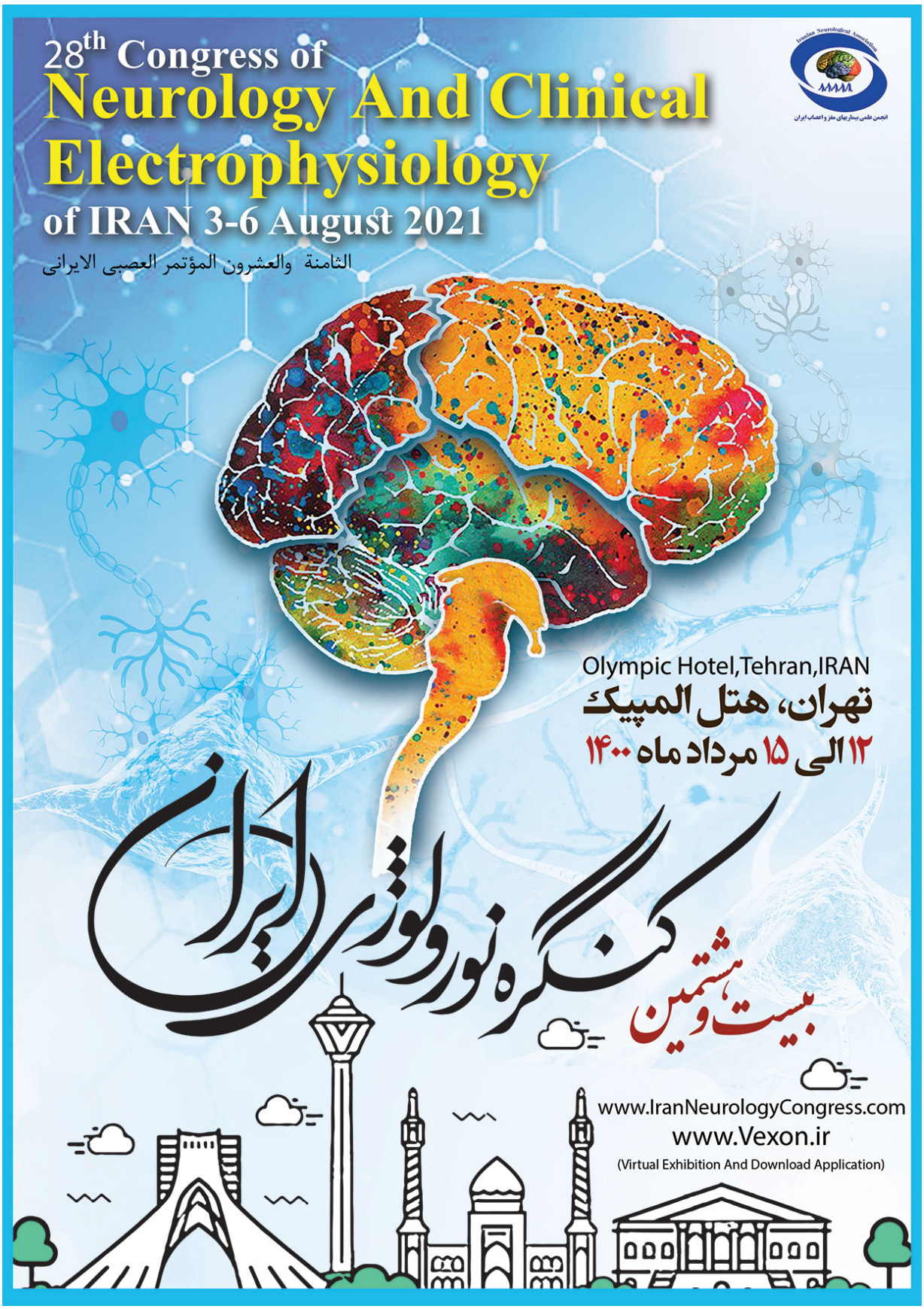
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Epilepsy

Cost-effectiveness of presurgical evaluation and surgery in drug resistant epileptic patients in Iran

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Background: Epilepsy has a prevalence of 0.4 to 1.2 percent worldwide and is a chronic disease. Unfortunately, 30 percent of patients have uncontrolled seizures despite using 2 or more anti-epileptic drugs, these patients will benefit from epilepsy surgery. Epilepsy surgery is under health care coverage in Iran but presurgical evaluations such as video-EEG or intracranial EEG which are used for localization of epileptogenic focus in brain are very expensive and not covered by insurance. So, evaluating the cost-effectiveness of these presurgical evaluations in Iran is needed.
Methods: Twenty-four patient with drug resistant epilepsy whom were hospitalized in LTM ward of Imam Khomeini hospital and were candidate for epilepsy surgery were evaluated in this study. In order to compare their quality of life the SF-36 survey was filled for them prior and 6-12 month after the epilepsy surgery. To evaluate the cost-effectiveness of surgery we used a Marcov model.
Results: There was a substantial decrease in clinical visits, AED use and seizure frequency after the surgery and a significant improvement in their quality of life. Incremental cost-effectiveness ratio (ICER) in different strategies were between 31,188,252 IRR to 396,988,712 IRR.
Conclusion: Gross Domestic Product per capita in Iran is 200,000,000 IRR and we hypothesized that if ICER would be less than 400,000,000 IRR (two-fold the GDP per capita), the procedure will remain cost-effective. In all our strategies the preoperative evaluations and surgery at any age is beneficial and cost-effective.

The effect of levetiracetam on depression and anti-oxidant activity in patients with epilepsy

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Background: Levetiracetam (LEV) has been used to treat patients with epilepsy. Previous studies reported behavioral change such as depression as a side effect of LEV. It has been well established that depression leads to reducing anti-oxidative activities. So, we conducted this study to apprized the influence of LEV on depression severity and anti-oxidative status.

Methods: In this prospective follow-up study, we approached to 50 patients with diagnosis of epilepsy who had planned to receive LEV therapy. We assessed depression severity using Beck depression inventory-II (BDI-II). The serum level of zinc and glutathione was measure to evaluated anti-oxidant activities. These variables were assessed at the baseline and 3 months after commencement of LEV.

Results: A total of 30 patients finished the follow-up. Of them, 21 patients were female. The mean of age at baseline was 28.76±11.37 (min-max: 16-68 years). The mean of BDI-II score at last follow-up was statistically significant compare to the baseline. The serum levels of zinc and glutathione decreased, though the reduce glutathione level was not statistically significant.

Conclusion: Our results show LEV may induce depression in epilepsy patients. We also found reduction in the zinc levels in our patients. This study suggests that zinc depletion can be induced through act of levetiracetam and this hypothesis should be validated by further studies.

Antiepileptic drugs in women with epilepsy before, during, and after pregnancy

Soheila Rezakhani

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During pregnancy, the pharmacokinetics of an antiepileptic drug is altered because of changes in the clearance capacity and volume of distribution. These changes may have consequences for the frequency of seizures during pregnancy and fetal exposure to antiepileptic drugs. we aim to formulate advice for dose modification and therapeutic drug monitoring of antiepileptic drugs. We searched PubMed and the available literature on the pharmacokinetic changes of antiepileptic drugs and seizure frequency during pregnancy published between January 2007 and September 2020. During pregnancy, an increase in clearance and a decrease in the concentrations of lamotrigine, levetiracetam, oxcarbazepine's active metabolite licarbazepine, topiramate, and zonisamide were observed. Carbamazepine clearance remains unchanged during pregnancy. We advise monitoring of antiepileptic drug trough concentrations twice before pregnancy. This is the reference concentration. We also advise to consider dose adjustments guided by therapeutic drug monitoring during pregnancy if the antiepileptic drug concentration decreases 15–25% from the pre-pregnancy reference concentration, in the presence of risk factors for convulsions. If the antiepileptic drug concentration changes more than 25% compared with the reference concentration, dose adjustment is advised. Monitoring of levetiracetam, licarbazepine, lamotrigine, and topiramate is recommended during and after pregnancy. Because of the risk of teratogenic effects, valproate should be avoided during pregnancy. If that is impossible, monitoring of both total and unbound valproate is recommended.

Withdrawal seizure: possible risk factors and predictors for seizure relapse

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Background: Most of the patients usually achieve seizure freedom under treatment with antiseizure medications (ASMs). Drug withdrawal in seizure-free patients is still one of the most challenging issues in the management of epilepsy. The decision-making process of long-term side effects of chronic treatment and on the other hand, the risk of seizure relapse. The big question is what is possible predictors and risk factor for seizure relapse during and after discontinuation of ASMs. Expert opinion: according literature evidence and available knowledge the most important risk factors for withdrawal failure are the etiology of the epilepsy syndrome and epilepsy-related factors, worsening or persistence of epileptiform abnormalities on EEG recordings at the time of discontinuation or during drug tapering and brain abnormalities, thus the principle risk factors related to seizure relapse are etiology of epilepsy syndrome, EEG abnormalities and neuroimaging, since the large majority of patients treated with anti-seizure mediations who have achieved seizure freedom can be good candidates for drug discontinuation, novel antiseizure medications, improve techniques of epilepsy surgery and non-pharmacological therapies, provide patients selection for withdrawal.

Conclusion: One of the most impotent issues in the management of anti-seizure therapy is to choose the best time for attempting ASMs withdrawal in seizure free patients is challenging how to apply the data literature to the clinical practice because a consensus document is not available.

The first-line management of Psychogenic Non-Epileptic Seizures (PNES) in the emergency

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Background: Non-epileptic seizures (PNES) are abnormal paroxysmal psychic, sensory and/ or motor manifestations which resemble to epileptic seizure but are not related to abnormal epileptiform discharges. Distinguish non-epileptic events, especially PNES, from epileptic seizures (ES) constitutes a diagnostic challenge. Misdiagnoses are frequent, especially, when vide-EEG recording, the gold-standard for PNES confirmation, cannot be completed. The issue is further complicated in cases of combined PNES with ES in emergency units, a misdiagnosis can lead to extreme antiepileptic drug escalade, unassay resuscitation measures (intubation, catheterization, etc.) as well as need loss biology, imaging investigations and prolonged hospitalization. Early recognition is thus desirable to initiate adequate treatment and improve prognosis.
Review of literature and expert opinions: Experience-based strategies for the main clinical clues for physicians facing PNES in non-specialized units, before transferred to epileptologists and neuropsychiatrists are patient recall or witness-report that provide the first orientation for the diagnosis, recognizing that collected information may be inaccurate. Through analysis of an event on have video or live analysis may lead to clinical diagnosis with high level. Clinical signs are highly suggestive of PNES are: a fluctuating course, crying with gestures of frustration, pelvic thrusting, and eye closure during the episode, and absence of postictal confusion. Prolactinemia is a useful biomarker to distinguish PNES from ES.
Conclusion: PNES in the emergency requires a good knowledge of specific relevant features, homemade video and or live analysis of a seizure is the best diagnostic tools in the emergency.

Anticonvulsant-induced hematologic complications

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Anti-Epileptic Drugs (AEDs), like other medications are associated with different side effects such as liver dysfunction, cognition disorders, skin and hematologic complications. As in convulsion, we need to take under control seizure attacks toughly, side effects would cause different types of physically and mentally problems for patients which are mild to severe that may cause not achieving optimum function of these medications. Therefore, if these complications occur, because of increasing burden of co-morbidity, it may lead to dose adjustment, discontinuing or another drug replacement for controlling such side effects. Anti-epileptic drugs have mild to severe and sometimes life-threatening side effects. Although all AEDs could cause a wide range of unpleasant side effects, some of them are assumed as a hallmark of a specific AED. For instance, one of the most common side effects among anti-epileptic medications is mild to life threatening hematologic issues like anemia, thrombocytopenia, aplastic anemia and bone marrow suppression. In this article we tried to discuss the hematologic side effects of AEDs, their risk factors, preventing strategies and treatment options.

Misleading of EEG in Epilepsy

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The finding of epileptiform EEG activity plays an important role in classification of epilepsies and epilepsy syndromes. The distribution of IED on the scalp depends on the conductive properties of the surrounding tissue, the spatial characteristics of the generator, propagation pathways and on the spatial resolution of the surface EEG. Consequently, the distribution of interictal epileptic discharges in the scalp EEG can fail to localize or even mislocalize the region or hemisphere of seizure origin. Patients with an epileptogenic zone in the frontal, occipital, insular-opercular and orbitofrontal regions may show falsely localizing temporal IED.

Poor localization of IED in FLE is due to the anatomy of the frontal lobe with inaccessibility of much of the frontal lobe to surface electrodes and the network of projection pathways that allow the rapid spread of epileptiform activity within and outside the frontal lobes. Mesial frontal lesions facilitate secondary bilateral synchrony which is the phenomenon of seemingly generalized IED which can be observed in up to 40% of these patients. In Parietal lobe epilepsy. The IED are usually widespread and multifocal and can be bilateral suggesting an extent of the irritative zone far beyond the epileptogenic zone. Secondary bilateral synchrony can be recorded in up to 30% of the cases especially with parasagittal lesions. The most frequent IED in Occipital lobe epilepsy are spikes and sharp waves in temporal or temporo-occipital regions and even frontal lobe. Rarely, IED can be recorded with highest amplitudes in the contralateral occipital region.

Psychogenic Non-Epileptic Seizures: A brief review

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Psychogenic nonepileptic seizures (PNES) are paroxysms of movement, sensation, or behaviors that are very similar to epileptic seizures but do not have a neurological origin; rather, they are psychosomatic manifestations of psychologic problems. Patients with PNES frequently are misdiagnosed and treated for epilepsy. As a diagnostic tool, video-electroencephalography monitoring is the choice for diagnosis. Between 5 to 10 percent of outpatient epilepsy patients and 20 to 40 percent of inpatient epilepsy patients have psychogenic nonepileptic seizures. These patients frequently have comorbid psychiatric illnesses, most commonly depression, posttraumatic stress disorder, other dissociative and somatoform disorders, and personality traits, especially borderline personality type. Many patients have a personal history of sexual or physical abuse. Between 75 and 85 percent of patients with psychogenic nonepileptic seizures are women. Psychogenic nonepileptic seizures usually begin in late teenage and young adulthood. A significant delay usually occurs between the clinical presentation of PNES and its definitive diagnosis. This time interval has been reported with a wide range of mean time from 0.6 to 11.18 years in different studies. This rather long delay poses adverse effects of a prolonged unnecessary (antiepileptic) drug treatment and social and psychological consequences of an erroneous diagnosis of epilepsy for these patients. Treatment includes stopping of all antiepileptic drugs in patients without associated epilepsy and referral psychiatrist for diagnosis of underlying psychologic stressor and appropriate treatment. The psychiatric management includes a combination of drug therapy and cognitive behavioral treatment. However, more studies are required to elucidate the best treatment choices.

Why is psychogenic nonepileptic seizure diagnosis missed? A retrospective study.

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Shiraz University of Medical Sciences, Shiraz, Iran

Purpose: The aim of this retrospective study was to scrutinize factors which are associated with a delay in making the diagnosis of psychogenic nonepileptic seizures (PNES).
Methods: In this study, patients with PNES, who were investigated at Shiraz Comprehensive Epilepsy Center, Iran, from 2008 until 2019, were studied. We categorized the patients into: 1. Those with a definite diagnosis of PNES in less than a year since the onset of their attacks; 2. Those with a definite diagnosis of PNES later than 10 years since the onset of their attacks.
Results: During the study period, 330 patients were recorded. In 98 patients (30%) the diagnosis of PNES was made in less than a year since their seizure onset. In 67 patients (20%) the diagnosis of PNES was made later than 10 years since their seizure onset. Taking antiepileptic drugs (AEDs) (Odds ratio= 6) and a history of ictal injury (Odds ratio=3.6) had a positive association and age at the onset (Odds ratio =0.8) had an inverse association with a delay in receiving a definite diagnosis of PNES (p=0.0001).
Conclusion: Some demographic variables (i.e., early age at the onset of seizures), patients' clinical variables (i.e., severe seizure manifestations such as ictal injury), and finally, some physician related variables (i.e., prescribing AEDs) have significant associations with a delay in making a definite diagnosis of PNES.

