extract on pentylenetetrazole-induced seizure in rats

Zahra Forouzabdeh Shahrakei, Nahid Jivad

Background and aims: Epilepsy is a disorder of the central nervous system that manifests with sudden, transient, recurrent, and unpredictable seizures of sensory-motor, autonomic origin. Drugs used to treat the disorder may cause numerous side effects, and treatment response may be unsatisfactory. The purpose of the present study was to investigate the in vitro effects of hydroalcoholic Petroselinum crispum L. leaf extract on pentylenetetrazole (PTZ)-induced seizure in rats.

Methods: In this experimental study, 60 male rats were randomly divided into 6 groups of 10 each. The control group received normal saline. The model group received PTZ at 90 mg/kg intraperitoneally. Intervention groups received P. crispum extract at concentrations of 100, 150, and 200 mg/kg 30 minutes before PTZ administration. Positive control group received 40 mg/kg phenobarbital 30 minutes before the PTZ injection. Then, seizure threshold was recorded. In addition, serum and brain antioxidant capacity and malondialdehyde (MDA) levels were measured.

Results: Treatment of mice given PTZ with different concentrations of P. crispum extract caused a significant increase in seizure threshold (P 0.05). In mice receiving PTZ, a significant increase in serum and brain MDA levels was observed (P 0.05), but no significant change in antioxidant capacity was noticed. Treatment of mice given PTZ with different concentrations of the extract led to a significant increase in brain and serum antioxidant capacity and a significant decrease in brain and serum MDA levels (P 0.05).

Conclusion: P. crispum shows protective efficacy against PTZ-induced seizures, which may be due to its antioxidant effects.

Escitalopram Improves Cognition Function in the Ischemic Stroke Patients

Surena Nazarbaghi, Zafar Gholinejad

Background & Aims: Cognition impairment is a common manifestation of ischemic stroke patients. The cognition function is modulated by serotonin levels in the brain. The serotonin levels of brain are changed during ischemic stroke. Therefore, we hypothesis that intervention in serotonin reuptake may improve the cognition function in the patients. We evaluated and compared the effect of escitalopram and fluoxetine on ischemic stroke patients.

Materials & Methods: A hundred patients whose ischemic stroke was confirmed by a neurologist were enrolled in this interventional study at Imam Khomeini Hospital, Urmia, Iran. All treatments and interventions performed based on a standard approach. The first group received escitalopram(10 mg/day) as an adjuvant treatment and the second group received fluoxetine (10 mg/day). The cognition function of the patients was measured by Dementia Rating Scale (DRS) in the 5th and 95th days after the final diagnosis. Statistical analysis was carried out using IBM SPSS
Statistics software version 23.

Results: In this study, about 54.1% of patients were female, and the rest 45.9%, were male. Gender and smoking had no influence on cognition function. There was no difference in the cognition function of the patients with posterior and anterior circulation impairment. Our finding showed escitalopram, but not fluoxetine improved cognition function significantly (p=0.032).

Conclusion: The results of this study recommends that escitalopram can be used as an adjuvant medicine to improve the cognition function in ischemic stroke.

A case report: leukocytoclastic vasculitis in a patient on Ocrelizumab

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ocrelizumab is a humanized monoclonal antibody that selectively targets CD20+ B-cells; that has FDA approved for CIS, RRMS and also the first proven therapy for in PPMS.
We present a 49 years old female who, with complaints of progressive lower limb weakness, urinary incontinence and paresthesia from 20 years ago who, was treated with Rituximab and then ocrelizumab. After one week receiving second dose of ocrelizumab , she was admitted to hospital for lower limbs edema and tenderness and diffuse palpable purpura of the distal lower extremities that was progressed to the proximal of lower limbs and trunk.
Abdomen and pelvic sonography, lung HRCT, echocardiography study was normal because of skin lesion, and dermatology consult skin biopsy was done and diagnosis of idiopathic leukocytoclastic vasculitis was confirmed; and after corticosteroid therapy patient became lesion free.
And because of the progressive course and we didn't have any treatment we again prescribed ocrelizumab, and the lesion never repeated.

Non-EEG-Based Ambulatory Seizure Monitoring-Smart Watch inspiring module and Accelerometer/gyroscope

Chitsaz.A

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Background: Novel technologies have an impact on applications of antiseizure and patient-specific epilepsy management. One of the telehealth detect monitor is non-EEG-based seizure detection systems that take advantage of stereotyped Change in physiologic signals other than EEG that reliably occur with seizures, such as skeletal muscle contraction with convulsive seizure.
Description: Accelerometers can detect the movements to determine movement in three dimensions. The smartwatch inspyr(smart monitor) consists of a GPS module and proprietary.
Accelerometry gyroscope. Algorithms continuously monitor and analyze wrist motion to detect the colonic movements of a convulsive seizure and then automatically send a text message and/or phone call to caregivers or other designated alert recipients along with the location of the patient based on GPS.A button on the watch can be pressed by the patient in case of an emergency if they feel that they are about to have a seizure, when another seizure type had occurred that the system cannot detect, when medication was taken, or event of false detection so that an alert is not sent out.
The smartwatch also provides medication reminders,analyze sleep duration and quality, record audio during seizure episodes and reports seizure tracking for physician, including Seizure duration and severity., frequency and time of occurrence.
Conclusion: Ambulatory seizure monitoring can perform real-time signal analysis and alert patients and care providers In the event of an algorithmic seizure detection.

DOK7 Congenital Myasthenic Syndrome mutations and manifestations

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Background: Congenital myasthenic syndromes (CMS) are one of the most challenging diagnoses in the neuromuscular domain. CMSs follow an autosomal pattern inheritance. Mutation in downstream of tyrosine kinase, Docking Protein 7 (DOK7), is a common cause of CMS. Ptosis, facial and neck weakness are common symptoms. The diagnosis is confirmed by genetic testing. Patients generally respond to salbutamol. The main objective of this study was to describe manifestations of DOK7 CMS.

Methods: Six patients were entered from neuromuscular clinic of Shariati Hospital and Kerman medical university hospital. The diagnosis was made upon limb girdle myasthenic pattern. They were undergone 3 Hz RNS, repetitive CMAP, and whole exome sequencing. Drugs included mestinon, salbutamol, ephedrine, and 3,4-diaminopyridine. The patients were assessed by myasthenia gravis activities of daily living profile (MG-ADL) before and after the drug.

Results: The mean age and age of onset were 37.3 and 12.5, respectively. (3 female and 3 male). Their symptoms had fluctuating pattern. All patients were seronegative for myasthenic antibodies. The mean CK level was 166.5 units/L. 3-Hz RNS was decremental in 5 patients. No repetitive CMAP was seen. The mean MG-ADL before the drug trial was 6.1 and after treatment, it was 2.6. Oral salbutamol was the most effective, with significant improvement in MG-ADL score of 5 patients. 1124_1127dupTGCC mutation was the most common mutation (50%). All mutations were homozygous, and two of them were novel mutations.

Conclusion: It is recommend that neurologists consider DOK7 CMS in patients with these symptoms and prescribe salbutamol as first choice. Keywords**:** DOK7; CMS; genetic testing; Salbutamol

Update on Antiseizure Medications

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Objective:
To review recent evidence that can assist clinicians be updated on antiseizure medications therapy. Updated Knowledge of antiseizure medication pharmacokinetics, efficacy, and tolerability profiles facilitates the choice of appropriate antiseizure medication therapy for patients with epilepsy.
Summary:
Antiseizure medications are the mainstay of epilepsy therapy.
Knowledge of the spectrum of efficacy, clinical pharmacology, and modes of use for individual antiseizure medications is essential for optimal treatment of epilepsy.
Until 1993, the choice of antiseizure medication was limited to seven or eight major agents. However, more than 19 new antiseizure medications have been approved and marketed since then. The most notable developments are the FDA approval of two new antiseizure medications, cenobamate and fenfluramine, and the expansion of the indications of some antiseizure medications, particularly the approval of lacosamide for primary generalized tonic-clonic seizures.
Treatment of epilepsy starts with antiseizure medication monotherapy.
Several newer antiseizure medications have undergone comparative trials demonstrating efficacy equal to and tolerability at least equal to or better than older antiseizure medications as first-line therapy for focal epilepsy.The list includes lamotrigine, oxcarbazepine, levetiracetam, topiramate, zonisamide, and lacosamide. Lacosamide, pregabalin, and eslicarbazepine have undergone successful trials of conversion to monotherapy for focal epilepsy.
Other newer antiseizure medications with a variety of mechanisms of action are suitable for adjunctive therapy.
Considerations in antiseizure medication choice must include the spectrum of efficacy of the antiseizure medication, its pharmacokinetic properties, its safety and tolerability profile, and its efficacy against comorbidities as relevant to the patient’s specific circumstances.

NARCOLEPSY FOLLOWING COVID-19

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Narcolepsy-cataplexy is a rare sleep disorder that usually presents with daytime sleepiness, cataplexy (i.e., sudden loss of muscle tone usually in response to strong emotions), REM-related phenomena during wakefulness, and sleep paralysis.
We report the case of a 33-year-old Iranian woman with an insignificant past medical history with the full range of narcolepsy symptoms that had started within two weeks after her recovery from COVID-19. Sleep studies revealed increased sleep latency and three sleep-onset rapid eye movement events. With a final diagnosis of type 1 narcolepsy, she was prescribed modafinil and venlafaxine, to which she had a partial response.
Conclusions
- The immune activation in COVID-19 may trigger narcolepsy in some patients.
- Not all patients with fatigue following COVID-19 simply suffer from “long COVID.”
- Clinicians should carefully evaluate patients with post-covid fatigue and hypersomnia for primary sleep disorders, specifically narcolepsy.

Mononeuropathy multiplex as the presenting symptom of intravascular lymphoma

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Background: Mononeuropathy multiplex (MM) is characterized by simultaneous involvement of at least two separate nerves. It has an extensive list of differential diagnoses. Rarely, intravascular lymphoma may present with multiple nerve involvement resembling MM. Intravascular large B-cell lymphoma is a rare disorder, and its dominant presentation as mononeuritis multiplex is an extremely rare entity. The disease is rapidly progressive and fatal if not diagnosed and treated timely.
Case Presentation: A 64-year-old man presented to our clinic with asymmetric paresthesia and subsequent weakness of his feet that had evolved over a month. He also complained of a 10-kg weight loss over about 40 days. Electrodiagnostic studies revealed a distal axonal sensory-motor polyneuropathy with ongoing axonal loss. The patient underwent a peroneal nerve biopsy that showed intravascular proliferation of large lymphocytes that were positive for CD-20. This was suggestive of intravascular large B-cell lymphoma. The patient underwent chemotherapy, and his neurological symptoms improved despite electrodiagnostic signs of progression of axonal loss. After two years, he returned to the clinic with weakness, and further evaluation revealed recurrence of lymphoma with skin involvement.
Conclusion: Although intravascular lymphoma rarely presents with peripheral neuropathy alone, its timely diagnosis in such patients can improve the patient's prognosis. Our case report highlights the importance of a thorough work-up and, specifically, nerve biopsy in patients who present with peripheral nerve involvement with a pattern of multiple Mononeuropathy.

The safety and effect of Teriflunomide on clinical sign, inflammatory and viral factors in patients with HTLV-1-associated myelopathy/Tropical spastic paraparesis

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Objective: this study is to investigate the safety and effect of Teriflunomide on clinical symptoms, inflammatory and viral factors in patients with myelopathy caused by HTLV-1.
Methods & Materials: This study is a randomized controlled clinical trial in 22 patients with HAM/TSP, the intervention group (11 people) received one tablet of teriflunomide 14 mg daily and the control group (11 people) received one placebo tablet for twelve months. At 3-month intervals, according to the criteria of MRC (muscle strength), Ashworth (spasticity), OMDS (motor disability), UDS (urinary disorder), T25FW (walking speed), laboratory factors, and drug complications were examined. Also, serum TNF-a level was measured by ELISA technique and viral load by Real time-PCR method at the beginning and end of the study.
Results: This study showed that using Teriflunomide can reduce the level of HTLV-1 proviral load in the intervention group. The level of HTLV-1 proviral load in the intervention group before the intervention was 176.1 ± 59.3 copies/ml, which decreased by 83.7 units in the 12th month after the intervention and reached 92.4 ± 60.1 copies/ml, which is The decrease was statistically significant (p=0.003). . No drug side effects were observed and the increase of liver enzyme was tolerable and controllable.
Conclusion: This study showed that Teriflunomide can be a potential treatment option, which can reduce the viral load and improve the severity of disability and walking speed, and better control the symptoms of urinary and gastrointestinal disorders without drug side effects.