The occurrence and risk factors of new-onset seizures after ventricular shunting procedures

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Shiraz University of Medical Sciences, Shiraz, Iran

Purpose: The aim of the current study was to investigate the rate and the risk factors of the occurrence of de novo post-shunt seizures in patients with hydrocephalus (HC). In specific, we hypothesized that shunt location is a significant risk factor for the development of de novo post-shunt seizures in patients with HC.
Methods: In this retrospective longitudinal study, all patients with HC, who have had ventriculo-peritoneal shunt insertion, from 2014-2017, at Namazi Hospital, Shiraz, Iran were studied. We called all the patients to verify their medical information and also to obtain their postoperative seizure outcome (presence of any seizures).
Results: One hundred and fourteen patients were studied. Sixty-eight (60%) patients had a frontal location of shunt insertion and 46 (40%) people had a parietal site. Twenty-four (21%) patients reported experiencing de novo post-shunt seizures; 15 of these had a frontal location and 9 had a parietal location for shunt insertion (p=0.8).
Conclusion: De novo post-shunt seizures are common occurrences. When possible, it is reasonable to consider using alternative techniques instead of ventriculo-extracranial shunting procedures. If it is mandatory to perform ventriculo-extracranial shunting procedures, it is important to try to prevent and minimize the risk factors for the development of de novo post-shunt seizures. It seems that shunt location is not a significant risk factor for the development of de novo post-shunt seizures in patients with HC.

Best management of seizure in pregnancy: A systematic review

Soheila Rezakhani

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Background: There is evidence that certain antiepileptic drugs (AEDs) are teratogenic and are associated with an increased risk of congenital malformation. The majority of women with epilepsy continue taking AEDs throughout pregnancy; therefore, it is important that comprehensive information on the potential risks associated with AED treatment is available. We aimed to compare the risk of congenital malformations (CMs) and prenatal outcomes of AEDs in infants/children who were exposed to AEDs in utero through a systematic review.
Methods: MEDLINE, EMBASE, and Cochrane Central Register of Controlled Trials were searched from inception to December 10, 2018. We included randomized clinical trials (RCTs), quasi-RCTs, non-RCTs, controlled before-after, interrupted time series, cohort, registry, and case-control studies. The literature search results screening, data abstraction, and risk of bias appraisal will be performed by two individuals, independently. We compared mono-or poly-therapy AEDs versus control (no AED exposure).
Conclusion: Exposure to certain AEDs carried an increased risk of malformation in the fetus and may be associated with specific patterns of malformation. Based on current evidence, LEV and LTG exposure carried the lowest risk of overall malformation; however, data pertaining to specific malformations are lacking. Physicians should discuss both the risks and treatment efficacy with the patient prior to commencing treatment.

Status Epilepticus: An epilepsy emergency and the Response to Immunotherapy

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Status epilepticus that persists despite at least 2 standard anticonvulsant medications is termed refractory status epilepticus (RSE). New-onset refractory status epilepticus (NORSE) is defined as a condition, not a specific diagnosis, with new onset of refractory status epilepticus without a clear acute or active structural, toxic or metabolic cause in a patient without active epilepsy. Most of the common causes of RSE can be identified within 24-72 hours of presentation. In up to half of the cases of NORSE, a possible or probable cause is ultimately found, most often autoimmune or paraneoplastic encephalitis, with infectious causes less common. Identifying patients with an underlying autoimmune origin is critical because these patients' condition may remain refractory to conventional antiseizure medications but may respond to immunotherapy.

The most common causes of NORSE and FIRES are autoimmune/paraneoplastic disorders, such as encephalitis associated with anti-neuronal antibodies (anti-NMDA receptor, anti-voltage-gated potassium channel complex, etc.), followed by viral encephalitis. When an underlying cause is identified it should be appropriately treated.it is common to use approaches that modulate the immune system. These options include IV steroids, IV immunoglobulins, plasma exchange therapy (plasmapheresis) and some monoclonal antibodies against inflammatory cells (e.g., rituximab).
Conclusion: Status Epilepticus is an epilepsy emergency and neurologists try to treat it emergency to reduce the morbidity and mortality of this grave disease recently one of the refractory causes of status epilepticus is autoimmune encephalitis and Response to Immunotherapy has been reported satisfactory in some cases. But more investigation must be performed.

Lamotrigine versus valproic acid monotherapy for Idiopathic generalized epilepsy

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Background: Idiopathic Generalized Tonic-Clonic Seizures (GTCS) are frequently encountered in adults. The standard for generalized epilepsies (GE) monotherapy in treatment is valproic acid (VPA) and lamotrigine (LTG) has been proposed as an alternative to VPA. We have performed a study to compare the efficacy and tolerability of VPA and LTG monotherapy, in newly diagnosed epilepsy.
Methods: The present study was conducted on 80 patients suffering from idiopathic GTCS. 40 patients received VPA and rest 40 patients received LTG. All patients were followed regularly monthly for six months for treatment response and adverse effects.
Results: After 6 months follow-up, 87.5% patients taking VPA and 57.5% patients taking LTG were seizure-free. Common adverse effects recorded were nausea, dyspepsia, headache and skin rash. Severe adverse effects were not found in both groups. The treatment withdrawal due to lack of seizure control were in the LTG group, while the treatment withdrawal due to intolerable side effects were in the VPA group.
Conclusion: Valproic acid appears to be better than lamotrigine as first-line drug in the treatment of adults with newly diagnosed idiopathic generalized tonic-clonic seizures. Lamotrigine appeared to be better tolerated

Best management of seizure in pregnancy: A systematic review

Soheila Rezakhani

Kerman Neuroscience Research Center, Kerman Medical University, Kerman, Iran

Background: There is evidence that certain antiepileptic drugs (AEDs) are teratogenic and are associated with an increased risk of congenital malformation. The majority of women with epilepsy continue taking AEDs throughout pregnancy; therefore it is important that comprehensive information on the potential risks associated with AED treatment is available. We aimed to compare the risk of congenital malformations (CMs) and prenatal outcomes of AEDs in infants/children who were exposed to AEDs in utero through a systematic review.
Methods: MEDLINE, EMBASE, and Cochrane Central Register of Controlled Trials were searched from inception to December 10, 2018. We included randomized clinical trials (RCTs), quasi-RCTs, non-RCTs, controlled before-after, interrupted time series, cohort, registry, and case-control studies. The literature search results screening, data abstraction, and risk of bias appraisal will be performed by two individuals, independently. We compared mono-or poly-therapy AEDs versus control (no AED exposure).
Conclusion: Exposure to certain AEDs carried an increased risk of malformation in the fetus and may be associated with specific patterns of malformation. Based on current evidence, LEV and LTG exposure carried the lowest risk of overall malformation.
Results: After screening 5305 titles and abstracts, 642 potentially relevant full-text articles, and 17 studies from scanning reference lists, 96 studies were eligible (n=58,461 patients). Across all major CMs, many AEDs were associated with higher risk compared to control. For major CMs, ethosuximide, valproate, topiramate, phenobarbital, phenytoin, carbamazepine, and 11 polytherapies were significantly more harmful than control, but lamotrigine 0.72–1.25) and levetiracetam were not.

Neuromuscular Disorders

Nodo-Paranodopathy: A new category

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Background: Polyneuropathies are traditionally classified into demyelinating or axonal, according to whether the pathologic process affects primarily the myelin/Schwann cells or the axon. Node of Ranvier structures are a key target of autoantibodies in chronic inflammatory neuropathies. In the peripheral nervous system gangliosides are present in both axons and myelin, and biochemically there are no significant quantitative differences of the major gangliosides in human ventral and dorsal roots. Impairment of sodium-calcium pump function is hypothesized to lead to intracellular calcium accumulation contributing to eventual axonal degeneration.

Classification:

This classification has electrophysiological correlates employed for diagnosis and to establish prognosis. Other neuropathies in which nodal dysfunction is hypothesized to play a role in disease pathogenesis are included:

• Acute motor axonal (neuropathy)variant of Guillain-Barre syndrome (AMAN)
• Guillain-Barre syndrome with autoantibodies associated with nodal antigens
• Chronic inflammatory demyelinating polyradiculoneuropathy (CIDP) associated with autoantibodies to nodal antigens
• Miller Fisher syndrome
• Multifocal motor neuropathy (MMN)
• Marine toxins
• Drugs with ion channel blocking properties (phenytoin) (more electrophysiologic than clinical)
• Possibly critical illness polyneuropathy(CIP)
• Possibly ischemic monomelic neuropathy
• Possibly thiamin deficiency

IgG autoantibodies to gangliosides GM1 and GD1a are associated with acute motor axonal neuropathy (AMAN), acute motor conduction block neuropathy (AMCBN)and acute motor-sensory axonal motor neuropathy (AMSAN). IgG anti-GQ1b antibodies are strongly associated with Fisher syndrome, mono-specific IgG antibodies to GD1b are found in patients with ataxic GBS and acute ataxic neuropathy (ASAN), and patients with pharyngeal–cervical brachial weakness more often carry IgG anti-GT1a antibodies.

A 48-year-old man with myasthenia gravis complaining of muscular stiffness

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A 48-year-old man developed bilateral arm flexion weakness, dysphagia, and nasal regurgitation of liquids which progressed over 1 year. Serum CK ranged from 230 to 440 mg/dl (normal, 200 mg/dl). Left deltoid muscle biopsy showed epimysial and endomysial inflammatory cell infiltrates. He was diagnosed with an inflammatory myopathy and treated with prednisone; within 2 weeks, he noted substantial improvement. He tapered his prednisone over 12 months, and relapsed with proximal arm weakness, diplopia, dysphagia, and head drop. Further evaluation showed a 25% decrement to low-frequency repetitive nerve stimulation of the spinal accessory nerve. The acetylcholine receptor antibody level was 65.2 (normal, 0.08), and chest CT showed anterior mediastinal mass. He was treated with 60 mg/day of prednisone for 6 weeks without benefit, underwent plasmapheresis with improvement, underwent thymectomy, with pathology revealing a thymoma. He gradually improved and by the age of 52 was without symptoms on low-dose prednisone for 6 months when he started to note rippling waves of muscle contractions across his chest, back, and limbs that were precipitated by percussion. Rapid extension of his arms became painful. Serum CK increased from 440 to 788 mg/dl. The acetylcholine receptor antibody level was 5.7. Needle EMG studies did not show fibrillation potentials or myotonic or neuromyotonic discharges. Electrical silence was present during episodes of muscle rippling. He continued to taper his prednisone and went on pyridostigmine alone for 2 years without symptoms of myasthenia gravis but continued to have persistent symptoms of muscle rippling and stiffness with rapid limb movement.

Inclusion body myositis; is rare inflammatory muscle diseases that's exacerbated by corticosteroids

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A 58-year-old male, presented with progressive painless weaknesses and atrophy on both forearms, hands and lower extremities from 3 years ago. Two years earlier, he had been independent but now required assistance for most activities of daily living such as transfers from bed to chair, climbing stair and toileting. Family history was negative. In medical history, 6 months later he was treated by corticosteroid but suddenly exacerbated the symptoms and showed an inappropriate response. In Neurological examination he had no sensory abnormalities. Deep tendon reflexes were decreased and force reduced in upper and lower limbs in proximal and distal, especially in flexor digital and quadriceps muscles. CPK and LDH were 2504/380 IU/L and Aldolase :7.7,Anti HTLV and muscle PCR were positive other laboratory findings were within normal limits. The result of EMG suggested myopathy with inflammation (Irritable myopathy).Biopsy from the left biceps muscle was done. Pathological findings were severe inflammatory myopathy with RED-RIMMED vacuoles and rare congophilic inclusions associated with some ragged red fibers and endomysial fibrosis as well as adipose tissues replacement compatible with inclusion body myositis. The patient was treated with IVIG and response to treatment with IVIG was minimal improvement of weakness in upper extremities but weakness of lower limbs remained.

Peculiar presentation of Covid-19: A case report of concurrent stroke and Guillain–Barre´ Syndrome

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Background. Coronavirus disease 2019 (COVID-19) is a newly recognized infectious disease that has turned into a pandemic. There are few studies reporting Guillain–Barr´e syndrome (GBS) and stroke separately associated with COVID-19. In this study, we report an unusual case of COVID-19 with stroke and GBS concurrently. Case Report. A 59-year-old woman presented with left-sided weakness of two weeks' duration followed by right-sided weakness and foot paresthesia. She also complained of cough, myalgia, and respiratory distress of three weeks' duration. On examination, the patient had respiratory distress. The limb examination revealed asymmetric weakness. All limb reflexes were absent. Pinprick sensation was impaired. The chest CT scan and PCR of nasopharyngeal swab confirmed the diagnosis of COVID-19. Further evaluation revealed acute cerebral infarction and GBS. Consequently, the patient was treated by plasmapheresis, and her symptoms partially improved. Conclusion. According to reports, 36.4% of COVID-19 cases display neurological complications. +e neurological manifestations of the disease can involve both the central and peripheral nervous systems. Previously, a few cases of GBS and cerebrovascular disease have been reported in association with COVID-19 separately, while in the present case, CNS and PNS involvement occurred concurrently. It is hypothesized that this concurrence is related to the imbalance of the systemic inflammatory responses and blood vessel autonomous dysfunction.

Guillain-Barré syndrome as a neurological complication of novel Covid-19 infection: A case report and review literature

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The novel coronavirus (Covid-19) is a family of large enveloped non-segmented positive-sense RNA viruses which has been recently considered as a global pandemic. Although the main clinical manifestation of the Covid-19 is the respiratory involvement, there is evidence suggesting the neuro-invasive potential of the Covid-19. There are limited reports of neurological complications of Covid-19 in the literature. Here in we aim to describe two members of a family affected by Covid-19 presenting with ascending paresthesia which was eventually diagnosed with Guillain–Barré syndrome.

Limb girdle muscular dystrophy type 2E: A case report

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In this case report a 23 years' boy from consanguineous marriage was referred to our hospital (Isfahan Alzahra hospital muscles). He is wheelchair bound and also has a cousin with signs and symptoms similar to him. She achieved normal motor milestones in childhood and had normal growth parameters. She started frequent falling from5yrs and she had difficulties in walking from 9yrs and from 10yrs she became wheelchair bound. Genetic test for Duchene muscular dystrophy was negative. He had frequent falling from 4yrs. He had slowly progressive proximal lower limb weakness at childhood (from 7 years old) and then distal lower limb and then upper limb weakness at 14 years old. He was completely disabled and became wheelchair bound at age 10 years. At present he has dysarthria and head drop. He complained from recurrent shoulder and hip dislocation.

In neurological examination he had normal mental activity. Multiple skeletal deformities such as severe lordosis, Achilles, knee and elbow contracture, pes cavus was detected. His force of the muscles was decreased in both upper limbs (particularly proximal muscles) and lower limbs (particularly proximal muscles) DTRs were absent Babinski was negative. Sensory exam was normal. EMG-NCV reported generalized non irritative myopathy. The ejection fraction was 35%. CPK :847. Gene analysis was sarcoglycanopathy (LGMDE2), SGCB gene.

Epidemiologic and Clinical Characteristics of Guillain-Barré Syndrome in Patients Referred to Sina Hospital of Haman, Iran in 2017

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Background: Guillain-Barré syndrome (GBS) has several types, some of which damage myelin and some others cause axonal damage. Determining the type of GBS is important in determining the type of treatment and its prognosis. The aim of this study was Epidemiological investigation of GBS and its variants in patient referred to Hamadan Sina hospital at 2017.
Methods: In this cross-sectional study, 51 patients who were admitted to Sina Hospital with a diagnosis of GBS in 2017 were examined. Demographic data, GBS type, outcomes of disease, risk factors, preclinical and clinical findings of patients were collected. Data were analyzed using the Stata software version 12. P-value 0.05 was considered statistically significant.
Results: Of the 51 patients who entered the study, 34 (66.66%) were male. The mean age of patients was 54+16.7 years. Of the 41 patients with identified syndrome, the most common variant type was AJDP with the 27.45% of cases followed by AMAN with the 19.61% of cases. The highest average hospitalization days were for CIDP patients (11.1±11.7 days) and lowest were for AIDP patients (6.85+1.91 days) (P0.001). All CIDP cases were occurred in spring and 71.43% of AIDP cases were occurred in summer. All 7 cases with AMSAN syndrome and only case with MFS were occurred in Fall (P0.001).
Conclusion: According to the study, the most variants of GBS in Hamadan province was AIDP in demyelinating form and AMAN variant as the axonal deterioration form. However, studies with larger sample size for a greater understanding of the epidemiology and ensure common types of Guillain-Barre syndrome is recommended in the west of county.