Progressive encephalopathy in a young woman due to a rare neuroinflammatory disorder. A case report and a mini-review

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A 23- year old pregnant woman presenting with Imbalance in gait, sudden hearing loss, stuttering, and blurred vision, which has progressed. The symptoms have been worsened after abortion and urinary and fecal incontinence and symptoms of cognitive impairment have been added. In past medical history, she has experienced similar symptoms in 4 years ago during pregnancy that she has not followed up on. 4 years ago, she was treated with corticosteroids due to the white matter lesions of the brain, with a brief recovery. In the last admission The symptoms started to become more severe after the spontaneous abortion. The patient received treatment with Prednisolone and Rituximab, which did not improve with suspicion of susac syndrome. When we stopped the corticosteroid, the symptoms such as paraparesis, inability to speak and pseudo bulbar palsy worsened.In the last MRI, there were diffuse white matter lesions in the periventricular , Juxtacortical and BG with enhancement . DSA of the brain was normal. Because of refractory and progressive symptoms brain biopsy was done with microangiopathic lymphocytic. Result. The patient was treated with cyclophosphamide with rituximab combination . The patient had significant improvement in the follow-up.

Management of anesthesia in patients with neuromuscular disorders

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Patients with neuromuscular disease pose many anesthetic challenges and are at greater risk for perioperative complications, including respiratory or cardiovascular dysfunction and pulmonary aspiration. Malignant hyperthermia is a life-threatening pharmacogenetic complication that develops when people susceptible to this complication are exposed to volatile anaesthetics (such as sevoflurane, isoflurane, and desflurane), succinylcholine or a combination of both. Most people with malignant hyperthermia susceptibility have autosomal dominant mutations in the skeletal muscle ryanodine receptor (RYR1) gene, encoding the principal skeletal muscle calcium release channel, RyR1. Patients with neuromuscular disease may also be sensitive to sedative-hypnotics and opioids, which should be used judiciously. Patients with Becker's and Duchenne's muscular dystrophies are at increased risk of perioperative rhabdomyolysis or so-called anesthesia-induced rhabdomyolysis causing sudden hyperkalaemic cardiac arrest. Mitochondrial disorders are considered to increase the risk of propofol infusion syndrome, although there are case series reporting no complications. The cases of propofol infusion syndrome in patients with mitochondrial disorders occurred after 3–5 days of propofol infusion. Conclusion: It is crucial for patient safety that anesthetists should share their experience regarding the management of patients with neuromuscular disorders with neurologists interested in these conditions. It is very important for the neurologist with interest in neuromuscular disorders to be aware of anaesthetic implications and to discuss possible perioperative complications and the necessary precautions for their patients with neuromuscular disorders.

Determination of diagnostic value of venous sinus density indices in non-contrast brain CT scan for early detection of cerebral venous sinus thrombosis

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Background: Studies show that a CT scan of the brain without contrast is one of the most important and accessible, and relatively cheap tools for diagnosing cerebral sinus venous thrombosis(CVST) in the acute stage, This study was conducted to evaluate this diagnostic method and its multiple density indices in order to diagnose this debilitating disease more accurately and quickly.
Method: This retrospective case-control study was conducted in patients with clinical suspicion of acute CVST. The control group was selected from people who were hospitalized with suspected acute CVST based on clinical symptoms and history, but their MRI/MRV (as a golden diagnostic test) did not have any CVST. The information related to non-contrast brain CT scan of the patients was collected in terms of venous sinus density according to Hounsfield and standardized density indices.
Results: A significant difference in the average sinus attenuation was found between patients with acute CVST (p0.001). The optimal threshold of 61HU leads to sensitivities of 77.1% and specificities of 92.5% for average sinus attenuation. Optimal cutoff for standardized parameters includes the ratio of H: H, HF: ICA, HF:BA, HF: FRONTAL,HF: TEMPORAL, and HF-BA were 1.41, 1.52,1.63,1.6,1.6 and 23, respectively (p0.001).
Conclusion: Sensitivities of the standardized parameters of absolute Hansfield venous sinus thrombosis in brain CT scan without contrast include the ratio of H: H, HF:ICA, HF: BA, HF: FRONTAL, HF: TEMPORAL, and HF-BA in the diagnosis of CVST were 91.7%, 81.3%, 77.1%, 81.3%, 68.8%, and 81.3% respectively and specificities of 80%, 85%, 90%, 87.5%, 95%, and 82.5% respectively.

Symptomatic myopathy as a rare manifestation of sarcoidosis; a case report

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Introduction: Muscle involvement of sarcoidosis is a relatively common manifestation of this disorder; however, sarcoidosis-associated symptomatic myopathy is rare and might not be recognized straightforwardly.
Cases presentation: A 40-year-old woman referred with proximal extremities weakness, primarily and more severely in the lower extremities extended to the upper ones, and reduced NYHA function class of IV-to-I. She had elevated levels of creatine phosphokinase (CPK), aldolase, and angiotensin-converting enzyme. Electromyography (EMG) and nerve conducting velocity (NCV) were compatible with generalized irritable myopathy. Considering the findings of EMG & NCV, the elevated CPK and the subacute course of the disease, inflammatory myopathy was suspected. A muscle biopsy was performed which pathological study revealed macrophage, perimysial T- and B-cells infiltrations, plus non-caseating granulomas containing histiocytosis surrounded by inflammatory cells. Accordingly, the muscular sarcoidosis diagnosis was raised and confirmed via the manifestations of chest computed tomography. Corticosteroid was initiated and the patient well-responded to the medication via symptoms improvement.
Conclusion: Although rare, sarcoidosis myopathy should be considered in differential diagnoses of proximal myopathies with subacute nature.

Update trigeminal nerve stimulation effects on seizure control, mood disorder and depression. Report of a research:

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Background:
Trigeminal nerve stimulation (TNS) is an approach for the treatment of drug-resistant epilepsy as adjunctive treatment. TNS modulates mood disorders and depression similar to Vagus nerve stimulation (VNS)but without side effects of VNS. Its effects is done by its direct, indirect, reciprocal connections to key brain regions related to mood control and epilepsy, such as the locus ceruleus, the raphe nuclei, tractus solitarius, medullary reticular activating system, thalamic structures, limbic, and other cortical and subcortical structures.

Materials and Methods: Percutaneous simulation of supraorbital branches of the trigeminal nerve by an electrical device was planned in 18 patients over a six-month period. T-test was used for data analysis.

Results: Only eight of 18 patients stayed in the study during all 6 months. A 47.9% reduction in daily seizure frequency was seen in this group (P = 0.022). Other subjects left the study earlier. In this group, seizure frequency increased by 10.6% (P = 0.82).

Conclusions: Although in comparison with seizure frequency prior to the study, there was 50% seizure frequency reduction. Trigeminal nerve stimulation may be an effective “adjuvant” method for the treatment of intractable seizure. For evaluation of TNS effect on mood disorder and depression other research in the future is recommended

Key Words: Refractory epilepsy, depression, mood disorder, TNS (trigeminal nerve stimulation)

Tinnitus and its Relationship with brain stroke

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Introduction: Tinnitus is a common medical symptom that can be defined as the conscious perception of an auditory non-speech sensation, such as hissing, sizzling, and ringing, cicada-like, clicking, in the absence of a corresponding external sound. The prevalence of tinnitus in Western countries is reported to be 10%, it has been reported to be up to 15-20% in elderly people. Tinnitus has various causes, one of the causes is blood circulation disorder. Methods: In this case-control study, CT angiography of brain and cervical vessels was performed on patients who presented with brain stroke (non-hemorrhagic and non-cardioembolic) who were conscious. The condition of non-pulsatile tinnitus was also checked by taking the history of the patients. Results: In this study, more than 43% of patients had tinnitus. In our study there are no significant differences about tortuosity, or straightening of carotid arteries between tinnitus group and the non-tinnitus group. Tortuosity was seen in more than 68% of cases, and more in older age 60 or above. In this study, have no significant differences about sex, age, hypertension, or diabetes between two groups. Conclusion: Patients who suffer from tinnitus and do not have hearing problems are at a higher risk of stroke, and the use of stroke prevention drugs should be considered.

Knowledge landscape of MRI in Myopathy publication: A scientometric Study

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Background: Diagnosing myopathies may be very challenging. Muscle MRI can detect changes in skeletal muscle structure, evaluate response to treatment, and distinguish between inflammation and chronic damage. In science mapping, thematic areas are analyzed by investigating scientific networks. This research wanted to show science mapping of the structure of documents about MRI in myopathy and indicate different areas and sub-areas of this field.

Methods: All articles and documents from 1985 to 2022 were searched in different databases and collected based on keywords. Bibliometrix R Tool was used for bibliometric analysis.

Results: A total of 1704 articles were analyzed. They were published by 8894 authors. The collaborative coefficient was 5.32, indicating a relatively high level of collaboration. The growth trend of articles was upward in 2015. In source local impact by H-index, neuromuscular disorders, and neurology had the steepest slope and the remaining journals followed a milder slope. Straub, Vandenbronek and Vissing Jbeing were the most influential authors. The greatest number of articles was from University of Florida and Newcastle. The USA and United Kingdom had the most country in multiple publications. The most citation was in 2015. The thematic evolution map showed the historical progression so that the articles from 1985 to 2014 focused on subjects like MRI, and congenital muscular dystrophy, and from 2015 to 2022 on topics such as MRI, CoVID-19, and cardiomyopathy.

Conclusion: This study provided a scientific map, structural analysis, new trends, and thematic evolution about MRI in myopathy. It is recommended to research more due to manage patients better.

Keywords: Muscle MRI; Myopathy; Scientometrics; R software; bibliometrix

The Role of Stimulants in reducing excessive daytime sleepiness in drug-resistant epilepsy patients, Report of A Clinical Trial

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Background: Some studies show the high prevalence of sleep disorders and excessive daytime sleepiness (EDS) in refractory epilepsy. The aim of this study is evaluation of the effectiveness of methylphenidate and modafinil in the treatment of daily drowsiness of drug-resistant epilepsy.

Methods: This study is a clinical trial. The target group was adult patients with drug-resistant epilepsy on multiple anti-seizure medicine and excessive daytime sleepiness(EDS) who visited epilepsy clinics in Isfahan between 2019-2020. The patients randomly divided into three groups. The first group was treated with methylphenidate (10-30 mg/day), the second group was treated with modafinil (200-600 mg/day), and the third group has not received any stimulants. Epworth Sleepiness Scale (ESS) and Total Sleep Time (TST) were calculated before and 8 weeks after the intervention for the patients.

Findings: Forty-seven patients with an average ESS score of 17 (moderate to severe sleepiness) were eligible to enter the study. 19 patients on methylphenidate, 20 patients on modafinil, and 8 patients as a control group. Patients who received high-dose stimulants for 8 weeks compared to the control group, the average ESS score dropped from about 19 to 8 ($P<0.05$). There was no significant difference between the effectiveness of methylphenidate and modafinil, but the tolerance of methylphenidate compared to modafinil would be better.

Discussion and Conclusion: Modafinil and Methylphenidate are two stimulant drugs to improve drowsiness in uncontrolled epilepsy. The addition of stimulants to anticonvulsant drugs in drug-resistant patients may improve their quality of life.