Dysferlinopathy misdiagnosed as inflammatory myopathy

Ehsan Ziaei

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A 20-year-old man presented with low back pain and lower limb pain then slowly progressive weakness in lower limbs from 2 years ago and exacerbated from 4 months ago. He complained myalgia and cramp but without ptosis, ophthalmoparesis, dysphagia and cardiac problems but he had mild dyspnea during walking. Before referring to our neuromuscular clinic, treatment with prednisolone, methotrexate and azathioprine was started from two months ago with diagnosis of inflammatory myopathy and because of the exacerbation of weakness, he stopped this treatment arbitrary. His medical, developmental and family history was unremarkable. His parents are relatives.
In neurological examination, cranial nerves were intact without facial weakness or gaze palsy. Neck flexor and extensor strength was 5/5. There was no scapular winging. Muscle strength in upper limb was 5/5 and in lower limb was: hip flexion 2/5, quadriceps 0/5, dorsiflexion 3/5, and plantar flexion 2/5. Atrophy of calves was seen. DTR was absent in lower limb but present in upper limb. Sensory and cerebellar examination were normal. He had a waddling gait and had difficulty in walking on his heels and toes. Gower's sign was positive. The electrodiagnostic study revealed irritative myopathy. Lab data showed elevated CPK level (11791). Muscle biopsy was obtained. Gene analysis identified one heterozygous disease-causing mutation in [c.3059C>T] of the dysferlin protein. According to these findings, the patient was diagnosed as limb-girdle muscular dystrophy type 2B (LGMD R2).

Diagnosis of myopathy based on muscle MRI

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A 27-year-old man presented with a progressive proximal weakness in upper and lower limbs from 6 years ago. He had problem in climbing stair and sitting up and also combing hair, following by distal weakness. He complained myalgia and cramp but without ptosis, ophthalmoparesis, dysphagia and cardiac or respiratory problems. His medical and developmental history was unremarkable. His family history was unremarkable. His parents are relatives.
In neurological examination, cranial nerves were intact and without any facial weakness or gaze palsy. Tongue was midline with normal movements and no atrophy or fasciculation. Neck flexor and extensor strength was 5/5. Severe lordosis and spinal rigidity were seen. Force of bilateral upper limbs was -4/5 in proximal and +4/5 in distal. Bilateral thenar atrophy was detected. In the lower limbs, Quadriceps and iliopsoas strength was +4/5, Hamstring muscles strength was -4/5 and in distal was 4/5 symmetrically. Also atrophy in leg and distal of thigh were detected. DTR was absent generally in upper and lower limbs. Mild proximal contracture was detected. There was no myotonia, distal joint laxity and scapular winging. Sensory and cerebellar examination were normal. He had a waddling gait. He had a difficulty in walking on his heels and toes. Gower's sign was positive. The Electrodiagnostic study revealed nonirritable myopathy. Muscle MRI findings consistent with collagen VI–related muscular dystrophy. To confirm the diagnosis, muscle biopsy and genetic analysis is suggested.

Acute neuromuscular weakness in the intensive care unit

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Background: In intensive care unit, a patient is noted to have generalized flaccid limb weakness with–and sometimes without–diaphragm weakness while undergoing treatment of a non-neurologic critical illness. These disorders are somewhat broadly categorized as critical illness polyneuropathy (CIP), critical illness myopathy (CIM), and prolonged neuromuscular junction (NMJ) blockade. Prolonged NMJ blockade has become less common, likely due to the reduced use of paralytic agents in ICUs.
Clinical Presentation: Patients with CIP and CIM usually present after 1–2 weeks of systemic inflammatory response syndrome (SIRS) or multiple organ dysfunction syndrome (MODS) with failure to wean from mechanical ventilation or with diffuse limb weakness, or both. CIM is usually recognized days to weeks after exposure to intravenous corticosteroid (IVCS) with or without neuromuscular junction blocking agents (NMBAs). Prolonged neuromuscular junction blockade also presents as flaccid generalized weakness with failure to wean and areflexia that persists (usually for days) after NMBAs are discontinued.
Management and Prognosis: All critically ill patients, including those with neuromuscular weakness, require adequate nutritional intake, correction of underlying metabolic disorders such as hypokalemia and hypophosphatemia, and aggressive treatment of underlying infections since all of these metabolic abnormalities can aggravate weakness. In CIP, there are no proven specific therapies. There is no specific treatment for CIM, but prevention is ideal if possible. Limiting intravenous corticosteroids or paralytic agents in ICU patients is recommended in order to make occurrence less likely. Prolonged Neuromuscular Junction Blockade is self-limited.

Risk of autism associated with prenatal exposure to anesthetics

Niloofar Nezaminia, Arefe Kadkhodaei

Autism spectrum disorder which is defined as an impairment in social functions and interaction is considered as a developmental disorder with symptoms appearing mostly in the first 2 years of life. Symptoms may include difficulty of communication, decrease in the inability to function in social environments, and different sensory input as compared to normal.

Pompe disease screening in a sample of Iranian patients with myopathies of an unknown etiology

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Background: Pompe disease is a rare but potentially treatable disorder caused by the deficiency of the lysosomal enzyme acid-α-glucosidase (GAA). Early diagnosis is important for a good prognosis, and the development of more rapid diagnostic techniques, such as Dried Blood Spot (DBS), to detect GAA activity can contribute to an earlier Late-Onset Pompe Disease (LOPD) diagnosis.
Objectives: Patients with undiagnosed myopathy or proximal myopathies in the lower limbs or those with more proximal than distal involvement were examined in terms of the prevalence of Pompe disease using the DBS as a fast-screening tool.
Conclusion: Pompe disease is the first metabolic myopathy requiring an improved early diagnosis and therapy for improving the outcome. All patients with LGMW should be screened for PD using DBS so as to avoid any delays in diagnosis of a potentiality treatable disease.

Small fiber neuropathy in unexpected clinical settings: A review

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Small fiber neuropathy (SFN) is nowadays diagnosed more frequently in neuromuscular practice as a result of improved diagnostic techniques. Besides common etiologies, up to a third of cases are considered idiopathic. In recent years, several disorders have been unexpectedly reported in association with SFN, on clinical as well as complementary investigations, including Quantitative Sensory Testing, intraepidermal nerve fiber density and confocal corneal microscopy. Fibromyalgia, Parkinson Disease, rapid eye movement sleep behavior disorder, as well amyotrophic lateral sclerosis all have been described with unexpected high frequency in association with SFN. Other disorders including Ehlers Danlos syndrome have also been described concurrently with SFN, which has in addition been reported after vaccinations and alone or combined with large fiber involvement in the setting of inflammatory neuropathies including Guillain-Barré syndrome and chronic inflammatory demyelinating polyneuropathy. This article reviews these reported associations, their possible pathophysiologic basis as well as the potential resulting management implications.

Effects of enzyme replacement therapy on the respiratory &motor functions among patients with late-onset Pompe disease for long-term

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Background: Pompe is a congenital metabolic disorder and muscles involvement is the most common presentation of it. The late-onset Pompe disease is a type of Pompe according to the age of clinical presentation. In LOPD, the muscles of respiratory system, trunk and proximal limbs involved. Enzyme replacement therapy is a new method for treatment of these patients, but the efficacy and safety of this method are challenging for long-term so that in this pilot study efficacy and safety were evaluated for two years.
Methods: In this prospective study, the patients with LOPD included this study, and they received rhGAA every two weeks for two years, and the motor and respiratory function of them were evaluated. Also, CPK and LDH were measured every six months. This study was registered as a trial and approved by the ethics committee of Tehran medical sciences.
Results: Two adults who were suffering LOPD for 17 and 12 years were investigated in this study. Both of them did not show any side effects, also the motor function got slightly better, and one of them could walk for more distance, on the other hand, the respiratory function was slightly improved and the CPK levels dramatically reduced.
Conclusion: The results of this study showed the ERT was safe and effective for control the disease activity of patients with LOPD, but this method is so expensive special for long-term. This is a small pilot study and needs more.

The effect of sensory feedback on sense of force in the knee joint

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Background: Sensory information is essential for controlling and modulating force. The aim of this study was to examine the effect of the lower leg sensory feedback on sense of force of the extensor muscles of the knee joint.
Methods: Twenty-two healthy young people participated in this cross-sectional study. A simple randomized method was used. Average error of three times the production and reproduction of the target force of the knee extensor muscles was measured before and immediately after the intervention. Sense of force of the knee extensor muscles at an angle of 60 degrees of flexion was measured. The test modes include (1) normal or control mode, (2) after using a thick sponge on the lower end of the dominant leg, and (3) after placing a bag of small ice blocks on the lower end of the dominant leg for 20 minutes.
Results: By manipulating the sensory information of the leg, no significant change was observed in the amount of reproduced force error in the same limb (p>0/05). However, a significant change was observed in the amount of reproduced force error in the opposite limb (p0/05).
Conclusion: The results showed that sensory information sent from the leg is necessary to accurately understand the force in the knee joint.

Headache

An investigation of the prevalence of sub clinical brain lesions in MRI images of migraine patients

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Background: The use of the MRI method has opened up a new perspective on brain lesions.
Methods: This cross-sectional study was conducted on 300 patients with a migraine referred to Baqiyatallah and Amir Al-Momenin Hospitals from 2005 to 2006. We measured the relationship between the results of MRI and the type of brain subclinical lesion by indices such as age, gender, type of a migraine, the number of migraine attacks, blood pressure and heart diseases, cholesterol, diabetes and thyroid diseases. Finally, data were analyzed by IBM SPSS statistics software version 23. The significance level in this study was considered as $P > 0.05$.
Results: From among 300 patients, 87.7% were women in the age range of 13-72 years. Moreover, the results indicated that with increasing age, blood pressure and some migraine attacks, the frequency of abnormal MRI also is increased significantly as well as the ratio of a migraine with aura was significantly higher than a migraine without aura in individuals with abnormal MRI. Also, the ratio of white matter lesions (WML) is higher in a classical migraine (a Migraine with aura). Statistical analyses did not reveal any significant relationship between MRI results on age, diabetes, cholesterol, heart and thyroid diseases.
Conclusion: The prevalence of abnormal MRI in older people and those with high blood pressure and migraine with aura is higher, and the ratio of subclinical lesions in the population of a migraine with aura is more common than a migraine without aura.

Isolated oculomotor and abducencs nerve palsies as initial presentation of cavernous sinus tuberculoma

Hesam Abdolhosein Pour

Background: Central nervous system tuberculoma is the most severe manifestation of extrapulmonary tuberculosis with high mortality. Cavernous sinus tuberculoma (CST) is a very rare central nervous system tuberculoma with few cases reported in the literature.
Case Description: A 57-year-old woman was admitted to our clinic with acute diplopia and headache limited to the right side. There was no specific medical history except for migraine, depression, and anxiety, all of which were controlled by oral medications. Physical examination revealed ptosis and mydriasis in the right eye, which indicated right third and sixth cranial nerve palsies. Pituitary magnetic resonance imaging showed a right parasellar lesion at the cavernous sinus wall and ophthalmic nerve. Laboratory examinations and brain computed tomography scan showed negative findings. Initial differential diagnosis included meningioma, sarcoidosis, tuberculoma, and lymphoma. However, results of further studies, including blood and cerebrospinal fluid cultures and Mycobacterium tuberculosis DNA assay, were negative. Biopsy of the cerebral lesion was performed through the subfrontal approach, and histopathologic study confirmed CST. She was treated with a standard antituberculous regimen. After 12 months of follow-up, no cerebral or clinical findings were seen.
Conclusions: CST is a rare presentation of M. tuberculosis, and the diagnosis is a difficult challenge. However, accurate diagnosis and timely treatment of CST can result in complete cure.

Evaluation of the correlation between flow mediated dilation and homocystein with migraine

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Background: endothelial-derived nitric oxide mediates the arterial dilation fallowing hyperemia (flow-mediated dilation, FMD). This method has been used for evaluating endothelial function. On the other hand, homocysteine is an amino acid which impairs nitric oxide secretion. Endothelial dysfunction is supposed to trigger a migraine. This study aimed at investigating whether the endothelial function is impaired in migraine patients compares to the control group.
Methods: We evaluated 29 migraineurs (1 with aura [MWA] and 28 without aura) and 22 controls. In the age group 15-50 years. FMD was evaluated with ultrasound by measuring the percentage of increase of brachial artery diameter after 5 minutes of cuff inflation around the forearm above systolic pressure. FMD values were then normalized for shear stress. Fasting serum homocysteine was also measured. Mann-Whitney test was used to compare homocysteine and FMD between studied groups.
Results: FMD and homocysteine difference between two groups wasn't statically significant. Normalized FMD in migraineurs (2.1% /s) and in control group (2.3% /s). P= 0.966. Mean homocysteine in migraineurs was 9.42±6.20 µmol/lit and in control group was 9.12±6.25 µmol/lit.
Conclusion: peripheral endothelial function and arterial response to hyperemia don't impaired in migraineurs.

Prevalence of epilepsy in migraine patients and their first-degree relatives

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Background: Migraine and epilepsy are among the most common neurological diseases, share several characteristics, including specific clinical features, overlapping pathophysiological mechanisms, and treatment. It seems these two conditions have bidirectional relation and the presence of one disorder increases the probability of other.
Methods: Current study was performed as a descriptive cross-sectional survey to evaluate the prevalence of epilepsy in migraine patients attending to Shariati Hospital of Tehran during 2010 and their first-degree relatives.
Results: Four-hundred patients with migraine were evaluated. Mean age of patients was 31.13±8.99 years. One-hundred subjects (25%) were male and 300 patients (75%) were female. Nine patients (2.3%) had personal history of epilepsy and 7 patients (1.8%) had familial history of epilepsy. Patients with self-history of epilepsy had significantly higher rate of aura (66.7% versus 20.2%, P=0.004).
Conclusion: According to the obtained results, it may be concluded that the obtained frequency for epilepsy in migraine is low and also it is relatively similar to other reports.

A review on the effect of CGRP and anti-CGRP monoclonal abs in migraine

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Migraine is a common neurovascular primary headache disorder. CGRP activates the trigeminovascular system, is a 37-amino acid neuropeptide and has two α and B isoforms. In the plasma, the half-life of CGRP is ~ 10 min. The human trigeminal ganglia accounts for up to 50% of all CGRP-immunoreactive neurons. The main pharmacological features of anti-CGRP (CGRP-receptor) mAbs are a large molecular size, a prolonged T1/2, slow distribution and target specificity, inability to cross the blood-brain barrier, regarding to not related to cytochrome P450 isoenzymes resulted a decreased potential for drug-drug interactions and liver toxicity via binding to specific oligosaccharides. The large size, the relatively poor membrane permeability and gastrointestinal degradation of the mAbs mean that they can be administered only parenterally. Binding of CGRP to an antibody reduces the free ligand that is available to interact with the receptor and efficacy is driven by the magnitude and duration of the reduction in free ligand concentration. Fremanezumab comes in subcutaneous prefilled syringes of 225 mg. Galcanezumab comes both in subcutaneous prefilled syringes of 120 mg and autoinjectors of 120 mg. Galcanezumab is effective in preventing episodic cluster headache as well. Erenumab is a fully human anti-CGRP receptor mAb and is available in autoinjectors with monthly subcutaneous doses of 70 or 140 mg. The most common adverse events are injection site reactions (6%); upper respiratory infection (6.4%). The study of eptinezumab is ongoing and has not approved by FDA yet.

Vitamin D supplementation in migraine headache

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Background: As an anti-inflammatory and antioxidant agent, vitamin D is one of the agents which has been of interest in relation to headache recently. In the current review, in addition to observational and case-control studies, we included clinical trials concerning the effects of vitamin D supplementation on migraine/headache.
Methods: Based on a PubMed/MEDLINE and ScienceDirect database search, this review study includes published articles up to June 2019 concerning the association between migraine / headache and vitamin D status or supplementation.
Results: The percentage of subjects with vitamin D deficiency and insufficiency among migraineurs ad headache patients has been reported to vary between 53 to 100%. Moreover, an inverse association between serum levels of this vitamin and migraine/headache has been shown in most of the previous studies. Furthermore, in a number of these studies, vitamin D level was negatively correlated with frequency of headaches. In addition, the present findings show that supplementation with this vitamin in a dose of 1000-4000 IU/d could reduce the frequency of attacks in migraineurs.
Conclusion: The present findings regarding vitamin D supplementation in migraineurs indicate that in addition to routine drug therapy, vitamin D administration might reduce the frequency of attacks in migraineurs. However, these results have yet to be confirmed.