Keywords: Modafinil, methylphenidate, excessive daytime sleepiness, EPWORTH sleepiness scale, Total Sleep Time

Association between miRNA-145 and miRNA-155 expression in peripheral blood mononuclear cells of patients with multiple sclerosis: a case-control study

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Introduction: MicroRNAs (miR or miRNA) are short regulatory RNAs, which modulate post-transcriptional gene expression. The dysregulation of these molecules contributes to the pathogenicity of autoimmune disorders, such as multiple sclerosis (MS).
Aims This study was conducted to investigate changed expression pattern of miRNA-145 and miRNA-155 in MS.
Methods: We collected blood samples from 75 patients with relapsing-remitting MS patients and 75 healthy controls. Ficoll-Hypaque density gradient method was used to isolate peripheral blood mononuclear cells. Also, total RNA was extracted and subjected to RT-PCR analysis. We used the Mann–Whitney U test to evaluate the differences in expression levels of target miRNAs between the groups.
Results: We found that expression of miRNA-145 (P = 0.012) and miRNA-155 (P = 0.005) were partly reduced in patients with relapse-remitting MS in comparison with healthy controls. The miRNA-145 had an area under the curve (AUC) of 0.621 (P = 0.01) and miRNA-155 levels had an AUC of 0.625 (P = 0.008).
Conclusion: Decreased expression of miRNA-145 and miRNA-155 contributes to development of relapse-remitting MS, while further large-scale observational studies and meta-analyses.

Tau pathology in hub regions is associated with higher conversion to Alzheimer's disease

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Background: Previous studies showed that tau pathology spreads trans-synaptically across interconnected neurons. However, it is not clear whether the individuals who convert to Alzheimer's disease (AD) have higher tau pathology in globally connected hubs. We aimed to perform a study by combining resting-state fMRI and longitudinal tau-PET to investigate the association between tau pathology in globally connected hub regions and conversion to AD.
Methods: The data of 110 patients with mild cognitive impairment (MCI) was obtained from ADNI. Tau-hub ratio was calculated, which represents the pattern of tau pathology considering the functional connectivity of each region to other regions.
Results: Our analysis showed that the tau-hub ratio was significantly higher among MCI patients who converts to AD over the follow-up (p:0.002). Moreover, there was a strong correlation between the tau-hub ratio and disease progression in MCI patients (p0.001, r:0.453).
Conclusion: Our findings suggest that the tau pathology in globally connected hub regions may accelerate tau spreading through connected regions, AD progression, and conversion rate to AD.

Stroke as the presenting rare manifestation of cardiac amyloidosis

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Background and aims: Ischemic stroke is a rare presentation of cardiac amyloidosis (CA) and is considered a marker for worse prognosis. The underlying mechanisms of thromboembolism in CA are thought to be multifactorial.
Methods: Case report
Results: An 80-year-old man presented to the emergency department with a new onset motor deficit noticed upon waking. He had a past medical history of type-2 diabetes mellitus and hyperlipidemia. Physical examination revealed moderate dysarthria. left central facial palsy and left mild hemiparesis (NIHSS=5). Brain computed tomography (CT) scan showed a right insular hypodense area, and the CT angiography identified a distal occlusion to the right middle cerebral artery. He was started on dual antiplatelet and high-intensity statin therapy with clinical improvement. His blood analysis, including HIV and VDRL, were unremarkable. The electrocardiography identified sinus arrhythmia with no other clinically relevant events recorded during 48h monitoring. Transthoracic echocardiogram showed a left ventricle ejection fraction of 45% with myocardial deformation in an "apical sparing" pattern and elevated filling pressures, suggestive of infiltrative cardiomyopathy. Cardiac magnetic resonance and cardiac scintigraphy later confirmed the diagnosis of cardiac amyloidosis and the patient is waiting for genetic testing for transthyretin mutations.
Conclusion: Amyloid fiber infiltration of the myocardium may lead to mechanical dysfunction and atrial thrombus formation, even with normal sinus rhythm. There are no formal guidelines addressing anticoagulation in CA without atrial fibrillation, and further studies are needed. CA awareness is important, especially in the Portuguese population, known for a high prevalence of transthyretin familial amyloid polyneuropathy.

Posterior circulation ischemic stroke with uncommon etiologies

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Introduction

Ischemic strokes can be categorized based on the vascular territory of infarction as anterior and posterior circulation ischemic stroke(PCIS). The PCIS accounts for about 20% of all ischemic strokes(4-6). Thromboembolism and hemodynamic hypoperfusion, with an incidence of 97%, are the leading causes of PCIS(6). This article reviews three uncommon etiologies that by the mechanisms of thromboembolism and hemodynamic hypoperfusion leading to PCIS.

Case presentation

Case 1: A forty-five years old woman was operated on because of cervical trauma. Preoperatively the patient did not have any neurological deficit, but after the surgery, the patient could not be extubated due to loss of consciousness.

Case 2: A sixty-six-year-old man with a history of facial neuralgic pain was referred to our department with an acute presentation of left-side hemiplegia, diplopia, vertigo, and dysphagia.

Case 3 : A fifty years old man with the presentation of sudden vertigo was admitted to the hospital; In brain MRI, an acute midbrain stroke was detected.

Discussion

Because the vast majority of PCISs are caused by the thromboembolic event or hemodynamic hypoperfusion, considering the dissection, specifically in the setting of cervical trauma and after cervical surgery, is necessary. Furthermore, dolichoectasia in patients with a previous history of neuralgic pain can be a reason of PCIS.

Finally, arterial fenestration can rarely lead to PCIS, and its differentiation from arterial dissection is very important to avoid invasive procedures such as stenting.

Poster Presentations

Grafted human chorionic stem cells restore motor function and preclude cerebellar neurodegeneration in rat model of cerebellar ataxia.

Mahdi Tizro, Abbas Aliaghaei

Cerebellar ataxia (CA) is a form of ataxia that adversely affects the cerebellum. Cell replacement therapy (CRT) has been considered a potential treatment for neurological disorders. In this report, we investigated the neuro-restorative effects of human chorionic stem cells (HCSCs) transplantation on rat model of CA induced by 3-acetylpyridine (3-AP). In this regard, HCSCs were isolated and phenotypically determined. Next, a single injection of 3-AP was administered for ataxia induction, and bilateral HCSCs implantation was conducted three days after 3-AP injection, followed by expression analysis of a number of apoptotic, autophagic, and inflammatory genes as well as vascular endothelial growth factor (VEGF) level, along with assessment of cerebellar neurodegeneration, motor coordination, and muscle activity. The findings revealed that grafting of HCSCs in 3-AP model of ataxia decreased the expression levels of several inflammatory, autophagic, and apoptotic genes and provoked the up-regulation of VEGF in the cerebellar region, prevented the degeneration of Purkinje cells caused by 3-AP toxicity and ameliorated motor coordination and muscle function. In conclusion, these data indicate in vivo efficacy of HCSCs in the reestablishment of motor skills and reversal of CA.

The causes and outcome evaluations of elderly patients hospitalized with seizure in Kashan Shahid Beheshti Hospital

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Background
This investigation was performed targeting the characteristics of all consecutively elderly seizure and epilepsy patients referred to the Shahid Beheshti hospital in Kashan from 2017 to 2020.
Materials &Methods
This cross-sectional study was performed on 497 elders older than 60 years who were admitted for minimum 24 hours and had their own file in the hospital.
Results
the patient's average age was about 74.2 years and the most common age range is between 76 to 85 years. Among the 497 studied elders, 297 patients (59.8%) were men and 200 (40.2%) were women. The generalized seizure and focal seizure frequencies are 254 (51.1%) and 243 (48.9%) ones, respectively. The most frequent seizure etiologies are idiopathic (55.7%), CVA (23.3%), and Trauma (9.9%). 41 (8.2%) persons passed away during the treatment procedure and 456 (91.8%) had an improvement in their well-being during the discharge.137 (27.6%) and 360 (72.4%) persons had been transferred to the hospital by EMS and their own car, respectively. Valproate (13.1%), Phenytoin (11.3%), and Phenobarbital (6.6%) are the most used Anticonvulsant drugs in this study. The mean of admit days in hospital is about 5.3 days, the days are between 1 to 80 days. There is a statistically significant correlation between the seizure etiology and the patient's age.
Conclusion:
In this study, the involvement of men was more than that of women, and the prevalence was higher between the ages of 76 and 85. Stroke and trauma were more common causes of Seizure at this age

Unusual presentation of temporal lobe epilepsy, A case presentation

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The patient is a 13-year-old girl who was hospitalized and monitored due to uncontrolled epilepsy. The first seizure occurred at the age of one with high fever. The second seizure occurred at the age of three, the symptoms of which were lip smacking along with swallowing movements, which was treated for a while with a diagnosis of gastric reflux. Recently she is treated with carbamazepine 800 mg /d and Levetiracetam 2000 mg /d. For better investigation, the patient was monitored and after reducing the amount of drugs, she had seizures several times. The clinical symptoms of seizures are that first, the patient feels a taste and then automatic movements in the fingers of both hands like counting money, and sometimes in the toes. During this time, she is fully aware and answers the questions correctly. After about a minute, the symptoms end and then she tends to sleep. It should be noted that in last seizure, despite following the nurse's orders , she did not completely remember them.In the EEG , epileptic discharges such as spikes, sharp and waves observed in the right temporal and sometimes in the left temporal region during sleep and wakefulness, and epileptic discharges in the right temporal region in ictal phase. Brain MRI showed atrophy with sclerosis in right temporal lobe. So the diagnosis is temporal lobe epilepsy, originates from the right temporal lobe and is candidates for amygdalohippocampectomy. The remarkable thing about this case is full awareness of most of the events.

A rare genetic disorder as a mimicker of demyelinating disorder

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Introduction: Nasu-Hakola disease (NHD) is an autosomal recessive inherited disorder characterized by progressive dementia and repeated pathological fractures during adolescence.
Case presentation: A 36-year-old woman with chief complaint of progressive ataxia and memory loss, and slowness of movement in daily tasks from 8 years ago.
She had no history of developmental or psychological problems, and family history was also unremarkable. At the age of 35, the patient suffered a pathological fracture of the left ankle, and an X-ray confirmed bone resorption in the left ankle. Even after orthopedic surgery she could not move independently. In neurological exam, she has problems in multiple cognitive domains, predominantly in visuospatial, language and memory domains. Bradykinesia and bradyphrenia are remarkable, along with asymmetric rigidity of upper limbs and right hand tremor. Based on periventricular white matter lesions in brain MRI, she was referred to MS clinic to investigate demyelinating disorders. Spinal MRI was performed, and there was no demyelinating lesion in cervical MRI. In CSF sampling, OCB was negative.
Considering these negative findings in spine and CSF, and also rapidly progressive dementia in a young patient, other differential diagnosis of demyelinating disorder must be evaluated. She was referred to neurogenetic clinic and whole exon sequencing showed mutations of Nasu-hakola syndrome.
Conclusion: we should consider another differential diagnosis of demyelinating disorders when progressive symptoms are present.

combined administration of Ginger (Zingiber officinale Roscoe) and Depakene on pain reduction in patients with migraine headaches compared to Depakene alone

Zahra Forouzabdeh Shahrakei, Nahid Jivad

Background and aims: Migraine is known as one of the most debilitating diseases with high prevalence worldwide. This study aimed to compare between combined administration of ginger and Depakene (sodium valproate) capsules (intervention group) and the use of Depakene (control group) alone to evaluate the therapeutic efficacy of ginger in the treatment of migraine.

Methods: This randomized, one-blind clinical trial was conducted with 80 patients suffering from migraine headaches. A total of 40 patients in the intervention group received two ginger capsules of 250mg manufactured by Zintoma (Gol Darou Co.) along with 500 mg Depakene orally daily for sixteen weeks, and 40 patients in the control group received Depakene (500 mg/d) alone. The variables included the severity of the headache, the number of headaches per month, and the sleep quality of patients. Data were analyzed using descriptive statistic

Results: For pain intensity, the mean score of pain after the intervention in the intervention group was significant, so that it was lower than the mean score in the control group (P 0.05). Moreover, there were significant differences in disability severity induced by migraine headaches between the two groups after the intervention so it was lower in the intervention group than in the control group (P 0.05).
Conclusion: Administration of the ginger capsule (500 mg) with Depakene (500 mg) was considered to improve pain severity, disability, and sleep pattern in patients with migraine compared to administration of Depakene alone. Therefore, this combination therapy can be considered a choice in the treatment of these patients.

Effect of Gabapentin vs Duloxetine on Pain Intensity in Adults with Chronic Radiculopathy

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Background: Optimal pharmacologic treatment for chronic radiculopathy (CR) is difficult. While Gabapentin (GBP) and Duloxetine (DLX) are both used to treat CR, uncertainty exists.
Methods: A randomized, double-blind, double-dummy crossover trial of DLX vs GBP for the management of CR was performed in a single center. A total of 40 patients underwent randomization from 2020 to 2022, and four were excluded. Patients attending in neurology clinic with unilateral chronic radiculopathy. Chronic radiculopathy was defined as pain lasting for at least three months radiating into one leg only to, at, or below the thigh or knee level. Imaging (MRI) was done in necessity. Randomly assigned participants received GBP (300 mg twice daily) then DLX (60 twice daily) or vice versa, each taken for 8 weeks. Crossover followed a 1-week washout. Pain was measured with VAS.
Results: 36 patients accomplished study consisted mostly of men (22 [61%]) with a mean (SD) age of 57 (16.5) years. Gabapentin was superior to DLX, with fewer and less severe adverse events. Both GBP (mean [SD], 7.54 [1.39] to 5.82 [1.72]; P .001) and DLX (mean [SD], 7.33 [1.30] to 6.38 [1.88]; P = .002) displayed significant visual analog pain intensity scale reduction. Head to head, GBP showed superior visual analog pain intensity scale reduction (mean [SD], GBP: 1.72 [1.17] vs. DLX: 0.94 [1.09]; P = .035) irrespective of sequence order.
Conclusions : Duloxetine and Gabapentin were both significantly efficacious. However, Gabapentin was superior with fewer and less severe adverse events.

Fatal cryptococcal meningitis after discontinuing fingolimod; A case report

Zahra Ebadi, Sara Salehian, Amirreza Azimi

Fingolimod is one of the oral disease-modifying drugs in MS treatment. One of its rare but worrying side effects is cryptococcal infections such as meningitis and skin-pulmonary involvement.
In this report, we presented a patient with cryptococcal meningitis diagnosed after fingolimod discontinuation.

Labrune syndrome; A case report

Zahra Ebadi, Elnaz Asadollahzadeh, Seyed Aidin Sajedi, Mohamadali Sahraian

Labrune disease or Leukoencephalopathy with brain calcifications and cysts (LCC) is a rare genetic disease. It distinguishes by a triad of leukoencephalopathy, calcifications, and intracranial cysts. Recently, a mutation in the SNORD118 gene has been identified as the genetic basis involved in the disease.

A 34-year-old woman presented with progressive left hemiparesis. Neuroimaging reveals multiple parenchymal cysts, diffuse white matter hyperintensities and scattered calcifications. These radiological findings after ruling out other differential diagnoses lead to the diagnosis of LCC.

Paraneoplastic NMOSD: A case report

Zahra Ebadi, Elnaz Asadollahzadeh, Fereshteh Ghadiri, Hedieh Moradi Tabriz, Abdoreza Nasermoghadasi

Neuromyelitis Optica spectrum disorder (NMOSD) is immune-mediated astrocytophaty with related to AQP4 antibodies. Some case reports showed a possible association between NMOSD and neoplasm, especially in late-onset patients.
In this case report, we presented an old woman with the concurrent first attack of NMOSD and discover tubular adenoma with dysplasia.

Effect of vitamin D on short term prognosis of acute ischemic stroke

Seyed Ali Masoud, Ebrahim Kouchaki, Arezou Jafarian Yazdi

Introduction: According to the studies conducted and the effects of vitamin D antagonists in the prognosis of stroke, and since the disease of stroke is increasing, it is necessary to carry out extensive research in the field of prevention or treatment in order to improve the prognosis of this disease. Materials and Methods: In this clinical trial study, patients with acute ischemic stroke were included in the study according to the inclusion criteria and after obtaining informed consent, and were randomly allocated to intervention and control groups. MRS was evaluated and recorded for all patients at the beginning of the study, and in order to measure the level of vitamin D, a larger sample volume of 2 to 3 cc was taken and sent to the hospital laboratory. In addition to standard treatments, the patients in the intervention group were given a single intramuscular injection of vitamin D (300,000 IU) up to 24 hours from the onset of symptoms, and the patients in the control group were given standard treatments. After six weeks, vitamin D levels, MRS, and NIHSS were measured and compared for both groups. Then, the collected data were analyzed through SPSS software version 26 and using Wilcoxon and Mann-Whitney U tests.
Results: The findings of the present study showed that after six weeks there was no significant difference between the two groups in terms of NIHSS and MRS ($p>0.05$).
Conclusion: The results showed that the single dose injection of vitamin D had no significant effect on the short-term prognosis of the patients.

Statin use and tau deposition: four years follow-up

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Aims
There are contradictory findings regarding the effect of statin drugs on tau deposition as one of the main hallmarks of Alzheimer's disease (AD). We aimed to longitudinally investigate the therapeutic and preventive role of statin drugs by examining the brain tau protein deposition and metabolism rate in AD, mild cognitive impairment (MCI), and healthy controls (HC).
Methods
The data of 828 subjects including 178 HC, 492 MCI, and 158 AD individuals, were obtained from ADNI. The baseline and longitudinal [18F] AV1451 PET standard uptake value ratios (SUVR) measures were investigated among statin users and non-users.
Results
Our results showed that there is no significant difference in baseline tau deposition between statin users and non-users among HC, MCI, and AD subjects. There was a significant difference in tau deposition change after two and four years (from baseline) between statin users and non-users within HC subjects ($p=0.014$). The change of tau deposition at four years from baseline was -1.5±5.3% for statin users and 1.9±7.2% for non-users. Moreover, there was also a significant difference in tau deposition change at four years from two years visits between statin users and non-users of the HC group ($p=0.024$). The change was -4.1±5.2% and 0.7±4.9% for statin users and non-users respectively.
Conclusions
The present longitudinal analysis revealed that statins could reverse the tau deposition in subjects without cognitive impairment over extended periods of follow-up. However, once the clinical symptoms of cognitive impairment appear, statins fail to reduce tau deposition.

Can metformin use reduce amyloid βeta deposition in elderly individuals with diabetes?

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Aims
There is a shred of growing evidence demonstrating that diabetic patients are at higher risk of developing Alzheimer's disease compared to the general population. The previous investigation showed the protective effect of metformin for delaying dementia in diabetic patients. However, there are limited data on the effect of metformin on Aβ deposition. This study aims to investigate the effect of metformin on Aβ deposition in non-demented diabetic individuals.
Methods
We entered 198 non-demented diabetic subjects, including 101 mild cognitive impairment (MCI), and 97 cognitively healthy individuals from Alzheimer's disease Neuroimaging Initiative (ADNI), which were then categorized as metformin users and non-users. We used the ANCOVA model for measuring the association between metformin use and hippocampal and cortical volumes.
Results
In total, 96 individuals were stratified as metformin users. Results of the univariate model indicate that metformin users had a lower overall Aβ deposition (p=0.022) in the baseline. Moreover, after two years the difference in Aβ deposition remained between groups (p=0.007).
Conclusions
Our findings showed the protective effects of metformin on Aβ deposition in non-demented elderly individuals with diabetes. Comparing the groups show strong enough results regarding the lower Aβ deposition in metformin users.

A comparative study of Verbal Fluency in MS Patients and healthy individual

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The aim of this study was to compare the verbal fluency of individuals with multiple sclerosis with normal individuals.
For this study, two groups of 15 people were selected. The main group consisted of 15 individuals with RRMS of Firoozgar Hospital, who were treated with Rituximab, and the next group which is called control group consisted of 15 healthy individuals who were selected by convenience sampling method. After completing the special information form, twenty-question, proverb, word context and verbal fluency tests of the Kaplan-Delis test were taken from both groups. Also, the homogeneity of the testers, both in the former and the later group, has been cited in cases such as gender, education, age, etc.
The result of research was performed by multivariate analysis of covariance and univariate t-test in each of the test results. The results showed that individuals with MS had lower verbal fluency than normal people. They also have poorer performance in language comprehension, proverb, and word context comprehension than normal people.

Effect of multi-session trans-cranial direct current stimulation of dorsolateral prefrontal area on depression and sleepiness in patients with multiple sclerosis

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Introduction: Multiple sclerosis (MS) is one of the most common diseases of the central nervous system with high prevalence in the world and Iran. The common complications of the disease are depression and sleepiness. Due to structural and functional brain changes following depression and sleepiness in patients with MS, brain electrical stimulation may be considered as an effective intervention in therapy.
Materials and Methods: In this clinical trial, 30 patients with MS were randomly divided into Experimental and sham a-tDCS groups according to the inclusion and exclusion criteria. Correspondingly, the anode electrode was placed on the left dorsolateral prefrontal cortex (DLPFC) and cathode on the opposite supraorbital. In the experimental group, 20-minute DLPFC a-tDCS with the intensity of 1.5 mA was performed during 10 sessions for 20 days. However, in the sham a-tDCS group, although the electrodes were placed in the same positions as used for the experimental group, the stimulation was slowly turned off after 30 seconds.
Results: The depression after intervention was significantly decreased as compared to before intervention (P0.05), although the trend of sleepiness was toward reduction. Also, sleepiness and depression levels were significantly improved after the intervention in experimental as compared to the control group.
Conclusion: Multi-session a-tDCS over the left DLPFC has a significant effect on the improvement of depression and rate of sleepiness in MS patients.

Through The Tracts; a narrative review of DTI-based AD Diagnosis

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Abstract: Diffusion Tensor Imaging (DTI) is an MRI technique that can detect the motion of water molecules. It is sensitive to white-matter alterations such as loss of myelin and axonal membranes that restrict the random motion of water molecules in the tissue. Previously, DTI has demonstrated that the integrity of white matter begins to disrupt in the preclinical stage of Alzheimer's disease (AD). These alterations are initially limited to the medial temporal limbic associated tracts but tend to spread to the temporal and parietal white matter as the disease progresses. Frequently reported DTI metrics, including fractional anisotropy (FA) and mean diffusivity (MD), have shown significant changes in core areas of AD pathology. Anatomically, involvement of these white-matter tracts follows the topographic progression of gray-matter neurodegeneration in AD. This anatomic concordance between gray and white-matter degeneration implies that the disruption in white-matter tracts is associated with the cortical AD pathology. These findings demonstrate a typical pattern of cortical and subcortical microstructural changes in AD patients. They also suggest that DTI has significant utility for prediction of cognitive decline in MCI and will provide complementary evidence for diagnosis. However, further longitudinal studies of the relations between DTI metrics, cognitive function and biomarkers in AD are required to determine whether DTI has potential to be used as a reliable measure of progression of AD or treatment efficacy.

Application of Botulinum toxin type-A in Neuromuscular Disorders.

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Background: Botulinum toxin type -A(Btx-A) has been used as a treatment for spasticity and dystonia.Btx-A by inhibiting the release of inflammatory mediator and peripheral neurotransmitters from sensory nerves acts on neuropathic pain Btx-A also has application in amyotrophic lateral sclerosis(ALS) , complex regional pain syndrome(CRPS),inflammatory myositis and hyperactivity of muscle of temporomandibular joint.

Btx-A in Neuropathic pain and CRPS.

In refractory neuropathic pain. Trigeminal neuralgia and causalgia that not respond to pharmacotherapy Btx-A have efficacy. CRPS is a devastating condition characterized by intractable pain, vasomotor changes. alodynia and hypalgesia Btx-A beside release of acetylcholine from cholinergic nerve terminal can induced paralysis sympathetic block in preganglionic sympathetic nerves and has effectiveness in severe refractory pain in CRPS,Btx-A injected in allodynia skin. Effect of Btx- A in reducing pain is more viable than alternative modalities like sympathetic nerve blocks and ketamine infusion.

Btx-A in ALS: application of BTX-A in ALS are: Treatment of limb spasticity, and in bulbar ALS in that sialorrhea is a disabling symptom, injection of Btx-A into both parotid glands can control sialorrhea, patients with troublesome masseter spasticity with difficulty in opening mouth benefit from injection of Btx-A injection into each masseter.