Erythro Cyanotic headache: A case report

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Background: An intense, generalized, throbbing headache may occur in conjunction with flushing of the face and hands and numbness of the fingers (erythromelagia). This condition called erythrocyanotic, has been reported in a number of unusual setting: 1-In mast ocytosis (infiltration of tissues by mast calls which elaborate histamine, heparin and serotonin, 2-with carcinoid tumors, 3-with secreting-tumors, 4-with some tumors of the pancreatic islets and 5-with pheochromocytoma. Seventy-five percent of patients with pheochromocytoma have vascular-type headaches coincident with paroxysms of hypertension and releases of catecholamine and rarely with flushing phenomenon.
Case Presentation: A 43-year-old man from two years ago had paroxysmal headache, palpitation and diaphoresis with variable duration and intensity of headache, from 9 month, ago he involved generalized edema especially in face with purple stria on abdomen. In this time due to severe headache and dyspnea he referred to Alzahra hospital in Isfahan, Iran in march 2019. In emergency room blood pressure (BP) was 160/100 mm and in physical examination his face was cushingoid and plethoria, and neurologic exam was normal. Brain CT scan and brain MRI were not exclusive, for evaluation of erythrcocyanotic headache abdominal and pelvic MD CT scan was done and show left adrenal mass. For patient left adrenal mass resection was done and pathology report revealed adrenocortical adenoma, after resection of tumor, headache, flushing of face and crisis of BP were improve.

Is it vertigenous migraine or it is Menier disease: Up-to-date on vestibular migraine?

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Background: There is a relationship between migraine and vertigo. Vertigo is an aura or to episodes of paroxysmal vertigo in adult and is a migraine equivalent. In addition, attacks of vertigo followed by an intense unilateral and suboccipital headache and vomiting are the characteristic features of basilar artery migraine. There is a syndrome of episodic vertigo with migraine, mainly in children but also in adults, who are known migraines. Patients report varying, degrees and types of dizziness and imbalance but the examination during a symptomatic period is most often normal. The neurologic exam remains normal, and family or personal history of migraine headaches is common. Some patients with benign recurrent vertigo (BRV) also report auditory symptoms similar to patients with Meniere disease and a mild hearing loss may also be seen on the audiogram.

Case Presentation: A 46-year-old woman had vertigo attacks of several seconds, triggered by movement for 5 months. In some attacks, she had throbbing headache of half of the head, she evaluated in ear-nose-throat clinic and no pathology was determined in the examination and laboratory findings like cranial MRI, MR venography, carotid-vertebral Doppler ultrasonography, electroencephalography and blood analyses findings were all normal. No hearing loss was determined in audiogram.

Conclusion: There is similarity from clinical point between vestibular migraine and Menier's disease history of migraine in patients and his family are helpful in diagnosis.

Nummular headache related to structural lesions

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Background: Nummular headache or coin-shaped cephalgia characterized by mild-to moderate pressure-like pain felt in a rounded or alliptical area typically 2-6 cm in diameter usually in the parietal area. The pain remains confined to the same symptomatic area which does not change in shape or size with time. The pain is continuous but lancinating exacerbations for several seconds may superimpose the baseline pain. The affected area may show paresthesia or tenderness.
Case I: Trigeminal Neuralgia Evolving into Nummular Headache. A 66-year-old man with acutely developed a sharp, intermittent, retro-orbital pain, there was no sign of autonomic dysfunction, neurologic examination was normal, and brain MRI was normal after 12 days he described a mild to moderate constant pain, but also an intermittent lancinating pain in left eye, original excruciating pain disappeared and now his headache was a 2 cm circular area located behind to his left ear.
Case II: Nummular Headache and Pituitary Lesion. A 54-year-old woman since 1 year ago, she suffered a cyclic recurrence of headache. The pain was mild to moderate in intensity, lancinating or electric in nature, exclusively, located at vertex and left parasagital area, circular in shape, 3.0 cm×3.0 cm in size. Brain MRI revealed a huge mass at supra sella region trans-sphenoidal microsurgery was performed, pathological study revealed adenoma cells.
Conclusion: Nummular headache can be a referred pain from intracranial secondary involving the nearby pain-sensitive structures.

Carotid artery dissection mimicking a new attack of cluster headache case report

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Background: Dissection of the cervical portion of the carotid or vertebral arteries is associated with headache, neck pain, or facial pain in 80% of patients. The headache may be isolated, or associated with an ipsilateral Horner syndrome or stroke symptoms. The headache is typically unilateral and ipsilateral to dissection. Facial pain is common and ipsilateral cranial nerve palsies, especially of lower cranial nerves are not infrequent. Onset of headache is usually gradual, although sudden thunderclap headache may occur. The headache usually non-throbbing and severe facial and orbital pain has been reported in more than 50% of case.

Symptomatic or secondary cluster headache is associated with different kind of lesions located in the middle fossa, near the sellar or para sellar structure like pituitary adenoma and meningioma of sphenoid wing and can secondary to internal carotid artery dissection, thus carotid artery dissection could stimulate a cluster headache.

Case Presentation: A 53-year-old man presented to the emergency room with 10-day history of recurrent right peri-orbital headache. Headaches were sudden, severe, pulsating of thirty minutes duration and occurred once or twice a day. Headache was accompanied by ipsilateral ptosis, miosis, conjunctiva injection, lacrimation and nasal stuffiness in right side, the remaining cranial nerves and neurological examination were normal. **Conclusion:** Individuals presenting with new onset of a cluster headache may have an underlying internal carotid artery dissection and to distinguishing from primary cluster headache further investigation must performed, like color duplex sonography of cervical arteries and cervical angiogram.

Anti-CGRP in Cluster Headache therapy

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Background: Cluster Headache (CH) is a primary headache characterized by recurring excruciating pain and autonomic signs leading to significant suffering and derangement of patients' life. Efficacious new preventive treatments are needed. The pathophysiology of cluster headache comprises mechanisms both in the peripheral and central nervous system, involving the trigemino-para sympathetic reflex, and central modulating systems. Calcitonin gene-related peptide (CGRP) has an active role throughout these systems. It is increased during spontaneous and provoked attacks and itself can induce attacks. Recently drugs against this neuropeptide have been develop for the treatment of cluster headache. Monoclonal antibodies vs CGRP as galcanezumab and fremanezumab have been tested in cluster headache, with promising results for the episodic form. Considering the relevance of central mechanisms in CH, drugs interfering with the CGRP pathway in the central nervous system can enlarge the therapeutic armamentarium against this highly disabling condition.

Conclusion: Monoclonal antibodies against CGRP have the potential to improve cluster headache. Two trials exploring anti-CGRP monoclonal antibodies efficacy for the prevention of chronic CH.

Multiple Sclerosis & Demyelinating Diseases

Gender based epidemiologic survey of multiple sclerosis patients: A report from Isfahan province, Iran

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Knowledge about gender-based characteristics of multiple sclerosis is important to find new strategies for further management. Patients' sex can be an important risk factor for incidence and also prognosis of disease. The aim of this epidemiologic study is to evaluate the gender based clinical and imaging differences among MS patients. Study done in Isfahan Kashani referral MS center. Overall, 1781 patients enrolled. The epidemiological questionnaire including 6 areas (patients demographics, Family history, MS diagnosis, course of disease, disability and complications, treatment) filled. Pathological findings of the first brain MRI reported by neuroradiologist in 500 cases (120 men vs 380 women). 75.9% were female with mean age of 36.66±9.94 and the others were male with mean age of 36.60±10.40 years. The mean of disease duration and EDSS didn't differ. The age at disease onset was higher in men with 32.95 ±12.31 years. Smoking (cigarette and hookah) was more popular in male patients. The history of head trauma, type 2 diabetes, pulmonary disease, hypothyroidism and autoimmune disorders were more prevalent in females. Among signs of MS, both optic neuritis and motor disturbance were higher in females. There were not any statistical differences between type of drugs. In the first brain MRI, infratentorial and thalamic lesions were more prevalent in men but early cortical atrophy and tumefactive lesions were reported more in women. The role of sex and genetic, beside to the environmental factors, is important in incidence and prognosis of MS. Since there is not any specific diagnostic test for MS, considering gender-based characteristics can be helpful in management.

Coronavirus disease (Covid-19) among patients with Multiple Sclerosis: A systematic review of current evidence

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Background: We systematically reviewed the literature on coronavirus disease (COVID-19) in multiple sclerosis patients.
Methods: We searched PubMed, Scopus, EMBASE, CINAHL, Web of Science, Google Scholar, and WHO database from December 01, 2019, to December 18, 2020. Three conference abstract databases were also searched. We included any types of studies that reported characteristics of MS patients with COVID-19.
Results: From an initial 2679 publications and 3138 conference abstracts, 87 studies (67 published articles and 20 abstracts) consisting of 4310 suspected/confirmed COVID-19 patient with MS met inclusion criteria. The female/male ratio was 2.53:1, the mean (SD) age was 44.91 (4.31) years, the mean disease duration was 12.46 (2.27), the mean EDSS was 2.54 (0.81), relapsing/progressive ratio was 4.75:1, and 32.9% of patients had at least one comorbidity. The most common symptoms were fever (68.8%), followed by cough (63.9%), fatigue/asthenia (51.2%), and shortness of breath (39.5%). In total, 837 of 4043 MS patients with suspected/confirmed COVID-19 (20.7%) required hospitalization and 130 of 4310 (3.0%) died of COVID-19. Among suspected/confirmed patients, the highest hospitalization and mortality rates were in patients with no DMTs (42.9% and 8.4%), followed by B-cell depleting agents (29.2% and 2.5%).
Conclusion: Our study suggested that MS didn't significantly increase the mortality rate from COVID-19. These data should be interpreted with caution as MS patients are more likely female and younger compared to the general population where age and male sex seems to be risk factors for worse disease outcome.

The psychological effect of covid19 pandemic on neuromyelitis optica spectrum disorder patients and their attitude change after a year of the pandemic in Isfahan, Iran

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Background: Coronavirus 2019 (COVID19) is a new coronavirus which created a pandemic recently. NMOSD patients are more affected by psychological effects of pandemic such as anxiety because they may be worried about being infected (due to the nature of disease and treatment by immunosuppressants) and they concern about their treatment protocol and disease relapses during the pandemic. The aim of study was to evaluate the anxiety due to COVID19 infection, 3 and 12 months after beginning of epidemic in Iran.
Methods: The study was done in patients of NMOSD Clinic of Isfahan Kashani hospital. We asked individuals if they were anxious or afraid of the pandemic subjectively. To investigate the objective level of anxiety, Hospital Anxiety and Depression Scale (HADS-A) questionnaire was filled. We asked them about respecting general cautions and sanitary protocols to prevent COVID19 infection.
Results: Study included 120 patients (96 female) with mean age of 36.37±9.69 and mean disease duration of 8.49±5.35 years.96 cases (80%) experienced anxiety during the first 3 months of pandemic. The point is that their level of anxiety decreased significantly with the prolongation of pandemic and just 66 patients (55%) showed anxiety subjectively on the second survey. Based on HADS-A score, 92 patients (76.66%) were anxious on the third month while after one year of epidemic 70 cases (58.33%) showed anxiety.
Conclusion: Respecting preventive measures increased in the same period. So along with the COVID19 pandemic prolongation, the level of anxiety had decreased gradually while the level of alertness and attention was almost high. It should be considered that this awareness must be preserved till the end of epidemic.

The impact of Covid19 pandemic on neuromyelitis optica spectrum disorder patients, after one year of epidemic: A report from Isfahan, Iran

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Coronavirus 2019 created a pandemic with high mortality. Underlying disease and immune system suppression make prone to infection. The nature of NMOSD disease as well as its treatment by immunosuppressants predisposes patients to infection. The aim of study was to evaluate the effect of Covid19 pandemic on the clinical course of NMOSD and the characteristics of Covid19 infection in patients after a year. We considered relapses during the year of epidemic and the year before and the presentation of Covid19 infection in the NMOSD patients. Patients were asked also about changes in maintenance therapy. Study included 120 patients (96 female). Mean age was 36.37±9.69 and mean disease duration was 8.49±5.35. Overall, 36 relapses reported during the year before epidemic (ARR:0.3) and 29 relapses during Covid19 epidemic (ARR:0.24). The maintenance therapy of NMOSD was rituximab in 96 cases, azathioprine in 22 and methotrexate in 2 ones.35 patients infected by Covid19 (diagnosis by RT-PCR test).6 of them admitted in hospital and two received ICU care. There was one death due to respiratory failure. Five patients experienced gastrointestinal symptoms as the presentation. Their mean age was 36.02±10.11 years and the disease duration was 6.82±4.62. 20 of 35 patients reported close contact with COVID19 cases (among relatives) before infection. Results showed in spite of suppression of the immune system, neither incidence nor the number of the serious complications of COVID19 infection was high. Regarding the disabling nature of NMOSD as well as prolonged epidemic period, it may be reasonable to continue the routine treatment of these patients along with training patients to stick to health protection instructions.

Evaluation and comparison of month of birth in Multiple Sclerosis and Neuromyelitis Optica Spectrum Disorders

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Background: Multiple Sclerosis (MS) and Neuromyelitis optica (NMO) are two of the most important diseases of central nervous system (CNS) that are associated with neuro disabilities. Recently, it has been reported that the birth of month can be related to MS. The purpose of the present study was to investigate the months of birth in MS and NMO patients compared to the control group.
Methods: In this case-control study, 2698 patients with MS, 220 NMO patients and 2174 healthy subjects were enrolled. Demographic information such as age, sex, birth of month and education in three groups were carefully evaluated and recorded. Data analysis was performed using SPSS software.
Results: In the NMO group, 75.9 % of the patients were female. This percentage was 80 in the MS group and 75.8 in the healthy subjects. Percentage of births in March, April and May were significantly higher in the NMO and MS patients than in the control group. The numbers of March births in the MS, NMO and healthy subjects were 364, 31, and 185, respectively. These amounts were 217, 17 and 165 for April, and 247, 16 and 143 for May.
Conclusion: Based on the findings of the present study, the risk of MS and NMO diseases in the spring's months is more than in the autumn's, which can be due to the important role of vitamin D in the pregnancy and the immunopathogenesis of MS and NMO diseases.

Association between comorbidities and health-related quality of life in patients with multiple sclerosis

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Background: Multiple sclerosis (MS) is a debilitating disease accompanied by physical and mental comorbidities. Little is known about the relation between different comorbidities and health-related quality of life (HRQOL) in MS patients. Therefore, we designed this study to assess the association between comorbidities and HRQOL.
Methods: In this cross-sectional study, of 976 MS patients attending the MS clinic of Kashani Hospital in Isfahan, Iran was assessed. The data on comorbidity were extracted from patients' medical records. The 36-Item Short Form Survey (SF-36) was used to measure HRQOL. Firstly, the association between each comorbidity and HRQOL was assessed. Then, the comorbidities were categorized into physical, psychiatric, and autoimmune, and the association of each comorbidity group with HRQOL was evaluated.
Results: The mean (SD) age and disease duration were 37.58 (9.22) and 7.41 (5.24); most of the patients were female (82.8%) and had a relapsing course (77.1%). The most common comorbidity was migraine (13.6%), followed by hypothyroidism (13.5%), OCD (13.5%), and anemia (11.5%). There was a significant association between the physical component score (PCS) of HRQOL and reduced epilepsy, coronary artery disease, eye diseases, obsessive-compulsive disorder (OCD), major depressive disorder (MDD), and borderline personality disorder. Regarding mental component (MCS), ovarian failure, polycystic ovary syndrome, OCD, and MDD had an association with low MCS. After categorization, both physical and psychiatric comorbidities were related to less PCS and MCS score. However, no significant association between autoimmune comorbidities and HRQOL was found.
Conclusion: Our results show a significant association between comorbidities and HRQOL in MS patients.