Btx-A in dysphagia in inflammatory myopathies:

Dysphagia can occur in any inflammatory myopathy, particularly in inclusion body myositis(IBM) that lead to malnutrition and aspiration pneumonia, with Btx-A injection into cricopharyngeal muscle dysphagia will alleviate

Visual and Auditory Attention and Inhibition Control as an Important Cognitive Impairment in Multiple Sclerosis

Mahrooz Roozbeh, Maziyar Shojaei, Mehrdad Roozbeh, Leila Simani

There is Increasing Evidence of Cognitive Impairment in Patients with multiple sclerosis (MS). However, research has also been conducted on cognitive function in MS yielded conflicting results. This study examines the control functions of attention and inhibition.
Relationships between MS patients and other clinical features such as depression and fatigue In these patients. Participants included 80 patients with MS and 60 healthy controls. Patients with MS performed worse on the IVA-CPT task than healthy controls. However, multiple regression analysis showed no significant relationship between FSS and HADS for disease duration, attention, and inhibitory control. Inhibitory control and attention are significantly impaired in MS patients. Uncovering the basis of cognitive impairment in MS may have important clinical implications for developing better cognitive rehabilitation strategies.

Cognitive Training and TDCS on Cognition of Patients with Multiple Sclerosis

Leila Simani, Mahrooz Roozbeh, Maziyar Shojaei

Between 40-70% of patients with multiple sclerosis (MS) suffer cognitive impairment during their illness. Few studies have examined the effects of anodal transcranial direct current stimulation (a-tDCS) together with cognitive training on cognitive performance in MS patients.
This study aimed to determine whether multiple sessions of a-tDCS, with or without cognitive training, affect cognitive performance in MS .
Eighty MS patients underwent a-tDCS, cognitive training, a-tDCS plus cognitive training, and sham ten consecutive times daily. Cognitive function (including episodic memory, attentional and inhibitory control, working memory, and visuospatial skills) was measured at baseline, weeks 4 and 12 after the intervention.
All cognitive functions were significantly improved after the intervention compared to the sham condition. This effect was also evident during the follow-up of several cognitive tasks in the a-tDCS, and a-tDCS combined cognitive training groups.
The cognitive training group had immediate improvements in attention and inhibitory control, but the differences were not significant at follow-up. There are also no significant differences between these three groups in post-intervention cognitive scores.
Cognitive training with a-tDCS alone and in combination with a-tDCS appears to be a promising treatment option for cognitive performance in MS patients compared to sham.

Temporal Lobe Epilepsy in a Syndrome of Progressive Scoliosis with Horizontal Gaze Palsy Syndrome

Mostafa Asadollahi, Mehrdad Roozbeh, Elham Rahimian, Behnam Safarpour Lima

Horizontal gaze palsy with progressive scoliosis (HGPPS) is a rare autosomal recessive syndrome characterized by congenital absence of conjugate horizontal eye movements and childhood-onset progressive scoliosis.
Here we present a case 30-year-old female with refractory focal seizures. LTM findings were compatible with the right TLE.
Results of whole exome sequencing revealed a homozygote variant defined as c.1090G>A (p. Val364Met) in ROBO3 gene.
The presence of auditory aura at the beginning of seizures, which is more characteristic of lateral temporal lobe epilepsy, is a challenging issue in our patient. Focal epilepsy has not been previously described in HGPPS.
In this article we report the first case of HGPPS with temporal lobe epilepsy (TLE) and false. Lateralizing ictal signs.

A Study on the Neuroimaging Differences between IGE and PNES

Mehrdad Roozbeh, Farzan Safi Dehaj, Mahrooz Roozbeh, Hosein Pakdaman, Parnian Shobeiri

Psychogenic non-epileptic seizure (PNES) is a complex entity that does not have electrical Discharges in the brain cortex and is different from idiopathic generalized epilepsy (IGE) in Symptoms, signs in EEG, and, especially, neuroimaging modalities.

Thus, it has recently drawn attention to enhancing the therapeutic and management approaches. This narrative review provided and compared various neuroimaging modalities and their outcomes in PNES and IGE patients. In addition, a brief need-to-know background for epidemiology and psychiatric/medical comorbidity, brain network circuits related to emotion-executive-motor dysregulation. It may cause differences between PNES and IGE patients, and recent and future studies aimed to reveal the connections in these patients are discussed.

Finally, it has been proposed that the pathophysiology of PNES and IGE is distinct, based on different imaging and functional characteristics, although they possess a few common characteristics. Given the imaging abnormalities observed in PNES patients, it is assumed that the condition is more organic and should be addressed accordingly

Consequently, specific treatment and management approaches are recommended for each. Further research is necessary to elucidate the pathophysiology of PNES to propose a practical and efficient treatment.

Follow-up and evaluation of patients undergone LTM EEG in Imam Reza Hospital, Mashhad

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Introduction:
This study aimed to explore the clinical value of LTM EEG in patients who had provisionally been diagnose with refractory seizures

Method:
41 patients with refractory seizures who undergone 24 hour LTM EEG recording, were assessed after one year of study. One patient has died for unknown reason during this period and was excluded from study. The data which was collected included: Final diagnosis of attacks, efficacy of LTM EEG monitor on diagnosis and treatment, severity and frequency of attacks and patient's total satisfaction of test.
Results:
Final diagnosis of patients based on LTM was divided in to 3 groups: PNES (n=12), Epileptic (n=26) and sleep disorder (n=2). Severity and frequency of attacks decreased in 29(72.5%) & 32(80%) patients respectively. In 10 patients diagnosis and treatment has changed. Patient's satisfaction in each group was assessed with k2 test and in PNES and sleep disorder groups degree of satisfaction was high (in 57.1%), mod (in 28.6%) and low (in 14.3%) (P value 0.001). In epileptic group who 9 of them undergone epilepsy surgery and others had treatment change, range of satisfaction was: high (in 42.3%), moderate (in 30.8%) and low (in 23.1%). And one patient of latter group was not satisfied.

Conclusion:
By employing LTM EEG, a considerable size of patients diagnosed initially with drug resistance epilepsy (14 out of 41) had received accurate diagnosis and thus, appropriate treatment. In addition, this method could help patients to achieve better control of the attacks, irrespective of the diagnosis.

Evaluation of the cognitive impairments and depressive symptoms in patients with Parkinson's disease: A case-control study from Iran

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Background: The study will focus on the original data regarding the cognitive impairments and depressive symptoms in patients with Parkinson's disease and control group.
Methods: In a case-control study, a total of 100 Parkinson's patients who were hospitalized in Rouhani Hospital and 200 non-Parkinson's people (control group) from Amirkola Health and aging project (AHAP) Marras et al., Babol, Iran were enrolled between September 2019 to February 2020. Data were collected by simple random sampling. Data were collected using a four-part questionnaire, including demographic characteristics, Unified Parkinson Disease Rating Scale (UPDRS), Modified Hoehn and Yahr staging Scale (MHYSS), Mini-Mental State Examination (MMSE) and Geriatric Depression Scale (GDS).
Conclusions: Cognitive impairments and depressive symptoms were significantly associated with an increase in the severity of Parkinson's disease, and also, depressive symptoms in Parkinson's patients was associated with an increase in cognitive impairments.

Cerebral Venous Thrombosis associated with Spontaneous intracranial hypotension: a case report

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Spontaneous intracranial hypotension (SIH) is a well-known cause of orthostatic headache. SIH as a risk factor for cerebral venous thrombosis (CVT) is not well-known. There are several mechanisms that could contribute to the development of CVT in SIH. While not well-known, Schievink reported that the frequency of CVT among patients with SIH was about 2%, which was higher than the 0.0005% rate in the general population.1 we report a case of a 44-year-old woman with SIH and CVT. She was treated with anticoagulation but did not receive a blood patch for the SIH, because there was resolution of orthostatic headache with bed rest and sufficient hydration. Follow-up magnetic resonance imaging showed resolution of the findings of SIH and CVT. So, CVT should be considered in Patients with SIH and any change in the headache pattern might suggest the development of CVT.

Perineuritis as a rare cause of polyneuropathy; a case report

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42 y/o female presented with Progressive asymmetric painful quadriparesis and paresthesia from 4 months ago Prominent in distal of left upper and right lower limbs .in PMH she had DM, 3x abortion .She was admitted three times in gestational age 29 w,36 w and after delivary because of worsening of her symptoms. In first time EDX and work up done (mild sensorimotor polyneuropathy with axonal features) and The patient was discharged with a diagnosis of diabetic polyneuropathy. In second admission EDX was done again and reported Chronic sensorimotor polyneuropathy with axonal features and in asymmetrical pattern, Partial conduction block. Treatment with corticosteroids and IVIg was started .. she did not receive her full treatment and left the hospital with her personal consent after delivery at gestational age 36w. according to the examination, the lesion is localized in peripheral system. all of para clinic data were normal such as lab data (autoimmune and paraneoplastic panel ,…) lung HRCT, Abdominopelvic sonography and Echocardiography…for next step biopsy of proneal nerve was done and reported Mild Lymphocyte infiltrate present around small vessels (mild vasculopathy). Peroneus brevis muscle biopsy was done and Mild lymphocyte infiltrate present around small vessels (mild vasculopathy). There was no evidence of vasculitis (fibrinoid necrosis & neutrophilic infiltration, nuclear debries) in serial sectioned specimens. According to rule out of vasculities and mild lymphocyte infiltrate in nerve biopsy, Perineuritis diagnose was definite

A scoping review of clinical trials using Mesenchymal Stem Cells for Parkinson's disease. Which biomarkers have diagnostic value?

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Background: Parkinson's disease (PD) is a neurodegenerative disorder characterized by the classical motor symptoms of rigidity and tremor. Stem cell transplantation recently is known as a promising approach in this field. The aim of this study was to identify the main biomarkers that change in response to this treatment in Parkinson's patients.

Method: Two complementary search steps were applied up to February 6, 2023 in four databases (PubMed, SCOPUS, Cochrane and Web of Science), using PRISMA guideline. All relevant clinical trials containing Mesenchymal Stem Cell (MSC) transplantation in PD disease were comprehensively evaluated.

Results: Regarding to define inclusion and exclusion criteria, from totally 990 articles, 9 studies containing 30 biomarkers were included. The most clinical valuation after cell therapy was based on both F-Fluoro-2-deoxyglucose positron emission tomography scanning (FDG PET) and magnetic resonance imaging (MRI) with close association with patient’s status. Unified MSA Rating Scale (UMSAR) was also used for efficacy assessment. BDNF, PDGF-BB, P-tau, Amyloid-β, NF-L, MCP-1, HGF, VEGF, KGF, and TPO were also more repeated investigated biomarkers.

Conclusion: In summary, the functional tests were the most prominent biomarkers that changed in response to cell therapy. Of course, the sample size of the reviewed studies was mostly small (the maximum sample size was 29), which requires more carefulness and caution regarding the investigation of these biomarkers.

A rare cutaneous adverse effect in a multiple sclerosis patient under treatment of fingolimod

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Fingolimod is used in relapsing remitting multiple sclerosis as disease modifying treatment. It causes known side effects such as macular edema, alopecia, bradycardia and etc. we report a case of multiple sclerosis with cutaneous side effects of fingolimod .

Case report;

A 19 year old woman diagnosed with multiple sclerosis was treated with fingolimod .one month after starting the treatment she developed maculopapular skin lesions without pain and itching. In the dermatology consultation fungal and infectious and malignant causes were negative. The patient had no symptoms of rheumatological diseases in the history and laboratory studies.

Finally, a skin biopsy was performed. Pathological findings of were reported and the treatment was stopped and after discontinuation of treatment the lesion was disappeared and natalizumab was started. This is the first case of skin vasculopathic reaction compatible with pigmented purpuric dermatosis due to fingolimod.

hepatocellular carcinoma cause ischemic stroke, a case report

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Numerous types of cancer have been shown to be associated with either ischemic or hemorrhagic stroke. In this review, the epidemiology and pathophysiology of stroke in cancer patients is discussed, while providing vital information on the diagnosis and management of patients with cancer and stroke.
The importance of cancer-associated hypercoagulability as a possible stroke etiology in patients with cancer has received relatively little attention to date.
Increased serum levels of D-dimer, fibrin degradation products, and CRP are more often seen in stroke with concomitant cancer.
Multiple infarctions are more common in patients with active cancer compared with those without a cancer diagnosis.
Patients with hepatocellular carcinoma (HCC) might be more vulnerable to develop stroke than other cancer patients because of HCC-associated coagulation dysfunction.
We report a patient with ischemic stroke that we found HCC in our workup for Embolic Stroke of Undetermined Source(ESUS).