Coronavirus disease (Covid-19) among patients with Multiple Sclerosis: A systematic review

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Background: We systematically reviewed the literature on coronavirus disease (COVID-19) in multiple sclerosis patients.
Methods: We searched PubMed, Scopus, EMBASE, CINAHL, Web of Science, Google Scholar, and WHO database from December 01, 2019, to December 18, 2020. Three conference abstract databases were also searched. We included any types of studies that reported characteristics of MS patients with Covid-19.
Results: From an initial 2679 publications and 3138 conference abstracts, 87 studies (67 published articles and 20 abstracts) consisting of 4310 suspected/confirmed Covid-19 patient with MS met inclusion criteria. The female/male ratio was 2.53:1, the mean (SD) age was 44.91 (4.31) years, the mean disease duration was 12.46 (2.27), the mean EDSS was 2.54 (0.81), relapsing/progressive ratio was 4.75:1, and 32.9% of patients had at least one comorbidity. The most common symptoms were fever (68.8%), followed by cough (63.9%), fatigue/asthenia (51.2%), and shortness of breath (39.5%). In total, 837 of 4043 MS patients with suspected/confirmed Covid-19 (20.7%) required hospitalization and 130 of 4310 (3.0%) died of COVID-19. Among suspected/confirmed patients, the highest hospitalization and mortality rates were in patients with no DMTs (42.9% and 8.4%), followed by B-cell depleting agents (29.2% and 2.5%).
Conclusion: Our study suggested that MS didn't significantly increase the mortality rate from COVID-19. These data should be interpreted with caution as MS patients are more likely female and younger compared to the general population where age and male sex seems to be risk factors for worse disease outcome.

Skin vasculitis after Rituximab in two patients with multiple sclerosis

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We describe for the first time in sever skin vasculitis in 2 multiple sclerosis (MS) patients after first doses of rituximab in this case report this side effect occurs between 1-2 weeks after receiving rituximab in 2 patient one of them was candidate for this drug because of concomitant uveitis and breakthrough disease and in the other patient because of progression of disability in the form of secondary progressive multiple sclerosis. This diagnosis confirmed after skin biopsy in academic center and after symptomatic treatment remission of lesions occurred this side effect report in other rheumatologic or oncologic disease after receiving rituximab but this study report for the first time in the MS patient and neurologist must be aware of this complication

Estimation of time and predictor factors to reach disability milestones in multiple sclerosis and neuromyelitis optica spectrum disorder patients

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Background: Multiple sclerosis (MS) and neuromyelitis optica spectrum disorder (NMOSD) are autoimmune neurological diseases with moderate to high prevalence in Iran. Although there are many studies, the research in the time to reach disability milestones in Iranian NMOSD and MS patients remains limited. This study survived the time and influential factors to reach EDSS score of 3.
Methods: In this retrospective study, we assessed 2129 relapsing-remitting MS and 122 NMOSD patients who referred to MS clinic of Isfahan Kashani Hospital. The time taken to reach EDSS 3 was estimated by Kaplan-Meier analysis. We also carried out Cox proportional hazards model to assess influential factors of reaching to disability milestones. Potential variables consisting age at onset, sex, education level, employment status, family history of MS, comorbidity, first manifestation, second manifestation, number of relapses in first two years, brain and spinal MRI.
Results: Based on survival analysis, the median time to the assignment of an EDSS 3 in RRMS and NMOSD patients were 18.2 and 13.4 years. Predictor factors for RRMS patients were age at onset, age at last visit, male, first EDSS, abnormal spinal MRI, sensory disturbance as first manifestation, and cerebellar dysfunction as second attack. Predictor factors for NMOSD patients were age at onset, age at last visit, and first EDSS.
Conclusion: Our results highlighted disability factors in MS and NMOSD patients which should be considered in treatment and management of these patients.

The frequency of dysphagia in Iranian patients with demyelinating diseases: Multiple sclerosis and neuromyelitis optica spectrum disorder

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Background: Multiple sclerosis (MS) and neuromyelitis optica spectrum disorder (NMOSD) are autoimmune demyelinating disease. Dysphagia has been known as a common problem in these patients. We carried out this study to assess dysphagia in MS and NMOSD patients.
Methods: A total of 1085 patients included 775 relapsing-remitting MS (RRMS), 109 secondary progressive MS (SPMS), 23 primary progressive MS (PPMS), 94 clinically isolated syndrome, and 84 NMOSD were recruited in the study. Dysphagia was evaluated through DYMUS questionnaire. We also used short-form 36 (SF-36) to apprized quality of life (QOL) in these patients and its association with dysphagia.
Results: Swelling problem was reported in 48 (44.0%) SPMS, 9 (31.0%) PPMS, 172 (22.2%) RRMS, 16 (17.0%) CIS, and 15 (17.9%) NMOSD patients. The frequency of dysphagia in SPMS and PPMS was similar, but was higher than other groups. Dysphagia in RRMS patients was more frequent than CIS and NMOSD patients. Sex (female) and EDSS at first visit were the predictor of dysphagia. Dysphagia was the predictor of physical and mental components of QOL.
Conclusion: Our findings showed dysphagia is common problem in progressive MS patients and has substantial effect on patients' QoL. Also, dysphagia should be screened in early phase of MS and CIS and should be considered in patients with NMOSD who are high risk for dysphagia.

The COVID-19 Neurologic Impacts in Swallowing disorders

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Coronaviruses are a large family of viruses that can cause disease in animals or humans. It has been more than a year since the beginning of the COVID-19 pandemic. Some patients with COVID-19 are in a severe condition and require frequent intubation while hospitalized. We conducted a search in PMC, Science Direct, PubMed databases. The present information is available reviewing the articles from 2020 to 2021 through the search of the resources. Most of the complications of this intubation occur in the breathing and swallowing of these people and the treatment of swallowing disorders in this group of people is the responsibility of speech and language pathologists. The first step in the management of swallowing disorders following COVID-19 and neurological conditions is to screening and comprehensive evaluation of the patient, which is through instrumental evaluations, evaluation checklists and therapist observations. In the treatment process of these people, attention to the intubation process and possible injuries following intubation in these people, including damage to the airway and vocal tract, is given special attention. Therefore, the aim of this study is to review the available information and recommendations on the diagnosis and management of dysphagia after intubation in patients with COVID-19 and other neurological disorders who experience similar conditions. The finding showed that the swallowing treatment and feeding modification and neurorehabilitation in speech and language fields is essential for of COVID-19 patients.

The speech therapy effects on the swallowing facilitation in multiple sclerosis

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The speech therapy interventions are critical to reduce the complications of the disease. The literature search was performed using the electronic databases in PMC, Science Direct, Neuroscience, PubMed and Cochrane library databases. We also used the following search terms: “multiple sclerosis”,” dysphagia”, “swallowing problems” from 2000 to 2021. The rehabilitative techniques are applied to improve physiology of the swallowing function and involve sensorimotor exercises and swallowing maneuvers. Swallowing treatment requires careful evaluation. The conclusions found in the literature on the effects of swallowing therapy are strongly dependent on the selected evaluation protocol as well as the outcome parameters. The evaluation techniques were divided into five categories: quality-of-life measures, videofluoroscopy, fiber-optic endoscopic evaluation of swallowing (FEES), clinical screening and a residual category of other evaluation techniques. Furthermore, the diversity in type of therapy is impressive. Besides this variety of interventions, the literature reveals enormous variation in the duration of therapy. Some studies claim significant improvement after a single treatment session, whereas others report a long series of sessions. Although all of these studies provide information on the short-term effects of therapy, hardly any data are available on the long-term effects. Summarizing the literature on the effects of dysphagia therapy as applied by speech and language therapists gives the overall impression that most interventions have a positive therapy outcome. In general, significant positive therapy effects were found. This study demonstrated that the dysphagia therapy was effective in improving swallowing function in MS patients with dysphagia.

Oropharyngeal dysphagia deficits in multiple sclerosis patients

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Dysphagia is a common life-threatening symptom frequently underestimated in patients with multiple sclerosis (MS). The Speech Therapy practices for swallowing problems are critical to reduce the complications of the disease. We conducted a search in PMC, Science Direct and Neuroscience, PubMed, Embase and Cochrane library databases. We also used the following search terms: “multiple sclerosis”, ”deglutition disorders”, “swallowing problems”, and “dysphagia”. The present information is available reviewing the articles from 1999 to 2021 through the search of the resources. Several potential factors, such as involvement of the corticobulbar tracts, cerebellar and brainstem dysfunctions, lower cranial nerves paresis and cognitive impairment, can impair swallowing physiology. Prevalence of dysphagia in patients with MS have been reported from 10 to 90 percent. If desalinization occurs in the brain stem sensorimotor pathways, such as cranial nerves VII, IX, X, or XII, then some type of dysphagia or swallowing deficit may occur in MS patients. If the hypoglossal nerve is affected, the patient's lingual control of bolus manipulation, chewing, and oral transit will be reduced to some extent. If the Xth cranial nerve is involved, the patient's laryngeal function and airway protection will be reduced. If the IXth cranial nerve is involved, the swallowing reflex may be delayed and pharyngeal peristalsis will be reduced. If all three of these or any other combination of nerves is involved the patient will exhibit multiple problems. Because MS exacerbation often remit for long periods of time, swallowing rehabilitation can be highly effective in managing the dysphagia episodes.

Neuromyelitis Optica mimicking intramedullary mass in a child with isolated brainstem syndrome

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Neuromyelitis optica spectrum disorder (NMOSD) is an immune-mediated disorder characterized by relapsing episodes of optic neuritis and myelitis. Brain stem related symptoms such as Intractable vomiting are not usually considered as the initial presentation, misdiagnosis has been frequently observed. Almost 4% of NMOSD cases are pediatric. Early differentiation of NMOSD from other childhood disorders including acute disseminated encephalomyelitis, multiple sclerosis, infections and mass lesions is critical.

Case Presentation: An 11-year-old girl presented with intractable vomiting and received several types of gastrointestinal treatments during one months. After that diplopia occurred and she suffered vertigo as well. Brain MRI showed isolated edematous intramedullary lesion with heterogeneous enhancement. Patient received corticosteroid therapy with diagnosis of brain stem mass and the symptoms improved. She was candidate for biopsy to decide for radiation or chemotherapy but her parents didn't accept. After three months she developed central facial nerve palsy. The brain MRI showed the same lesion. Anti AQP4 ab was positive, so the appropriate treatment started with final diagnosis of NMOSD.

Conclusion: Only about 30% of patients presents with brainstem involvement. It is difficult to diagnosis of NMOSD with presentation of acute brainstem or cerebral or diencephalic syndromes for physicians who are not familiar with its clinical features and diagnostic criteria. Involvement of the area postrema can lead to the initial presentation of sometimes intractable nausea and vomiting with associated intramedullary lesions on MRI in 16% to 43% of patients.

NMOSD should be considered in differential diagnosis of isolated brain stem lesions to avoid from invasive surgical interventions. Early diagnosis is critical for proper treatment.

Correlation of stroke and multiple sclerosis: How distinguish vascular lesions from MS lesions?

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Multiple sclerosis (MS) and stroke are two common neurologic diseases and two common causes of death and disability worldwide. The relationship between these two diseases remains unclear. Compared with the general population, people with MS have an increased risk of developing any type of stroke in particular. Demyelination and axonal injury are characteristics of MS but are also observed in stroke. Conversely, hallmarks of stroke, such as vascular impairment and neurodegeneration are found in MS. MS is a complex heterogeneous disease. Diagnosing MS can be very challenging due to variable clinical features and lack of a definitive test. MRI plays a crucial role in the exclusion of alternative diagnoses of MS. But, when symptoms that are not specific to MS or are atypical of MS occur, diagnosis is difficult and ancillary tests have a more dominant role.

Association stroke and MS, could be evaluated from several aspects:
1-Role & correlation Stroke or Risk factors of stroke(or common) in develop of MS (MS as a vascular disease?)
2-Viceversa,role & correlation MS (or DMTs) in develop of Stroke(Ischemic-ICH, etc)
3-MS Misdiagnosis(MS MIMICS): (Vascular disorders that mimics MS & vice versa)
4-overlap syndrome: [concurrent/coincidence stroke(vasculitis, etc) & MS]
We present an overview of association of the vascular disorders and MS with emphasis on some their distinguishing features (clinical and paraclinical) from MS.

Is physical activity associated with brain metabolites and functional network connectivity in people with multiple sclerosis?

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Background: There is clear evidence for the decline in physical activity in multiple sclerosis (MS), and this may be associated with changes in global and localized brain volume, metabolites and functional network connectivity. The current study examined the relationship between physical activity levels and global and localizer brain volume, metabolites and functional network connectivity in people with MS (pwMS).
Methods: We recruited 78 pwMS with EDSS≤5 and age range between 18 and 50 years. Physical activity was measured by the International Physical Activity Questionnaire. Functional network connectivity was measured via functional magnetic resonance imaging (fMRI) in seven major cortical and subcortical networks. Localized brain metabolites in the thalamus, hippocampus, medial prefrontal cortex (MPC) and anterior cingulate cortex (ACC) were determined by in vivo magnetic resonance spectroscopy.
Results: Physical activity had significant moderate-to-strong relationships with brain metabolites including N-acetyl aspartate (r=0.41 to 0.62) and Myo-inositol (r=-0.42 to -0.56) in the hippocampus, MPC, and ACC. Physical activity was associated with choline level (r=0.32 and 0.34) only in the thalamus and hippocampus. Based on fMRI data, physical activity was correlated with the default-mode network, cerebellar network and thalamic network (r=0.29 to 0.43). Physical activity was associated with volumetric imaging metrics of the global brain (r=0.47) and thalamus (r=0.38) volume.
Conclusion: Our findings indicate that physical activity might be associated with beneficial changes in the brain metabolic status and functional network connectivity in people with MS. This supports modifying physical activity behavior as an approach for neuroplasticity in MS.

Home-based exercise improves brain characteristics of people with multiple sclerosis: A magnetic resonance spectroscopy and diffusion tensor imaging of lesion, thalamus and hippocampus

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Background: This study examined the effects of home-based exercise (HBE) on lesion, thalamus and hippocampus structure, connectivity and metabolites in MS using a multimodal magnetic resonance (MR) protocol.
Methods: We recruited 64 pwMS with EDSS≤5 who were randomly assigned into HBE or control conditions. Participants in the HBE condition undertook home-based exercise over a 24-week period. The MR protocol included volumetric MR imaging (MRI), diffusion tensor imaging (DTI), and MR spectroscopy (MRS), and yielded the metrics of lesion, thalamus and hippocampus volumes, metabolites and connectivity at baseline and following the 24-week period.
Results: The data revealed a tendency toward reduced global brain, thalamus and hippocampus atrophy, but there were no significant changes following the intervention ($p>0.05$). There was a clear increase in N-acetyl aspartate (NAA) concentration of thalamus ($p=0.025$) and hippocampus ($p=0.04$) in the HBE group, and Myo-inositol (Ins) concentration deceased in the hippocampus ($p=0.001$) and lesion ($p=0.011$) following HBE. Additionally, creatine and phosphocreatine (Cr) levels only decreased in lesion after HBE ($p=0.041$). However, there was a trend for a decrease in mean diffusivity as a myelin loss indicator in the thalamus, no significant differences were observed for global and tract-based spatial statistical differences of DTI measures between HBE and control conditions ($p>0.05$).
Conclusion: Increased NAA (thalamus and hippocampus), and decreased Ins (hippocampus and lesion) and Cr (lesion) concentrations are thought to reflect beneficial effects of exercise on neuro-axonal damage or loss and gliosis, respectively. Collectively,

this suggests that exercise could potentially slow down accumulation of microstructural brain tissue damage in pwMS.

B Cell Therapy in Multiple Sclerosis

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B cells have now emerged as the important target for our most highly effective therapeutics. Here, we review the roles of B cells in MS autoimmunity, the clinical data supporting use of ocrelizumab and other anti-CD20 therapies in the treatment of MS, as well as safety and practical considerations for prescribing. B cells can function in either pro-or anti-inflammatory roles, depending on their subtype and context.1 The pro-inflammatory functions of B cells, including presentation of critical antigens to Th17 and Th1 cells, secretion of cytokines and other molecules, as well as antibody production. There is also increasing recognition of the clinical importance of countervailing regulatory B cells (B-regs) that can dampen excessive inflammatory responses.
Three mAbs, rituximab, ocrelizumab, and ofatumumab, are currently in clinical use for MS. Rituximab, a chimeric mouse-human monoclonal antibody, was approved in 1997 for B cell lymphoma. 2 Rituximab was approved for rheumatoid arthritis in 2006, 3 as well as off-label use in IgG4 disease,4 pemphigus,5 ANCA vasculitis,6 neuromyelitis optica,7 and myasthenia gravis,8 in addition to widespread use in MS. Ocrelizumab, now approved for relapsing and primary progressive forms of MS, differs from rituximab in that it has a humanized antibody backbone. Ofatumumab, a fully human monoclonal antibody approved for refractory chronic lymphocytic leukemia,10 is the only anti-CD20 mAb now being tested using a subcutaneous, rather than intravenous. Other anti-CD20 mAbs include obinutuzumab, a humanized IgG1 targeting and ublituximab, an anti-CD20 antibody glycoengineered for higher affinity to all FcγRIIIa receptors.

Assessment of serum levels of Se, Pb, Mg, Cu, Zn, in patients with neuromielitis optica (NMO) and comparison with healthy control group

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Background: Although studies have shown immune system dysfunction in Neuromyelitis optic (NMO), the exact cause and risk factors of the disease remains unclear. To the current knowledge, no studies have investigated the metal serum levels in NMO patients. The aim of this study was to measure and compare the serum levels of selenium (Se), copper (Cu), zinc (Zn), magnesium (Mg), lead (Pb) and Cu/Zn ratio in subjects with NMO.
Methods: Fifteen patients and 18 healthy volunteers entered this study (all living in Khuzestan, Iran for the past 5 years). The correlation of metal levels with age, duration of disease and EDSS was also evaluated.
Results: No significant difference was seen for Cu, Pb, Mg levels between patients and control group. In terms of Se levels, although its role is to prevent over-oxidative reactions, the patients showed higher levels compared to healthy subjects. Zinc is shown to have a role in the regulation of the immune system and it had lower levels in NMO group (p 35 years of age, higher serum Cu and lower Zn levels were seen.
Conclusion: According to some studies, the Cu / Zn ratio has been investigated as an inflammatory marker rather than just the serum level of Cu or Zn. In this study, however, a significant difference (p0.01) was observed between the young and the elderly, but there was no difference between the patients.

Assessment of quality of life and related factors in relapsing-remitting and progressive multiple sclerosis

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Background: Several factors can affect quality of life (QoL) of MS patients. Studies suggested different factors contribute to patient-reported measures of QoL in relapse-remitting MS (RRMS) and progressive MS (PMS). We conducted this study to assess Qol and related factors in RRMS and PMS.
Methods: Totally, 775 RRMS and 132 PMS patients were appraised for disease severity (EDSS score and annualized relapse rat [ARR]) Qol (short-form 36 [SF-36]), depression (Beck depression inventory-II [BDI-II]), anxiety (Hamilton anxiety rating scale [HAM-A]), fatigue (fatigue severity score [FSS]), bladder problem (bladder score scale [BLCS]), bowel problem (bowel score scale [BWCS]). We also obtained demographic and clinical information including age, sex, education, age at onset, duration of disease. Multivariate general linear model was carried out to determine the effect of variables on physical (PCS) and mental component score (MCS) of QoL.
Results: Depression, fatigue, anxiety, bowel problem, bladder problem and EDSS affected significantly the physical component of Qol in patients with RRMS. Depression, anxiety, and EDSS were predictors of mental component of QoL in RRMS group. BDI-II was the only predictor of MCS in progressive MS. No significant effect was observed for other variables in PMS.
Conclusion: Our finding indicates the important effect of depression on QoL in MS patients. Depression should be triggered by psychopharmacological in all MS patients. We also found that progressive relapsing-remitting phenotype have different psychological pattern.

Early clinical and MRI predictors of short and long-term progression in multiple sclerosis

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Background: Multiple sclerosis is the most common neurological disease in young women. Short and long-term disability outcome in Iranian patients with multiple sclerosis is not well characterized. So, we conducted this study to predict disability after 2, 6 and 10 years.

Methods: This is a retrospective study of 2627 MS patients who referred to Isfahan MS Kashani clinical. Of them, 2412 and 1693 patients were followed after 2 and 6 years, 779 patients also followed at least 10 years. Disability was measured by Kurtzke Expanded Disability Status Scale (EDSS) at first and last of follow up. Information of brain and spinal Magnetic resonance imaging (MRI) were obtained at first visit. We conducted univariate and multivariate regression analysis to predict EDSS score. Potential predictors of interest included age at onset, sex, education level, family history of MS, autoimmune comorbidity at onset, first manifestation, EDSS score at first visit, and brain and spinal MRI.

Results: The mean of EDSS score at 2, 6, and after 10 years were 1.18±1.3, 1.05±1.61, and 2.30±2.52, respectively. Predictors for 2-year EDSS included EDSS score at first visit and first manifestation. Year 6 predictors included age at onset, first EDSS, education level, and gender. Year 10 EDSS predictors were age at onset, EDSS score at first visit, education level, gender, spinal lesion, location of brain lesion, and first manifestation.

Conclusion: Our results highlighted disability factors in short and long-term disease duration which should be considered in treatment and management of MS patients.

The prevalence of migraine in multiple sclerosis patients: A systematic review and meta-analysis

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Objectives: We designed this systematic review to estimate pooled prevalence of migraine in patients with multiple sclerosis (MS).
Methods: We searched PubMed, Scopus, EMBASE, CINAHL, Web of Science, google scholar and gray literature including references from identified studies, conference abstracts which were published up to December 2019. The search strategy included the MeSH and text words as ((Disorder, Migraine OR Disorders, Migraine Disorder OR Migraine OR Migraines, OR Migraine Headache OR Migraine Headaches) AND (Multiple Sclerosis OR Sclerosis, Multiple) OR Sclerosis, Disseminated) OR Disseminated Sclerosis) OR MS (Multiple Sclerosis)) OR Multiple Sclerosis, Acute Fulminating).
Results: The literature search found 2100 articles. After eliminating duplicates, 1500 articles remained. Eleven articles and twelve abstract conference papers were included for final analysis. A total of 11372 MS cases and 2627 MS patients with migraine included in the analysis. The prevalence of migraine ranged from 2% to 67%. The pooled prevalence of migraine in included studies was 31% (95%CI:22%-40%)(I2=99.3%, p=0.001). The pooled prevalence of migraine in different continents were significantly different (p=0.001).
The pooled prevalence was 24% in Asian countries, 43% in American countries, 25% in European countries and 43% in African countries.
Conclusion: The results of this systematic review shows that the prevalence of migraine in MS patients is 31% while the prevalence differs significantly among residents of different continents.

MOG Abs associated diseases

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Extensive research over the last decades basically failed to identify a common cause of noninfectious inflammatory central nervous system (CNS) demyelinating disease. This may reflect that the group of inflammatory CNS demyelinating disorders likely contains multiple pathogenetically distinct disease entities. Indeed, the greatest success so far the pathogenesis of a CNS demyelinating disorder resulted from the discovery of anti-aquaporin (AQP)-4 antibodies (ab), which allowed progressive delineation of neuromyelitis optica (NMO) as a distinct disease. these patients revealed that not all patients presenting with clinically NMO-suggestive disease phenotype express AQP-4 ab, which created the pathogenetically undefined category of NMO spectrum disorders (NMOSD).

Recent investigations discovered that a subgroup of these AQP-4– NMOSD patients produce an ab response against myelin oligodendrocyte glycoprotein (MOG), a molecule expressed on the outer lamella of the myelin sheath. This humoral response is extremely rare in adult MS and absent in classical AQP-4+ NMO, Indeed MOG abs are present in one third of all children with an acute demyelinating syndrome (ADS). MOG abs can be found in acute disseminated encephalomyelitis (ADEM), transverse myelitis, isolated optic neuritis (ON), or recurrent demyelinating diseases, such NMOSD without AQP4 abs but rarely in children who subsequently develop MS. MOG abs is age dependent with the highest seropositivity rates found in young children and an episode of ADEM, whereas older children with MOG-abs present with ON, myelitis, or brainstem symptoms. This presentation describes spectrum of phenotypes associated with MOG-abs with a focus on clinical characteristics, radiological features, and therapeutic aspects.

Comparable efficacy and safety of teriflunomide versus dimethyl fumarate for the treatment of remitting-relapsing multiple sclerosis: An Iranian real-word experience

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Background: In this prospective cohort study, the efficacy and safety of dimethyl fumarate (DMF) versus teriflunomide (TRF), the new oral disease modifying treatments (DMTs), on clinical manifestations of patients with remitting-relapsing multiple sclerosis (RRMS) have been investigated.
Methods: A total of 159 RRMS patients (82 ones on TRF regimen and 77 ones on DMF regimen) with available medical records intended to be orally treated with TRF or DMF were included. The expanded disability status scale (EDSS), confirmed disability improvement (CDI), confirmed disability progression (CDP) and annualized relapse rate (ARR) were evaluated for them within the least follow-up period of 2 years. The drug-associated adverse effects (AEs) were recorded, as well. Propensity matching score and logistic regression were estimated.
Results: Following the matching of the confounder factors between TRF-and DMF-reated groups, two groups were similar in terms of EDSS (P-value=0.54), CDI (P-value=0.80), CDP (P-value=0.39) and ARR (P-value>0.05). TRF discontinuation occurred in 2 patients (2.43%) due to mediastinitis and liver dysfunction, while DMF discontinuation in a patient (1.29%) due to depression. Incidence rate of AEs in TRF-treated group was 81.4% that hair loss (62.9%), nail loss (20.9%) and elevated aminotransferase (14.8%) were the most common ones, while they occurred in 88.2% of DMF-treated patients with predominance of flushing (73.2%), pruritis (16.9%), and abdominal pain (16.9%).
Conclusion: Based on our findings, DMF is as efficacious and safe as TRF for the treatment of RRMS in the Iranian population. For generalization of the outcomes, further larger multicentric studies are strongly recommended.

Rituximab for Balo's concentric sclerosis: Report of two cases and review of literature

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Balo's concentric sclerosis (BCS) is a rare demyelinating disorder of the central nervous system with rather unknown etiology and unique radiological characteristics. Treatment approaches currently being utilized in patients mainly fall into two categories, those applied in acute phases of attack and those aiming to modify the disease course. Corticosteroids and plasma exchange cycles have been proposed as the first-and second-line therapies for the acute phase. However, due to rarity and unknown underlying mechanisms for BCS, disease modifying agents are not investigated. We present two cases of BCS whose treatment procedures involving utilization of rituximab along with corticosteroids and plasmapheresis sessions showed positive outcomes, as we observed significant neurological improvements in both patients and they remained relapse-free, one during a 12-months period of follow-up and the other during 6 months of follow-up.

Progression to secondary progressive multiple sclerosis and its early risk factors: A population-based study

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Background: Secondary progressive MS (SPMS) associated with severe and irreversible neurological disability and there is limited therapeutic option with unidentified efficacy. There is still considerable uncertainty about the time of conversion and its risk factors.
Objective: Assessment of the proportion of RRMS patients who converted to SPMS and survived its early influential factors.
Methods: This retrospective study was conducted within a 7-years from 2012 to 2019. Information of MS patients at diagnosis date was extracted from a prospective population-based database. Demographic features included sex, age, education, the birth of season, and handedness were extracted from the database. Age, initial manifestation, MRI findings, and Expanded Disability Status Scale (EDSS) score were assessed. A Kaplan-Meier curve was used to report the proportion of patients with progression to progressive MS. Cox proportional hazards model was used to find the association between the various factors and progression to SPMS.
Results: Out of 1903 patients with RRMS at baseline, 293 (15.4%) patients progressed to SPMS during follow up. The 50% risk for convert from RRMS to SPMS was 20 years. On the multivariate cox regression analysis positive history of smoking, higher age, higher EDSS, motor dysfunction, brainstem dysfunction, and lesion in spine at the diagnosis date are the significant prognostic factors of conversion from RRMS to SPMS.
Conclusion: Rate of conversion to SPMS reduced compared to preliminary natural and observational studies. The identified prognostics factors may be useful in personalized medicine.

Autoimmune Disorders

Vertigo and autoimmune disorders

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The percentage of autoimmune disorders in western countries is around 8% of the total population. The cochlear-vestibular system might be affected by autoimmune diseases. Autoimmune vertigo can present as an isolated disorder (e.g., Autoimmune Inner Ear Disease, Bilateral Vestibulopathy, Menière's disease) or in association with systemic autoimmune diseases (e.g., Behçet's disease, SLE, Sarcoidosis, Antiphospholipid syndrome, ANCA associated vasculitis, Graves' disease, Hashimoto's thyroiditis, Vogt-Koyanagi-Harada syndrome, IgG4-related disease). Being the exact pathogenesis unknown, the diagnosis of autoimmune vertigo is based either on clinical criteria or on a positive response to steroids. Vertigo may be the first manifestation of an autoimmune disease, often misdiagnosed or attributed to CNS alterations rather to specific inner ear involvement. Vertigo of central origin may be due to other immuno-mediated disorders such as multiple sclerosis, brainstem encephalitis and vasculitis. An autoimmune mechanism seems to be responsible for 6% of unilateral and 16% of bilateral forms of Ménière's disease. Vestibular neuritis is the second most common cause of peripheral vestibular vertigo The characteristic symptom includes sudden and prolonged vertigo, the absence of auditory or other neurological symptoms. The management of vestibular neuritis involves antivertiginous drugs, corticosteroids, and physical therapy. Among available diagnostic tools, electro-oculography, posturography and vestibular evoked myogenic potentials (VEMPs) are especially suited to assess vestibulo-oculomotor and vestibulospinal systems. VEMP is the optimal method to detect brainstem lesions in MS and may be better than clinical examination, BAER or MRI for detecting these lesions.

Clinical features and treatment outcome in necrotizing autoimmune myopathy in Isfahan during the years 2019 to 2020

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We conducted a retrospective study of medical records from March 21, 2019, through September 21, 2020, for 11 adult patients to identify the clinical, serological, and electrophysiologic features of NAM, compare patients' subgroups, and evaluate predictors of clinical outcomes. Patients classified into four subgroups bases on their Etiological factor then Clinical, electrophysiologic, and pathologic characteristics were collected and compared among patient subgroups. Five patients (45%) were receiving a statin medication at the onset that one of these five patients also had connective tissue disease. One patient had cancer. Extremity weakness (n=7, 63%) and myalgia (n=8, 72%) were predominated. Distal weakness (n=4, 27%) and dysphagia (n= 4, 36%) were common. The median creatine kinase level was 4166 U/L. In 2 patients, SRP-IgG was detected. In statin-associated NAM, myotonic discharges were more common. Patients with statin-associated and paraneoplastic NAM were older, while patients with idiopathic NAM were more likely to have dysphagia. Two or more immunotherapeutic agents were needed in five patients. Relapse occurred in 5 (45%) patients during immunosuppressant taper or discontinuation.

The use of 2 or more immunotherapy agents within 3 months of onset was an indicator of a favorable outcome. About 50% of our patients were idiopathic NAM and we found no factor for their NAM disease. Two patients in our study were SRP seropositive and both of them belonged to the idiopathic group. The median age in the idiopathic group was lesser in comparison with other groups.

Multiple Acyl-CoA Dehydrogenase Deficiency (MADD) presenting as inflammatory myopathy

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Background: Lipid-storage myopathy (LSM) is a heterogeneous group of lipid metabolic disorders characterized by impaired oxidation of fatty acids, in which several metabolic enzyme deficiencies, like multiple acyl-CoA dehydrogenase deficiency (MADD), can interfere with lipid catabolism, leading to an accumulation of lipids in muscle fibers.
Case presentation: A 33-year-old woman presented with neck weakness and lower limb weakness after stress who partially improved with prednisolone 10 years ago, now her weakness exacerbated after stress with rapid deterioration from 2 months ago and the physician thought it's functional. In neurological examination: cranial nerves were intact, force of muscles in neck extension was 4/5 and proximal muscles in upper and lower limbs was 3/5 and distal muscles was 5/5 so she was wheelchair-bound. DTR was +2, Babinski sign was negative, sensory exam was normal. At presentation CPK was 548 and EMG showed nonirritable proximal and paraspinal myopathy. Muscle biopsy showed excess lipid droplet in ORO stain and pattern of acylcarnitin panel is compatible with biochemical diagnosis of multiple Acyl-CoA Dehydrogenase Deficiency. She had been commenced on Ribovelavin, CoA Q10 and L-carnitine and after 3 months she completely improved.
Conclusion: We present a patient affected by a late onset MADD myopathy misdiagnosed for several years as inflammatory myopathy with partially responsive to immunosuppressant therapies and also presenting symptoms after stress in two times. Riboflavin-responsive MADD can mimic inflammatory myopathy and is under-recognized due to its heterogeneous clinical characteristics.