Magnetic resonance imaging study of muscular fatty infiltration and edema in dystrophinopathies

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Introduction: The current study aims to investigate muscular fatty infiltration and edema in dystrophinopathies considering categories including the type of dystrophinopathy, involved muscular compartments and gene sequencing using magnetic resonance imaging (MRI).
Methods: The current cross-sectional study has been conducted on 33 patients with BMD/ DMD whose exon deletions were detected via gene sequencing. The deleted exons were categorized as exons 45-55 (group-1) and other exons (group-2). A lower extremity MRI was performed for the patients and interpreted qualitatively regarding fatty infiltration intensity and edema severity. The data were analyzed considering the type of dystrophinopathy, lower extremity compartments and exon deletions.
Results: The intensity of fat infiltration did not differ between DMD and BMD (P-value=0.100); however, edema was more severe in DMD (P-value0.001). Fatty infiltration grading was more severe in the posterior thigh compartment of BMD than DMD patients (P-value=0.048). The most intensive fatty infiltrations were found in the anterior thigh (57.3%) and the least in the posterior leg compartments (17.2%), respectively (P-value0.001). The most severe edema grading was detected in the posterior leg (15.2%) and the least in the anterior thigh compartments (3.7%), respectively (P-value0.001). Fatty infiltration (P-value=0.002) and muscular edema (P-value0.001) were remarkably more severe among the patients with group-2 exon deletions.
Conclusion: Based on the finding of this study, 1) exons 45-55 deletions were associated with milder muscle loss; 2) the anterior thigh compartment was the most severely affected area and 3) more severe edema was notified in DMD than BMD, however, the intensity of fatty infiltration did not differ.

Mesenchymal stem cell improves hippocampus cell density in dementia model

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Background: Stem cells have ability to proliferation and differentiation into different cell types. Stem cells could migration and secretion of neuroprotective factors for increasing survival and regenerative cells. Dementia is a progressive cognitive and behavioral dysfunction, memory loss, and language dysfunction which occurs in people over the age of 65. Materials and Methods: In this study, 24 male Wistar rats weighing 220 20g with available food and water ad libitum condition were randomly divided into three groups including, Control, TMT+PBS (8 mg/kg TMT+ 0.5 ml PBS) and TMT+DPSCs (TMT + 1 106 cells/ml DPSC in 0.5 ml PBS) groups. After the sacrificed rats, brain tissue removed for histological study. Also, the glass slides stained with Hematoxylin and Eosin (H&E). Neural cells were evaluated under a light microscope. The data were analyzed by one-way ANOVA followed by Tukey analysis with SPSS software. Results: The long shape fibroblastic morphology, plastic-adherent and adipogenic differentiation confirmed MSCs characterizations. Transplantation of Mesenchymal stem cell significantly improved pyramidal neurons of CA1 and CA2 compared to TMT+PBS (P 0.0001). Conclusion: Mesenchymal stem cell transplantation improves dementia, behavioral and cognitive function in rats. Also, Mesenchymal stem cell transplantation repair damage neuron of brain in dementia model. Mesenchymal stem cell transplantation improves neural density in CA1 and CA2 of hippocampal regions in rat model. Transplantation of Mesenchymal stem cell is promising treatment in neurodegenerative and behavioral disorders, as well as dementia and Alzheimers disease.

Investigate the effect of Crocin on inflammatory factors and mental health in Multiple Sclerosis patients at the Kashan Shahid Beheshti's hospital in 2022

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Multiple sclerosis is a demyelinating disease involving the central nervous system. It causes a wide range of psychiatric symptoms such as depression and anxiety. Considering the antioxidant effects of saffron and its role in improving symptoms such as depression, in this study we investigated the effect of saffron effective substance on inflammatory and mental health factors.

This interventional study was conducted in 2022 in Beheshti Hospital of Kashan among two groups of MS patients, the first group treated with crocin 15 mg twice a day and the second group treated with placebo, questionnaires and laboratory criteria were recorded on the first day and 8 weeks later.

The results showed that was no significant difference between the two groups in terms of demographic variables ($p>0.05$), there was no significant difference between the two groups in terms of depression and anxiety ($p>0.05$). Also, the results showed that there was no significant difference between the two groups in terms of the effect on MDA and NO factors, and in the crocin group, the average CRP after the intervention was significantly lower than the placebo group ($p=0.018$); In fact, crocin had a significant effect in reducing CRP.

Based on the findings, it can be concluded that crocin is effective in reducing the inflammatory factor CRP in MS patients, and it is suggested that in the future studies with a higher dose of crocin and in a longer period of time to influence the effect on inflammatory factors and mental health of MS patients.

Encephalitis, a rare manifestation of Epstein-Barr virus infection

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Introduction

Despite the commonly asymptomatic nature of Epstein-Barr virus (EBV) infection, neurological manifestations may occur. Encephalitis is a very rare complication, mostly affecting immunocompromised individuals.

Case Report

We report a 30-year-old male who presented with fever, sore throat, general weakness, and drowsiness. He had a history of a seizure episode at the age of 4, and Guillain-Barre syndrome at the age of 10.

Physical examination noted a confused individual with slow and delayed speech. Splenomegaly, axillary lymphadenopathy, and tonsillar enlargement were present. He was bradykinetic with cogwheel rigidity in both upper and lower limbs. The signs of meningeal irritation were identified.

Initial laboratory data included pancytopenia, direct bilirubinemia, elevated liver enzymes, and high ESR. Peripheral blood smear revealed hypochromic RBCs with anisocytosis, severe leukopenia, and atypical lymphocytes. Analysis of CSF revealed mild pleocytosis with 20 WBCs/ mm3 and 95% lymphocytic dominance. On MRI, T2/FLAIR images showed bilateral hyper-intensities in the medial temporal lobe as well as the basal ganglia, with right-side predominance, whereas DWI/ADC revealed diffusion restriction in cortical regions. Besides, diffused meningeal enhancement was observed following the contrast injection. The findings were highly in favor of a viral meningoencephalitis. In our case the diagnosis of EBV encephalitis was confirmed based on the positive serological IgM for EBV capsid antigen and the polymerase chain reaction (PCR) for EBV in CSF. The autoimmune panel, paraneoplastic panel, and PCR multiplex of both serum and CSF were all negative, ruling out other possible differential diagnoses. During hospitalization, the patient developed myocarditis and later intestinal perforation and finally died. Discussion and Conclusion

we report a very rare case of EBV infection with severe neurological, cardiac, and gastrointestinal complications causing multi-organ dysfunction.

The Effect of Rehacom Cognitive Rehabilitation On The Neurocognitive Status of Patients With Temporal Lobe Epilepsy After Anterior Temporal Lobectomy

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Background:
The medical treatment of epilepsy has progressed, but it still fails to control all seizures. Patients with focal epilepsy also have the option of undergoing epilepsy surgery. Surgery can result in adverse cognitive changes. Cognitive rehabilitation with RehaCom software was evaluated in patients with epilepsy who had undergone Anterior Temporal Lobectomy (ATL)
Method:
This study included twelve patients who had ATL (6 on the left side and 6 on the right side). Tests of verbal and figural memory were conducted to assess temporal lobe function, and tests of attention were conducted to assess extratemporal, non-memory function. RehaCom software was used as the rehabilitation tool.
Results:
Six of the participants were female. Patients were on average 34 years of age. The average interval between surgery and intervention was 12 months. There was an average IQ score of 92. Following rehabilitation, we found significant improvements in the domains of DSB (Digit Span Backward) (number of correct responses: p-value: 0.001, Max length of correct response: p-value: 0.001), BVMT-R (Brief Visual Memory Test–revised) (p-value: 0.008), SDMT (Symbol Digit Modalities Test) (p-value: 0.001), CFT (Category Fluency Test) (p-value: 0.008), working memory, learning, and delayed recall of RAVLT (Rey Auditory Verbal Learning Test) (p-value: 0.002, 0.001, 0.029).
Conclusion:
After surgery, cognitive rehabilitation can be provided to the patients to help them recover more efficiently. RehaCom rehabilitation intervention demonstrated a significant and positive effect, particularly on attention, verbal and figural memory, and executive performance. This result further confirms the importance of postoperative cognitive rehabilitation.

Stiff Person Syndrome: A successful Case Report of Mesenchymal Stem Cell and exosome therapy for a young female patient with coexistence of seropositive antibody to Glutamic Acid Decarboxylase

Amir Reza Boroumand, Najmeh Kaffash Farkhad, Mohammad Ali Khodadoust, Jalil Tavakol Afshari

Stiff Person Syndrome (SPS) is a rare neurological disorder characterized by fluctuating rigidity and painful muscle spasms. High-titer of anti- Glutamic Acid Decarboxylase (GAD) is common in this syndrome.
This case report study, is reported a 24-year-old Iranian female patient with SPS presenting with unusual clinical manifestations of severe increase in anti- GAD up to 700 unit and severe muscle spasms, who underwent successful stem cells and exosome transplantation.

Targeting Mitochondrial Dysfunction to Combat Alzheimer's Disease: Exploring the Pros and Cons of Modulating Bioenergetics.

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Alzheimer's disease (AD) is the leading cause of dementia. As of now, 99.6% of clinical trials, including those involving energy metabolism, have failed to prove effective in treating disease symptoms. Over the past decade or so, scientists have made significant advancements in the understanding of the pathophysiological mechanisms contributing to these pathologies. Impaired mitochondrial function has become one of the main factors responsible for brain disease pathogenesis. In Alzheimer's disease, there is a decrease in mitochondrial function, leading to decreased ATP production, oxidative stress, and a decrease in mitochondrial membrane potential. In such a situation, synaptic plasticity decreases, and learning and memory are impaired as a result. In addition, mitochondrial dysfunction may cause an increase in amyloid beta, which is thought to be a major contributor to Alzheimer's disease. In this regard, exploration of the multitude of mitochondrial mechanisms altered in the pathogenesis of Alzheimer's disease constitutes novel promising therapeutic targets for the disease. One therapeutic strategy targeting mitochondria directly focuses on modulating mitochondrial activities such as bioenergetics. This treatment strategy has positive and negative aspects. From a good news perspective, bioenergetics deficits and mitochondrial dysfunction are key features of Alzheimer's disease progression. From a bad news perspective, targeting mitochondria can have undesirable consequences. For example, accelerate the loss of white matter. Because of these inconsistencies, further laboratory investigations in this area are needed.

Brain computer interface comes to the aid of patients suffering from neuromuscular disorders

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Brain-computer interface (BCI) technology improves the quality of the elderly and rehabilitation of motor functions, facilitates motor control, and brain plasticity processes. BCI is a communication technology which converts brain neural activity signals for artificial output like muscle or nerve activity and motor rehabilitation. BCI create and analyze the signals for functional restore in neuromuscular disorders such as spinal cord injury, stroke, cerebral palsy and amyotrophic lateral sclerosis. BCI based on electroencephalography, electroencephalographic, intracortical and other signals for medicine aim including, robotic arms, prosthesis, wheelchairs, activate muscle and control cursors. BCI improved neuro-rehabilitation in psychiatric conditions like motor paralysis of neuromuscular disorders. Neuromuscular disorders resulting from functional problems in nerve and muscle in communication to each other. BCI - controlled functional electrical stimulation (FES) improves upper and lower extremity functions. BCI-FES, as sensory-motor loop reintegration, could access directly brain information through a motor interface, translating brain activities into control commands, and restoring the functional muscle activation. It is also for improving balance, gait performance, and functional activities in neuromuscular patients. Therefore, motivational activities following BCI-FES training showed functional improvements and rehabilitation of damaged brain area in neurological injuries. BCI can help to achieve normal neuromuscular outputs through real-time brain-muscle signals interactions. The system records and analyze brain signals as well as enhance neuromuscular output. Brain signals can be measured with many electrical or magnetic fields methods such as, PET, functional MRI, and functional near-infrared imaging (fNIR).