Dementia

Prevalence of Alzheimers Disease in Kerman, Iran: A house-based survey

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Backgrounds and Purpose: Alzheimer's disease (AD), which is the leading cause of dementia and the most common and important degenerative disease of the brain, as a chronic disorder associated with aging, has caused disability in the elderly. Currently, most of the world's elderly live in developing countries. The aim of this study was to determine the prevalence of AD as well as its risk factors in the residents of Kerman.
Methods: A randomize study was done at 2019 in Kerman city (East-South of Iran).
Results: in this study 4191 people from Kerman (47.5% are men & 52.5% are women). 1213 people aged 50 and above were tested by the ten-item questionnaire. 1116 of whom had a disorder in one or more of the questions, and thus entered the second stage of the study. For those who entered the second stage, an MMSE test was performed to confirm memory impairment. For the persons have memory impairment clinical examination was done, 26 cases were diagnosed with AD. In women the rate of Alzheimer disease was 8/1000, and for men 4/1000.
Conclusion: The prevalence of AD in Kerman was similar to that in the rest of the world. Many of the AD cases were over 80 years old and had serious illnesses. If they were diagnosed in the early stages of the disease, their disease could be managed at a lower cost and more effectively.

The communication difficulties in dementia

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Communications is fundamental to the existence and survival of humans as well as to an organization. The article has a descriptive character, and represents a review of the literature dealing with this topic from 1996 to 2021. We conducted a search in PubMed, PMC, Science Direct and Neuroscience databases. Language performance is both influenced by normal aging and by development of dementia. Dementia is a set of symptoms that include memory difficulties, learning difficulties, speech and language difficulties, disorientation in time and space, difficulties in understanding and behavioral changes. The communication skill is often necessary to adapt the way of communication to avoid stress and negative feelings in a person with dementia. Communication is a very important segment of every person's life, we use it to actively participate in society, pass on our wishes and needs, and share attitudes, knowledge and experience with other members of the community.
Multiple cognitive domains, including language and communicative function are affected by vascular dementia. Dementia affects the communicate with others or the way a person thinks, which can impact on their ability to respond appropriately or follow a conversation. This could be because they have comprehension deficits, the attention and concentration difficulties, the thinking speed problems, language or production deficits. Speech and language pathologists should be actively involved in treating people with dementia through direct contact with affected persons for maintaining communication skills or finding compensation strategies as well as working with their caregivers to teach them how to communicate more adequately.

Language difficulties as a result of dementia

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A person with any type of dementia can have problems with language. This is because dementia can damage the parts of the brain that control language. Difficulties in area of language or linguistic are a common symptom in people with dementia. We conducted a search in PMC, Science Direct, PubMed databases. The present information is available reviewing the articles from 1996 to 2021 through the search of the resources. Language problems can also vary from day to day, or be more or less of a problem at different times of the day. They can be made worse if the person is tired, in pain or unwell. The surroundings can also help with communication, or make it more difficult. In some types of dementia such as some forms of frontotemporal dementia, the patient may start to have problems with language much earlier than other types of dementia. It is likely to be one of the first symptoms that is noticed. Language problems include difficulties to the target word-finding, use the same class words or substitutes instead of target words. In some situation, they do not struggle to find words, but use words that have no meaning, or that are jumbled up in the wrong order. Also, they go back to the native language they learned as a child. The language problems in dementia are very common and speech-language pathology is critical time from onset of disorder to improve of the demonstration complications and to increase the quality of life.

Stages of dementia

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Dementia is a broad category of brain diseases that cause a long-term and often gradual decrease in the ability to think and remember that is severe enough to affect daily functioning. Other common symptoms include emotional problems, difficulties with language, and a decrease in motivation. The number of people living with dementia worldwide in 2015 was estimated at 47.47 million, reaching 75.63 million in 2030 and 135.46 million in 2050.In this study, related articles are collected from www.dementiacarecentral and google scholar. Dementia has several stages that each stage has particular symptoms. Knowing these stages and their specific symptoms can help us determine which stage the patient is in and to take appropriate therapeutic interventions.

Association of Diabetes Mellitus Type 2 and Alzheimer's Disease

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Background: Insulin serves an important role in brain metabolism, and insulin resistance and subsequent diabetes mellitus type 2 (DM2) can give rise to dysfunction of brain metabolism. This study aimed to test the hypothesis of association of late onset Alzheimer's disease (AD) with DM2 in an Iranian population.
Methods: In this case-control study, 243 subjects including 81 patients with late onset AD and 162 healthy controls were recruited. The frequency of DM was compared in AD patients with non-AD counterparts.
Results: The prevalence of diabetes in AD and control patients was 27% and 9%, respectively. (OR=3.94, 95% confidence interval: 1.89-8.22). After adjustment for age and gender, there was a significant association between DM2 and AD (OR=3.7, 95% confidence interval: 1.73-8.00).
Conclusion: The evidence from the present study suggested that DM2 was associated with AD in an Iranian population. Further longitudinal studies are warranted to confirm this finding.

Stroke & Cerebrovascular

Subarachnoid hemorrhage due to central vein sinus thrombosis and thrombocytopenia after covid-19 vaccination in 37 years old woman

Dina Motamedi, Arman Habibi

Various side effects of vaccines have been reported Among these complications, deep vein thrombosis has been reported in various parts of the body. We observed a case of Subarachnoid hemorrhage (SAH) following the injection of the Astrazeneca vaccine. A 37 years old woman comes with headache and vomiting. There was no history of underlying disease in the patient's history. In neurological exam's she has a hemiparesis in right side and bilateral papilledema, The patient mentioned that she had received the Corona vaccine 4 days before and she had a headache after that. CT scan was performed for the patient, which showed evidence of SAH as well as intracerebral hemorrhage in the left peritotemporal. Additional MRI with MR-venography was performed that show clot evidence in the right transverse sinus.
Further study is needed to ensure that covid-19 vaccines are associated with venous clots. And the presence of underlying coagulation disorders and vasculitis diseases may play a role in this complication.

Association between infection with Clamydia pneumoniae and cerebral noncardioembolic ischemic stroke

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Stroke is the third most common cause of mortality and the most common disable disorder among adults. According to controversial results of studies on association between Chlamydia pneumonia infection and cerebrovascular events, we aimed to study the relationship between Chlamydia pneumonia infection and non-cardio Ambulatory ischemic stroke. This case-control study was performed on 116 patients with non-cardio Ambulatory ischemic stroke admitted to Kashan in 2018 as case group and patients with neurological headache, discopathies and degenerative diseases as the control group. After filling the questionnaire for all subjects, 3 ml blood sample of was taken and analyzed for all three anti-chlamydia pneumonia antibodies by ELISA method. After data entering in SPSS software, data were analyzed by Chi-square and Fisher tests. The findings showed that positive IgA in the stroke group was significantly higher than the control group (p0.001) It was also found that the risk factors of HTN (p=0.001), HLP (p=0.001), DM (p=0.001) and age (p=0.049) were significantly higher in the stroke patients than control group. there was not a significant difference in serum IgG level (p=0.349), IgM (p=0.745), smoking (p=0.211) and gender (p=0.157) in under studied groups. Chlamydia IgA antibodies can be a complementary tool for predicting prognosis and monitoring new therapies for ischemic stroke. This study provides a way for further studies, especially with other markers of acute and chronic systemic Chlamydia pneumonia infection. Antibiotic treatment significantly helps to reduce mortality and stroke complications.

Subacute or chronic total carotid occlusion revascularization, yes or no? Review with two real case presentation

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For years, revascularization of total carotid occlusion especially after acute phase has a lot of debate. There are some limited case series that investigated subacute to chronic total carotid occlusion revascularization via surgery or neuro-intervention. In this presentation we will review this limited series with two real case that investigated and revascularization was performed after 7 days from beginning of total carotid occlusion. The key factor for performing revascularization or not, is presence of hypo-perfusion due to carotid occlusion that revascularization return this hypo-perfusion to normal perfusion and symptoms of patient improve with this procedure. This fact needs two factors, there is no permanent damage to brain tissue therefore brain function can return to normal after revascularization. Second, revascularization can safely do without adding any new complication such as release of new emboli from clots that expected to presence after occlusion site. The first issue can be investigated by different tools such as CT perfusion, CT angiography, MRI with DWI-ADC view, convectional angiography, and detail clinical investigation. Second issue can be safely performed with new clot retrieval device that available nowadays in modern Cat-lab with or without embolic protection device. In this presentation, two patients with total carotid occlusion after 7 days of beginning of CVA, was underwent angiography and fore one patient revascularization was done with excellent result and fore another due to good collateral, medical treatment was performed with satisfactory improvement. We will discuss the reasons of these decisions in this presentation.

Effect of shock wave therapy on spasticity in stroke patients

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Background: Stroke is a sudden episode defined as a neurological deficit of that affect muscle spasticity. There is a wide range of procedures for the management of spasticity. One of the recent methods for spasticity reduction is extracorporeal shock wave (ESW). Recent studies have indicated that ESW treatment is physical modality, which shows a valuable potential, promising effect, and suitable safety in the treatment of spasticity. This article will show the evidences and practical clinical use for the clinicians in the novel therapy of ESW for spasticity.
Methods: Twenty-two patients with post-stroke upper limb spasticity were included in the study, comprising 14 men and 8 women with a mean age of 63 years (range 38 to 76 years). Fifteen patients had ischemic stroke, and 7 patients had hemorrhagic stroke. Patients must have had a stroke 12 months previously. Patients with previous or planned treatment of the limb with botulinum toxin, phenol, alcohol, or surgery were excluded. The protocol consisted of 1 placebo treatment session in which no shock waves were applied, followed by 1 active shock wave treatment session 1 week later. In each subject, clinical measures were evaluated before and immediately after placebo, and 1, 4, and 12 weeks after the active shock wave treatment.
Results: Our findings suggest that shock wave therapy may be useful in decreasing tonicity in patients with spasticity and could open new areas of research in treatment of hypertonicity.
Conclusion: Shock wave therapy appears to be safe and noninvasive method for reducing spasticity.

Prevalence of hemorrhagic changes subtypes after administration of rtPA in acute ischemic stroke

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Background: Recombinant tissue plasminogen activator (rtPA) is one of the most important therapeutic methods which might be associated with cerebral hemorrhage. We aimed to investigate types of hemorrhagic incidents and their possible associations to types of strokes among patients treated with rtPA.
Methods: This is a cross-sectional study, which was performed in 2019, 145 stroke patients who were treated with rtPA were entered. Patient's risk factors and types of strokes, Fazekas scale, Type of hemorrhage based on imaging studies, initial National Institutes of Health Stroke Scale (NIHSS) and NIHSS at discharge, were extracted. Patients were followed for 6 months.
Results: 38.6% of patients had brain hemorrhage after rtPA administration. 45.5% of the patients had embolic stroke. The most common hemorrhage type was HI1(hemorrhagic infarction type 1). We observed a decreasing trend in NIHSS during hospitalization and after follow ups (P 0.001). Patients with HI2(hemorrhagic infarction type 2) and PH2(parenchymal hematoma type 2) had highest mortality rates (50% and 37.5%) (P= 0.001). Patients without hemorrhage and patients with PH1 had the lowest initial and discharge NIHSS (P 0.001). Patients with large vessel occlusions had highest mortality rates (23.1%) and initial and discharge NIHSS (P= 0.01).
Conclusion: 38.6% of our study population developed hemorrhagic transformation which is higher than previous studies. The Most common hemorrhage type was HI1 which has the best outcome among hemorrhagic changes. Patients with PH2 had highest mortality rates and neurological impairments during follow ups. There was no relationship between types of hemorrhages and Fazekas scale and stroke type.

New advances on diagnosis and treatment of cerebral venous thrombosis in adults: A Narrative Review

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Cerebral venous thrombosis (CVT) is a relatively common disorder of the cerebral venous system which accounts less than 1% of all strokes. The diagnosis of the disease might be delayed due to a wide range of clinical manifestations from a subacute headache with or without signs of intracranial hypertension to acute focal neurologic deficit and even loss of consciousness. Additionally, it be confused with other pathological conditions. The disease was previously only detectable at autopsy and was later diagnosed by angiography. It is currently diagnosed with brain magnetic resonance imaging or computed topography venography. Timely diagnosis is in paramount of importance to prevent the significant morbidities and even mortalities by appropriate treatment. Here in, we collected information without time and language limitation from international electronic database in Google Scholar pub med Web of Science and WHO site and magazine from 1989 to 2019

Whey protein plus lipoic acid supplementation improves inflammatory and antioxidant markers of patients with acute ischemic stroke: A double-blind, randomized controlled clinical trial

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Methods: A double-blind, randomized controlled clinical trial was conducted among 42 patients with the first episode of AIS at the Imam Reza Hospital of the Tabriz University of Medical Sciences. The blind research staff randomly assigned patients to two groups of receiving usual hospital gavage (control group) and 1,200 mg of lipoic acid plus 20 g of whey protein in addition to usual hospital gavage (intervention group) for midday meal. Levels of albumin, Interleukin-6 (IL-6), tumor necrosis factor (TNF-α), high-sensitivity C-reactive protein (hs-CRP) and clinical outcomes including severity of neurologic damage according to National Institutes of Health Stroke Scale (NIHSS) and functional state based on modified Rankin Scale (mRS) were evaluated initially and three weeks later.
Results: There were no significant differences in demographic and baseline characteristics between the two groups ($p > 0.05$). After three weeks, hs-CRP (p 0.05). In addition, comparing changes of assessed variables between two groups showed significant improvement in the whey protein plus lipoic acid supplementation group vs the control group ($p > 0.05$). While there were no significant differences in clinical prognosis parameters between two groups.
Conclusion: The investigation implied that whey protein plus lipoic acid supplementation has significant effects on inflammatory and oxidative stress markers compared to the control group of AIS patients

Comparative study of serum level of d-dimer in patients with cerebral venous thrombosis and the control group

Abdolreza Ghoreishi, Mohamad Soltani

Background: Cerebral Venous Thrombosis is a potentially life-threatening condition requiring early diagnosis and treatment with clinical manifestations that are unpredictable. On the other hand, the d-dimer test is inexpensive and easy to use and can be useful in diagnosis. This study aimed to evaluate the level of d-dimer in patients with cerebral venous thrombosis conducted from March 2017 to December 2017.
Methods: This case-control study was conducted in Valiasr Hospital, Zanjan. Patients with cerebral venous thrombosis whose diagnosis was confirmed by MRI and MRV, were included in the study. Data was collected by taking a history and physical examination and taking blood samples for d-dimer and performing MRI and MRV.
Results: In this research, 38 patients, including 35 women and 3 men with an average age of 42.00 ±9.7, were studied. The mean serum d-dimer was 905.272 ng/ml in the patients The average age and the mean d-dimer in the control group including 12 men and 18 women were 39.53 years and 243.07 ng/ml respectively.
Conclusion: Regarding the fact that the level of d-dimer in the patients' group was significantly higher than the control group, it is recommended that in patients with headache and suspected of CVT, Serum d-dimer level be measured as a diagnostic tool for the evaluation of CVT.

Is The TDSC Effective in Dysphagia?

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Background: Dysphagia is prevalent in acute stroke patients that is more than 50% within one month after stroke. In chronic stroke patients, the prevalence of dysphagia is less than 10%. Diagnosis and treatment of Dysphagia at early stage is important issue in speech and language pathology.
Methods: We conducted a search in PMC, Web of Science, PubMed, Scopus, Medline, SID, Google Scholar and Ovid databases. The present information is available reviewing the articles from 1995 to 2021 through the search of the resources.
Results: TDSC is a safe and effective treatment for post stroke dysphagia. The recent studies showed that anodal tDCS combined with conventional swallowing therapies effectively improved poststroke dysphagia as compared with swallowing training alone. This method, noninvasive cortical stimulation, has been used to enhance neural plasticity and treat hemiplegia and aphasia. In a study of chronic stroke patients, the combination of tDCS and peripheral sensorimotor activities or peripheral nerve stimulation improved motor functions. Therefore, we hypothesized that cortical stimulation in combination with peripheral sensorimotor activities would produce greater swallowing function improvement.
Conclusion: Speech therapy methods can improve brain synaptic plasticity. According to clinical and neurophysiological data, application of tDCS over the swallowing motor cortex supports cortical swallowing network reorganization, thereby leading to faster rehabilitation of acute post stroke dysphagia. TDCS have the potential to modify swallowing biomechanics in unimpaired swallowing and facilitate the recovery of impaired swallowing following stroke.