Evaluation of clinical outcomes of COVID19 in patients with multiple sclerosis in the north of Iran

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Introduction: People with autoimmune diseases are at higher risk than those of the community compared to other people with COVID 19. Therefore, it was decided in the objectives of this study to investigate the clinical consequences of COVID 19 infection in patients with multiple sclerosis (MS) and to examine the possible risk factors related to the severity of the disease in this group of patients.
Methods: Patients with multiple sclerosis were asked about their COVID19 history between March 2020 and March 2021. Demographic characteristics, underlying diseases, disease modifying drugs (DMDs), and clinical manifestations were recorded along with the need for hospitalization or intensive care unit were recorded.
Results: From a total of 618 patients, 92 individuals (14.8%) with a history of COVID19 were detected. The rate of hospitalization was 16% which far more than general population. No significant correlation was detected regarding age, blood groups, DMDs and patients disability with risk of COVID19. However, The higher BMI and female gender were due to occurrence of COVID19. Although no DMDs was related to higher risk of infection, B-cell therapy was associated to more hospitalization rate. Four patients who died during the pandemic were received rituximab.
Conclusion: Female gender and BMI are among the factors that increase the chances of COVID19 in MS patients. Due to more risk of hospitalization rate with rituximab use, it is logically recommended to pay more attention to patients on B-cell therapy at the peak time of COVID-19 pandemic regarding possible disease severity.

Attenuation of Blood-Brain Barrier Disruption in Rat Model of Middle Cerebral Artery Occlusion through Overexpression of MicroRNA-149

Samira Vahidi, Mohammad Reza Bigdeli, Mehrdad Roghani, Hosein Shahsavarani, Salma Ahmadloo

Introduction: Ischemic stroke is a leading cause of death worldwide, resulting in physical, social, and economic disabilities. Despite significant improvements in treatment methods, efficacy remains suboptimal for many patients. MicroRNAs have shown promise as a pre-treatment or treatment option for reducing complications associated with ischemic stroke, as they are frequently involved in various pathogenic processes that contribute to its development by down-regulating multiple genes. Although miR-149 has several effects on genes involved in either proliferation or apoptosis, it has not been fully utilized to treat stroke-related neurological defects. This study investigated the effects of miR-149 on the improvement of neurological deficits in a rat stroke model.

Material and methods: We created a total of 25 experimental groups, including five major groups (sham, control, recipient of miR-149-5p, recipient of LV-miR-149, and recipient of LV-Control), each containing five subgroups that examined cerebral edema, blood-brain barrier permeability, tissue damage volume, Faslg gene expression, and behavioral evaluation of neurological defects.

Results: Our findings indicate that injecting lentiviral miR-149 significantly reduced brain infarct volume and cerebral edema and improved behavioral outcomes after stroke, as miR-149 expression decreased during ischemia. Overexpression of miR-149 lowered Caspase-3 activity and downregulated Faslg expression.

Conclusions: These results suggest that miR-149 may be an attractive therapeutic target for ischemic stroke.

Neurosarcoidosis in an adult man with a family history of MS: A Case report

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A non-caseating granuloma is the histological hallmark of sarcoidosis, a multisystem disease. Neurosarcoidosis is a complex and rare form of sarcoidosis that affects the CNS . It involves the spinal cord with intradural lesions. Herein, we present a case of neurosarcoidosis with a family history of MS. He first underwent surgery for swelling of the right wrist joint and then was diagnosed with multiple sclerosis due to the onset of paraparesis and Magnetic resonance imaging (MRI) results. After an open biopsy, the diagnosis of neurosarcoidosis was established and was followed up by appropriate medical management. In conclusion, to distinguish MS from neurosarcoidosis, CSF analysis may not be particularly useful since it may reveal similar abnormalities. All manifestations are not identical between MS and neurosarcoidosis; nonetheless, persistent meninges enhancements or parenchymal enhancements in tissue are not expected in MS and likely indicate a granulomatous process. The administration of appropriate treatment at an early stage of the disease can assist in decelerating its progression.
Abbreviation: Central nervous system (CSF), Multiple sclerosis (MS), Cerebrospinal fluid (CSF), Computed tomography (CT), Lumbar puncture (LP), Angiotensin-converting enzyme (ACE), Blood-brain barrier (BBB), Magnetic resonance imaging (MRI)

Parkinsonism as an initial presentation of Creutzfeldt-Jakob Disease: a case report and Review of literature

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Background: Creutzfeldt-Jakob disease (CJD) is a deadly neurodegenerative illness. Approximately half of the patients with sporadic CJD (sCJD) may have movement disorder at the onset of the disease presentation, rarely. In this article, we report a case of CJD with parkinsonism as the initial presentation of the disease.
Case presentation: We report a 69-year-old lady with initial symptoms of gait difficulty, tremor and bradykinesia. Afterward, cognitive impairment, ataxia, chin tremor and myoclonic jerks appeared. Worsening of her symptoms lead to akinetic mutism. Probable sCJD was diagnosed by detecting protein 14-3-3 in CSF and typical imaging features.
Conclusion: This case report illustrates important aspects of an inevitably fatal and rapidly progressing disease's early presentation and clinical features. The uncommon initial presentations of sCJD should be considered with the intent of preventing misdiagnosis in the future. Early diagnosis of sCJD can avoid possible iatrogenic transmission of the disease and lead to better patient care.

Evaluation of the effective effect of crocin on inflammatory factors and mental health in patients with multiple sclerosis: randomized clinical trial in 2022

Nasim Safa, Bahador Rezapour

Introduction: Multiple sclerosis is a demyelinating disease involving the central nervous system. It causes a wide range of psychiatric symptoms such as depression and anxiety. Considering the antioxidant effects of saffron and its role in preventing neuronal analysis and improving symptoms such as depression, in this study we investigated the effect of saffron effective substance on inflammatory and mental health factors in patients with multiple sclerosis.

Materials and Methods: This interventional study was conducted in 2022 in Shahid Beheshti Hospital of Kashan among two groups of multiple sclerosis patients, the first group of multiple sclerosis patients treated with crocin tablets (saffron supplement) 15 mg twice a day and the second group of multiple sclerosis patients treated with placebo tablets were similar to crocin twice a day, questionnaires and laboratory criteria were recorded on the first day and 8 weeks later. Data were analyzed using SPSS software.

Results: The results showed there was no significant difference between the two groups in terms of depression and anxiety ($p>0.05$). Also, the results showed that there was no significant difference between the two groups in terms of the effect on MDA and NO factors, and in the crocin group, the average CRP after the intervention was significantly lower than the placebo group ($p=0.018$); In fact, crocin had a significant effect in reducing CRP.

Conclusion: Based on the findings, it can be concluded that crocin is effective in reducing the inflammatory factor CRP in multiple sclerosis patients.

The Effect of Binaural Beats Along with Speech Therapy on word finding problems and Cortical Connectivity in Word Selection Aphasia: Two case studies

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Binaural beats utilize a phenomenon that occurs within the cortex when two different frequency are presented separately to each ear. Referring to the results of previous research, some B.B frequencies might entrain the brain and enhance certain cognitive functions. Nevertheless, studies in the field of language problem are very scarce and controversial. Aphasia is a chronic condition that usually requires long-term rehabilitation. Because of logistical and financial considerations, especially more than 6 months after stroke, even if many effective treatments be offered to patients, speech therapy services for individuals with aphasia often remain limited. Therefore, the need to develop tools to maximize rehabilitation potential is unquestionable. In anomic aphasia, speech fluency, repetition, comprehension, and grammatical speech are relatively preserved, but these patients have difficulty in finding words. The aim of this study was to test the efficacy of binaural beats on word finding problems in word selection anomia. In this study, we examined the effects of different acoustic stimulation conditions on two participants [E.S (34 years old) and M.R (63 years old)] with chronic non-fluent aphasia. Six acoustic stimulation conditions were used as follow; None, Pure Tone, Classical Music, 5 Hz binaural beats, 10 Hz binaural beats, and 15 Hz binaural beats. These case studies indicate that only the 15 Hz binaural beats, compared to the non-condition, produced significant change in word finding problems and cortical connectivity.

Mesenchymal Stem Cells, A Promising Treatment For Parkinson's Disease

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Background: Parkinson's disease (PD) is a widespread neurological disorder that affects more than 10 million individuals. No approved drug has proven to affect this disease's etiology, although this condition's exact cause is understood. One of the promising therapies for this disease is mesenchymal stem cell (MSC) therapy. Mesenchymal tissues are readily available and can be grown from patients or donors. Mesenchymal stem cells are pluripotent cells able to self-renew and undergo many differentiations. In this abstract, we aimed to investigate the effect of MSC therapy on Parkinson's disease.
Methods: We observed an online search in PubMed, Scopus, and Web of Sciences to investigate the effect of MSCs on Parkinson's disease with the keywords: "stem cell", "mesenchymal stem cell", and "Parkinson's disease". Case reports, clinical trials, original research, and review articles were thus evaluated. The results were reported in a narrative method.
Results: The results showed that mesenchymal stem cells exosomes reduced neuron loss, damage, and inflammation by decreasing Sp1 signaling. These cells also can reduce neurotoxicity via the STAT3-miR-7-NEDD4 axis. Another interesting finding suggests that Stem cells are also capable of protecting and stimulating the regeneration of damaged dopaminergic neurons as well as They have trophic properties that preserve injured tissues.
Conclusion: This study has identified that mesenchymal stem cells can be used as a promising therapy in the future to treat Parkinson's disease.

Personality traits of patients with multiple sclerosis and their correlation with anxiety and depression levels: A cross-sectional case–control study

Amirali Ghahremani, Sahar Mosa Farkhani, Mahsa Baniasadi, Seyed Kaveh Hojjat, Hasan Namdar Ahmadabad, Najmeh Davoodian

Objective: Multiple sclerosis is a chronic demyelinating disease of the central nervous system that can cause severe disability and impair the quality of life (QoL).
Methods: In the current cross-sectional, case–control study, we investigated personality traits, anxiety and depression levels, in 101 patients in the case group and 202 individuals as the control group. The personality traits of the participants have collected via the Neuroticism-Extraversion-Openness Five-Factor Inventory (NEO-FFI) questionnaire. We evaluated the level of anxiety and depression based on the Hospital Anxiety and Depression Scale questionnaire.
Results: Our study showed in patients with disease duration above 1 year, the rates of agreement (29.78), anxiety (8.83), and depression level (6.39) were significantly higher than the control group (27.19, 6.47, and 4.97, respectively). Although patients with disease duration below 1 year showed a higher level of agreement and conscientiousness (29.65 and 34.35, respectively) than controls (26.6 and 30.86, respectively). The level of anxiety and depression in patients with a disability index above 4.5 was significantly higher than in patients with a disability index below 1. Patients with a disability index below 1 showed a higher rate of extraversion and agreement and conscientiousness (31.47, 31.53, and 35.07, respectively) than controls (25.5, 26.23, and 3033, respectively). In addition, patients with a disability index above 4.5 showed a higher level of agreement (35.64), conscientiousness (35.5), anxiety (9.64), and depression (7.5) than controls (25.96, 30.71, 6.96, and 4.71, respectively).
Conclusions: In conclusion, anxiety and depression levels were much higher among MS patients compared with controls, and the severity of these conditions correlated with the score of the disability index. Therefore, a complete comprehension of these conditions

Current Strategies in the Surgical Management of Post-stroke Spasticity

Mohammadreza Emamhadi

Cerebrovascular accidents (ischemic or hemorrhagic) often produce significant pathology, including upper extremity muscle contractures and spasticity that may be painful and aesthetically unappealing and that interfere with activities of daily living and hygiene. Surgical intervention may be required to manage these disabilities.

The aim of this presentation is to introduce different surgical management and explain a novel technique in treatment of Post-stroke Spasticity, in shoulder adduction, elbow flexion, forearm pronation, wrist and finger flexion, intrinsic muscle spasticity, thumb-in-palm deformity, wrist extension, and finger extension.

Investigate The Effect Of Fluoxetine And Citalopram On Motor Performance After Stroke In Acute Stroke Patients Referred To Shahid Beheshti Hospital In Kashan 2021-2022

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Stroke is a rapidly progressive neurological disorder of cerebrovascular origin, we decided to investigate the effect of citalopram and fluoxetine on Movement after stroke in acute cerebral stroke patients referred to Beheshti Hospital, Kashan 1400-1401

This is a double-blind clinical trial study on 90 patients with acute in 3 intervention groups, including fluoxetine 20, citalopram 20 and placebo daily for 90 days along with physiotherapy has been done. Fogel-Meier score has been assigned to all patients in the study of the 90 patients studied, 58 (64.4%) were male, and 32 (35.6%) were female. There was no statistically significant difference between the mean age, gender, severity of disability, depression score, and motor function score before the intervention in the patients of the three study groups (P>0.05). that the mean motor function score based on Meyer Fugl score one, two and three months after the intervention was the highest in the fluoxetine group and the lowest in the placebo group, and this difference was statistically significant. (P0.05) The results showed that the effect of time on the changes in the motor performance score was significant (P0.05).

The findings of the present study showed that the average motor performance score based on the Meyer Fugl score one, two, and three months after the intervention was the highest in the fluoxetine group and the lowest in the placebo group, and this difference was statistically significant and in The total of the three studied groups had a significant difference between the three groups

Investigation of the expression of Long non-coding RNA in Parkinson's disease

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Background and aim: Parkinson's disease is the second chronic age-related neurodegenerative disease after Alzheimer's. Pathogenic factors in Parkinson's include inflammation and oxidative stress, which lead to dopaminergic cell apoptosis. The case-control study aims to determine the expression level of long non-coding RNAs (lncRNAs) of the apoptosis pathway in Parkinson's patients with healthy individuals.

Methods: In the case-control study, 50 patients with Parkinson's were examined with 50 healthy individuals who were matched in terms of age and sex. In both groups, the expression of long non-coding RNAs includes taurine up-regulated 1(TUG1), metastasis-associated lung adenocarcinoma transcript 1(MALAT1) ،nuclear enriched abundant transcript 1(NEAT1), and Growth Arrest Specific 5(GAS5) were compared using Real-time PCR.

Results: The ratio of gene expression of MALAT1, NEAT1, and TUG1 in the case group was statistically significantly higher than in healthy individuals (P0.05). The ratio of GAS5 gene expression in people with Parkinson's disease was lower with a statistically significant difference (P0.05). The ratio of HULC gene expression was higher in the case group, but it did not show a statistically significant difference with the control group (P=0.06).

Conclusion: The involvement of long lncRNAs that increase apoptosis may play a role in the pathogenesis of the disease, which may be used for identification and therapeutic purposes.

Status epilepticus due to COVID-19; a cases series and literature review

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Background
Complications are increasingly recognized with SARS-CoV-2, the causative pathogen for COVID-19. Various mechanisms have been proposed to justify the cause of seizures in Covid-19 patients. To our knowledge, 13 cases of status epilepticus (SE) associated with COVID-19 have been reported so far.
Methods
Here, we present a single-center case series, including the clinical, laboratory, and imaging characteristics, and the EEG and the outcome of SE in 5 Iranian patients with laboratory-confirmed SARS-CoV-2 virus.
Results
SE was para-infectious in four patients and post-infectious in one other patient. In Three patients, the causes of seizure were included severe hyponatremia, acute ischemic stroke, and meningoencephalitis. However, in two other patients, no specific reason for seizure was found, but there are possibilities for lesser-known mechanisms of Covid-19 that play roles in developing SE. Two of the patients recovered, and three patients, older and with higher comorbidities, failed to recover and died.
Discussion
Status epilepticus can occur during covid-19 and also in asymptomatic patients. Five patients with COVID-19 and status epilepticus were evaluated in the current study. The reason for complications in three cases was due to COVID-19. No specific cause for the seizure was found in the other two cases.
Conclusion
The highlight of this study was the development of non-symptomatic status seizures in 2 of our patients, which can indicate that the SARS-CoV-2 virus can cause status epilepsy by unknown etiology.

Predictors of recurrent ischemic stroke: A retrospective cohort study

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Background: Cerebrovascular events are one of the most common causes of disability and the third leading cause of death in developed countries. Herein, we aimed to investigate the potential underlying causes of recurrent ischemic stroke.
Methods: This study was a retrospective cohort study conducted in Razi Hospital, Tabriz, Iran between March 2018 and September 2020. Patients with the diagnosis of recurrent ischemic stroke during the study period were eligible to be included. Baseline characteristics and data on the recurrence were collected using chart reviews. Binary logistic regression was used to examine the factors related to recurrence.
Results: One hundred participants with a mean age of 68.88 years were included in the study. Among them 59% were male. Hypertension, diabetes, heart disease, smoking and hyperlipidemia identified in 79%, 42%, 24%, 15%, and 15%, respectively. The average recurrence time of stroke was about 2.52 years. There was only a significant relationship between history of heart diseases and ischemic stroke recurrence (risk ratio: 0.10: 95% confidence interval: 0.03-0.33).
Conclusions: We found no significant association between ischemic stroke recurrence and underlying diseases except for heart diseases. Further large-scale observational studies and meta-analysis are recommended to evaluate the association

Assessing the quality of life and its related factors in patients with multiple sclerosis receiving rituximab

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Introduction: Life quality of patients diagnosed with Multiple Sclerosis reflects the effectiveness of treatment plans especially considering their quality and quantity status.This study was performed to evaluate the quality of life of patients with MS receiving rituximab in Kurdistan in 2019.
Methods and Materials: In this study, the case group consisted of 83 MS patients receiving rituximab in Sanandaj in 2019 who received WHOQOL-BREF questionnaires. Patients completed a questionnaire during a visit to receive medication. This process continued until the completion of the questionnaires in 83 people. each participant was examined by a neurologist before participating in the study and his EDSS score was determined.
Results: The mean scores of the subscales of quality of life in the subjects were as follows: (It should be noted that the scores are in the range of 0 to 100) . The mean of the physical health subscale was 49.26, the mean of the mental health subscale was 47.84, the mean of the social relations subscale was 79.58, the mean of the environmental health subscale was 52.41, and the mean of the overall quality of life subscale was 49.24. The mean score of EDSS in the subjects was 2.22
Conclusion: This study shows that gender, marital status, and residence of patients did not affect their quality of life and disability, but the higher level of education and employment of patients caused a better quality of life and a lower rate of disability. And increasing rates of disability are associated with lower quality of life.

Comparison of Herpes Simplex Virus Reactivation Frequency in Acute Idiopathic Cranial Mononeuropathy and Normal Population by Serological Assay

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Background: Following primary Herpes simplex virus (HSV)infection, HSV remains dormant in the neural ganglia. Secondary infection can emerge after the reactivation of latent infection, presenting as neurological manifestations. Previous studies have demonstrated the relationship between HSV reactivation and selective involvement of cranial nerves. This study used a serological assay to compare HSV reactivation frequency between patients with recent idiopathic cranial mononeuropathies and normal individuals.

Methods: Plasma samples from 35 idiopathic cranial mononeuropathy cases (57.2% women, mean age 58.37 years) and 35 age and sex-matched healthy controls were analyzed for anti-HSV immunoglobulin G (IgG) and immunoglobulin M (IgM) antibodies by enzyme-linked immunosorbent assay (ELISA).

Results: Anti-HSV IgG antibody was positive in 91.4% of patients and 88.6% of controls. The mean serum anti-HSV IgG antibody level was significantly higher in patients (146.7860 RU/mL) than in the controls (130.6152.99 RU/mL) (P-value = 0.037). Anti-HSV IgM antibody was positive in 37.1% of patients and 14.3% of controls (P = 0.042).

Conclusions: The frequency of HSV reactivation was significantly higher in patients with acute idiopathic cranial mononeuropathy than in the healthy controls, indicating the possible role of HSV as an etiology of cranial mononeuropathy.

An Overview of the Relationship Between Occupational Manganese Exposure and Parkinsonism

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Manganese (Mn) is an essential element used in many industries, such as welding, foundries, the production of metal alloys, especially stainless steel, and the production of dry batteries, pesticides, paints, and explosives. Individuals are exposed to Mn through inhalation of fumes, dermal absorption, and ingestion. This metal is an essential trace element required for normal growth, development, and cellular homeostasis. It also has toxic effects on the central nervous system and can cause Parkinsonism symptoms in exposed patients. Studies on human and animal models reveal that neurons of the globus pallidus, the cerebellum, pons, red nucleus, the thalamus, cortex, and the anterior horn of the spinal cord could be affected by Mn toxicity. Although the diagnosis of manganese-induced Parkinsonism is primarily clinical, there are some supporting features on the brain MRI images that may be helpful to objectively distinguish it. This study was designed to review the ways of exposure to Mn, clinical symptoms in case of exposure, and discover the relationship between exposure to Mn and Parkinsonism in the working population.

Therapeutic Plasma Exchange (TPE) Complications in Patients With Multiple Sclerosis (MS) and Clinically Isolated Syndrome (CIS) A Report From a Tertiary Center

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Background: Therapeutic plasma exchange (TPE) is a conventional second-line treatment for patients with multiple sclerosis (MS) or clinically isolated syndrome with steroid-refractory relapses.
Methods: MS and clinically isolated syndrome patients with a steroid-refractory relapse who fulfilled the indications for TPE were enrolled in this study. An expert nurse recorded the data comprising age, sex, type of MS, disease-modifying therapy, disease duration, relapse rate, vital signs at the beginning, during, and at the end of each plasma exchange session, plasma exchange volume, normal saline volume, and TPE complications. Ultimately, the statistical association was estimated amongst the variables.
Results: A total of 122 cases were assessed. Twelve cases (9.8%) received plasmapheresis for the second time. The mean age was 32.2 ± 8.7 years, and 107 (87.7%) were female. In total, 609 plasma exchange sessions were completed. Hypotension and skin reaction were the most clinical complications. Hemoglobin loss and hypokalemia were the most laboratory complications. Fifty-four cases (44.3%) had no complications, 40 (32.8%) had 1 complication, 21 (17.2%) 2 complications, 6 (4.9%) had 3 complications, and 1 (0.8%) disclosed four complications. The relapse rate in the past 12 months and the mean plasma volume exchange were significantly different between the groups.
Conclusions: We revealed that TPE could be considered a safe second-line therapy in MS relapses. Hypotension, skin reaction, hemoglobin loss, and hypokalemia were the most complications of TPE in our patients.

Gray matter cortical changes in persistent post-COVID headache

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Objective: To evaluate gray matter alterations in patients with persistent headache after COVID-19 resolution.
Methods: Exploratory case-control study. High-resolution 3D brain TI-weighted Magnetic Resonance Imaging data were acquired in patients with persistent headache after COVID-19 infection and healthy controls (HC). FreeSurfer (version 6.0) was employed to segment the TI-weighted images and extract the mean values of the cortical curvature (CC) and thickness (CT), surface area (SA), and gray matter volume (GMV) of 68 cortical regions. GMV comparisons were adjusted for intracranial volume. Significant results were considered with p 0.05 (False Discovery Rate corrected).
Results: Ten patients with persistent headache after
COVID-19 (mean age: 53.8 ‡ 7.8 years; nine women) and 10 HC balanced for age and sex (mean age: 53.1‡ 7.0 years; nine women were included in the study.
Significant higher mean SA and GMV values were found in patients with persistent headache compared to HC in the bilateral medial orbitofrontal cortex, left rostral middle frontal gyrus, right pars opercularis, and superior frontal gyrus. In the patients, significant higher GMV in the right caudal anterior cingulate gyrus and SA values in five temporal, frontal, and parietal regions were observed.
No CC or CT changes were found.
Conclusions: Persistent headache after COVID-19 infection is related to gray matter cortical changes defined by higher GMV and SA values mainly localized in frontal regions.

Antidepressive-like and antioxidant activities of melatonin in a murine model of post-stroke depression

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A plethora of scientific evidences suggest that oxidative stress plays an important role in the development of chronic diseases, including cardiovascular diseases as well as different psychiatric disorders. Melatonin exerts beneficial role against damages caused by cerebral ischemia-reperfusion in ischemic stroke and depressive symptoms in depression. Present study aimed to evaluate the in vivo protective activity of melatonin against post-stroke depression as a common consequence of stroke.
The antidepressive-like activity of melatonin was examined through behavioral tests in a mouse model of post-stroke depression. The antioxidant activity was examined by GSH, SOD, and TBARS measurements on mouse brain tissues. Melatonin resulted active in the modulation of depressive symptoms and the reduction of oxidative stress, restoring normal behavior and, at least in part, antioxidant endogenous defenses. This study represents the first attempt to demonstrate the beneficial effects of melatonin on post-stroke depression and to correlate this effect with its antioxidant potentials.