Noninvasive trans-cranial direct current stimulation therapy in post-stroke dysphagia

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Background: Dysphagia, a swallowing disorder, can be divided into oropharyngeal dysphagia and esophageal dysphagia based on the different stages of deglutition. Oropharyngeal dysphagia, resulting from either oropharyngeal swallowing dysfunction or perceived difficulty in the process of swallowing, is usually a manifestation of a systemic disease rather than a disease specific to the oropharynx. Stroke is a representative cause of oropharyngeal dysphagia, and in acute stroke, the prevalence of dysphagia has been reported as being between 37% and 78% leads to serious complications, such as dehydration, malnutrition, aspiration pneumonia and associated with increased risk of death or dependency, poor quality of life, and longer hospital stay. In most patients, PSD can improve spontaneously; however, in approximately 11e50% of patients, it is a long-term disability. Recent evidence suggests that stroke is increasing as a cause of dysphagia in adults, where it carries a particular significance to find effective therapies. The primary goal of treatment for dysphagia after stroke is to improve the amount and variety of food and liquid which are swallowed orally while minimizing the risk of aspiration and related complications. Speech and language pathologists (SLPs) administer interventions for treating dysphagia. The currently used treatment methods for PSD include posture training, dietary modifications, swallowing exercises, drug therapy, oromotor stimulation, neuromuscular electrical stimulation, botulinum toxin injection, and noninvasive brain stimulation (NIBS). transcranial direct-current stimulation (tDCS)can serve as a powerful method to modulate human brain function. tDCS is a non-invasive brain stimulation method based on the principle of neuroplasticity, including synaptogenesis, reorganization and brain network strengthening and depression.
Methods: studies were identified from PubMed, PsycINFO, Science Direct, Medline and Neuroscience (2015 up to date), systematic reviews, reference lists, and exports. The evidence reviews included only English-language, published articles that are available through libraries.
Results: Due to the importance of post-stroke dysphagia treatment, Researchers have looked to non-invasive brain stimulation as a means to rehabilitate dysphagia, and various small studies have investigated whether non-invasive brain stimulation could be used as a treatment for post-stroke dysphagia. The idea of using direct current to stimulate the body has been in existence for over 100 years, with Luigi Galvani's experiments on frogs leading to the foundation of the study of electrophysiology. As a novel, noninvasive brain

stimulation technique that delivers a small electric current continuously across the cerebral cortex, tDCS appears to be both safe and well tolerated, and it can directly alter excitability within the brain for periods outlasting the duration of stimulation. [3] The first report on the application of tDCS on a human pharyngeal motor cortex was published in 2009 by Dr. Hamdy et al. They concluded that anodal tDCS can alter pharyngeal motor cortex excitability in an intensity-dependent manner with little evidence for transcallosal spread, and they speculated that the anodal stimulation of tDCS may provide a useful way of promoting recovery in dysphagic patients.

Conclusion: Post-stroke dysphagia is not only costly but potentially fatal and is experienced in at least one out of every two-stroke patients. Many studies have investigated whether non-invasive brain stimulation could be used as a treatment to rehabilitate dysphagia however tDCS is a stimulation device whose neuromodulation properties have been widely demonstrated last decade. There remain challenges however with regards to the clinical utilization of these techniques, the type of patients that would benefit and the logistics of how such treatments can be embedded into a health care system. Nonetheless, these approaches should lay the foundation for the design of future large-scale randomized controlled trials of noninvasive cortical and peripheral stimulation in dysphagic stroke patients. It is hoped that such studies will provide more information as to whether neurostimulation can be a useful therapeutic tool or an adjunct to current clinical practice in the care of patients with dysphagia, so reducing the suffering and mortality associated with this distressing condition.

Post-hospital care status of patients with stroke in Kerman

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Purpose: The aim of this study was to evaluate the post-hospital care status of patients with stroke in Kerman.
Methods: In this prospective cross-sectional study 48 patients were included. The study population was stroke patients referred to Shafa hospital in Kerman in 2018. The patients were evaluated 3th month after hospital discharge. Data were collected through a questionnaire including age, gender, type of stroke, stroke risk factors, education and income status, caregiver, place of care, receiving or not receiving physiotherapy, quality of life, satisfaction care rate and post hospital care status was assessed.
Results: The mean score of quality of life for participants was 46.1±13.7 out of 100. The mean score of post-discharge care status was 50.6±21.4 out of 100. There was a significant difference between the mean score of quality of life and complications of stroke, education status and type of stroke. Also, there was a significant relationship between the mean score of post-discharge care and education, economic status, and physiotherapy use.
Conclusion: The results of the study showed that the majority of participants reported moderate care after discharge, moderate quality of life, and poor economic status. Therefore, stroke decreases the quality of life in these three dimensions. Therefore, it is necessary to provide people with the essential education to improve the quality of life of patients.

Neuroimaging as a triage tool for revascularization therapy in acute ischemic stroke

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Early recognition and differentiation of acute ischemic stroke from intracranial hemorrhage, stroke mimics and the identification of large vessel occlusion are critical to the appropriate management of stroke patients. The opinion that “Tissue is more important than time” is important in the selection of patients for Recanalization and Reperfusion in ischemic stroke patients. Some advanced computed tomography and magnetic resonance imaging technologies are able to distinguish between brain tissue that is irreversibly infarcted and that which is potentially salvageable, thereby allowing better selection of patients likely to benefit from therapy. The DAWN and DEFUSE 3 trials have prolonged the therapeutic window for Endovascular therapy. The imaging of patients with wake-up strokes or late presenting strokes requires magnetic resonance perfusion and computed tomographic perfusion of the brain.

Prognostic value of troponin on mortality and recurrence in ischemic stroke

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Background: Some recent studies have shown that troponin may have a Prognostic value in patients with ischemic stroke. The aim of this study was to evaluate the prognostic value of troponin on 3 months mortality and recurrence in patients with ischemic stroke.
Methods: In this study 63 patients with ischemic stroke were evaluated. Embolic and lacunar stroke were excluded from the study. In the first 24 hours, serum troponin levels were measured. Patients were evaluated for a three-month period in terms of death and recurrence of stroke, and the results were analyzed using independent t-test and logistic regression.
Results: In this study, 32 (50.8%) were male and the rest were female. Of the 63 patients studied, 8 (12.7%) had an abnormal troponin level. The mean serum level of troponin in patients who have died was 75.52 and Patients who did not die was 38.2. This difference was statistically significant (p=0.013). However, in the regression analysis, this result was not significant. Age (P=0.04) and NIHSS (P=0.001) had a meaningful relationship with mortality. Of the 53 patients who discharged the hospital, 5 (9.4%) had recurrence after 3 months. The mean serum level of troponin in patients with recurrence was 43.36 ±55.23 and mean serum troponin level in patients who did not relapse was 40.52 ±93.20. This difference was statistically significant (p=0.54).
Conclusion: Troponin has no prognostic value on three months mortality and recurrence rate in ischemic stroke patients.

Bilateral Superior Ophthalmic Vein Thrombosis (SOVT): Case report and review

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Background: The Superior ophthalmic vein is the main draining venous structure in orbit. The SOVT is extremely rare and is often associated with orbital inflammation/infection. We present a case of bilateral superior ophthalmic vein thrombosis.
Case Presentation: A 65-year-old woman awoke with diplopia and orbital pain from 3 days ago. Vision was OD 20/40 and OS 20/30. Pupils, color vision, and intraocular pressures were normal. There was no conjunctival chemosis or vascular engorgement, but 4 mm proptosis with bilateral abduction deficits (more prominent in right side) were present. There is no other physical abnormality. In past history there are no hypertension, diabetes mellitus or vascular disorders. MRI imaging was performed. Oral warfarin was instituted. All of laboratory tests about vasculitis were negative. Two weeks later, abduction deficits are decreased, proptosis disappeared and no complain about orbital pain and visual acuity.
Conclusion: The etiology of SOVT is multifactorial. Risk factors may be local or systemic, usually including at least one risk factor from Virchow's triad. Nearly 85% of cases presented with unilateral complaints. The etiology in bilateral cases are systemic disorders.

C-Reactive Protein level in admission time and outcome of stroke survivors, Babol, north of Iran

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Background: An elevated C-reactive protein (CRP) level is independently associated with the excessive risk of ischemic stroke. But there is currently no consensus on the use of CRP in detecting and tracking the progression of cerebrovascular diseases. The aim of this study was to determine the relationship between CRP and outcome in stroke patients.
Methods: This was an analytical cross-sectional study. Patients admitted with diagnosis of ischemic stroke were enrolled. Demographic, clinical characteristic, drug abuse and tobacco use, Severity of stroke (National Institute of Health Stroke Scale) were completed in checklist.
Results: Of the total 214 patients, the serum CRP levels in 122 cases (57%) were positive. The mortality during the first week of hospitalization was 17 cases (8%). The differences in CRP serum level with underlying disease such as Diabetes Mellitus (82 cases (51%) positive CRP vs. 77cases (49%) negative CRP, P=0.007) and Hypertension (59 cases (50.4%) positive CRP vs. 58 (49.6%) negative CRP, P=0.03) were statistically significant. Also, high CRP was seen in 10 thrombotic (91%) and 4 embolic (67%) of stroke expire patients, p=0.034). The difference in CRP serum level in mortality cases was statistically significant (14 cases (82%) positive CRP vs. 3 cases (18%), negative CRP (p=0.032).
Conclusion: The positive CRP serum level at the admission was accompanied with more severity of disability in stroke survivor. It suggested to use for predicting disability and mortality rate during the first week of post-stroke hospitalization. So, it's better to check serum level of CRP in admission time.

Concurrence of subarachnoid hemorrhage and ischemic stroke in antiphospholipid syndrome: A case report

Ghasem Farahmand, Nina Javadian, Hanna Magroni

Presented case is a 27-year-old female who developed acute aphasia, right sided hemiparesis and facial paresis. She did not have any previous history of abortions, joint swelling, constitutional symptoms or thrombotic events. Cerebral imaging revealed ischemic stroke in right MCA territory and also right frontal lobe signal change in favor of cortical subarachnoid hemorrhage. Trans-esophageal echocardiogram showed mitral valve vegetation, suggestive of nonbacterial thrombotic endocarditis (NBTE). Microbiological exams were negative, confirming the diagnosis of NBTE. Serologic tests and thorough evaluation of patient's history and physical examination confirmed the diagnosis of primary antiphospholipid syndrome (APS). She underwent oral anticoagulation therapy. In patients with juvenile stroke, especially females, primary APS should be considered as an important risk factor, even without accompanying other connective tissue disorders, such as SLE. This significance is because in addition to its direct effect on causing ischemic stroke, APS can also present with venous events or accompany with libman-sacks endocarditis that can predispose the patient to stroke. Other importance is due to different management of primary APS and APS secondary to connective tissue disease.

Embolic stroke of undetermined source: definition & evaluation

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Definition: Cryptogenic stroke encompasses for about 25% of ischemic strokes. Literature evidence demonstrates that most cryptogenic strokes have an embolic source; therefore, in 2014 CS/ESUS International Working Group construct a new clinical term, embolic stroke of undetermined source (ESUS). The concept of ESUS, moreover, implies that a full standard evaluation was done, whereas traditional definitions of cryptogenic stroke did not require a full evaluation. The criteria for ESUS are:

1. Stroke detected by CT or MRI that is not
2. Absence of extracranial or intracranial atherosclerosis causing ≥50 percent luminal stenosis of the artery supplying the area of ischemia
3. No major-risk cardioembolic source of embolism
4. No other specific cause of stroke identified (e.g., arteritis, dissection, migraine, vasospasm, drug abuse)

Possible Mechanisms: numerous mechanisms for ESUS have been proposed. The most likely mechanisms Known as Potential Embolic Sources (PES) include the following:

1. Atrial cardiopathy
2. Occult paroxysmal atrial fibrillation
3. Aortic atheromatous disease
4. Substenotic cerebrovascular disease
5. LV disease
6. Cardiac valvular disease
7. Paradoxical embolism
8. Cancer and other hypercoagulopathy state

Evaluation: ESUS is a diagnosis of exclusion based upon a thorough investigation for potential stroke etiologies. After standard evaluations, advanced evaluation may be warranted for patients with ESUS when the cause is undetermined; including prolonged cardiac monitoring, advanced cardiac imaging such as cardiac MRI and TEE, vascular studies of aorta and hematologic testing.

Evaluation of selenium supplementation in ischemic stroke outcome: An open-label, randomized, placebo controlled, trial

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Background and Purpose: Selenium is a trace element essential to human health that protects against cellular damage by oxygen radicals through selenoproteins. Ischemic stroke is associated with the generation of oxygen free radicals resulting in a condition of oxidative stress. Supplementing stroke patients with antioxidant nutrients may improve survival.
Methods: This was a randomized, open-label, placebo-controlled study on consecutive ischemic stroke patients admitted in Bu Ali Sina Hospital, Sari, Iran, during 2015-2017. Inclusion criteria were age between 20 to 85 years, accepted ischemic stroke by brain CT or MRI during the last 72h with volume of at list one-third of MCA territory and written informed consent. The patients were randomized into two therapeutic groups, one receiving Vial selenium 2000 microgram stat and 1000 microgram daily for 5 days and the other 40 cc normal saline stat and 20 cc daily for 5 days. Primary outcome measures with National Institutes of Health Stroke Scale (NIHSS) and modified Rankin Scale (mRS). Secondary Outcome Measures with Barthel index 3 months after discharge.
Results: 40 ischemic stroke patients (18 females, 22 males) with a mean age of 68.2±10 years were investigated. The comparison baseline and day 7, NIHSS and mRS score in case group, revealed statistically significant reduction in both scores (p=0.04, p=0.00); but not in control group (p=0.70, p=0.37). Differences in Barthel index was not significant in both groups (p=0.40).
Conclusions: Selenium can improve short-term ischemic stroke outcome, but it not influences the long-term outcome.

Evaluating of Nutritional Risk Screening (NRS2002) in stroke patients

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Background: Stroke is one of the most common causes of disability and mortality, and nutritional status is considered as one of the effective factors in the prognosis of various diseases. So various tools have been developed to assess nutritional status, and NRS 2002 is one of the nutritional risk assessment tools. The purpose of this study was to evaluate nutritional risk in stroke patients.
Methods: In a cross-sectional study, 523 patients admitted to Neurology ward with ischemic stroke were enrolled to the study. Patients were assessed for nutritional status at the admission time using the 2002 NRS and were classified into two groups, malnutrition (NRS≥3) and no malnutrition (NRS0.05).
Results and Conclusion: According to the results, malnutrition is associated with an increase in duration of hospitalization in stroke patients.

Child Neurology

Gross Motor Function Classification System: A functional measurement for cerebral palsy

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Background: Cerebral palsy (CP) is the most common physical disability in childhood. Traditionally, CP has been classified using a combination of the motor type and the topographical distribution. These days, different evaluation systems are used. The Gross Motor Function Classification System (GMFCS) is the most recognized of the functional classification measures in CP. In other words, this classification system describes the level of gross motor skills of the child. This article describes some advantages of this system.
Methods: We conducted a search in Web of Science, PubMed, Scopus, Medline, SID and Google Scholar databases. The key words of Gross Motor Function Classification System, cerebral palsy and occupational therapy were used. Articles describing and introducing this tool from 2000 to 2021 were selected.
Results: The GMFCS provides a common language for a practitioner that is meaningful, quick and easy to use. It also helps the therapist to follow a more accurate treatment plan.
Conclusion: This system demonstrates the ability of children in everyday life. In fact, a simple assessment can determine the children with CP needs.

Is developmental coordination disorder an important problem in children?

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Background: Long term impact of Developmental coordination disorder (DCD) is poorly understood however it is a relative common disorder. It is thought to affect around 5% of school-aged children. Deficits in both fine and gross motor skills have a significant impact on a child's activities of daily living or school productivity.
Methods: We conducted a search in Web of Science, PubMed, Scopus, Medline, SID and Google Scholar databases. The key words of occupational therapy, developmental coordination disorder, participation, occupational performance and children were used. Published original articles from 2010 to 2020 were considered.
Results: When children with DCD do not receive early interventions, they usually experience participation restrictions in academic, vocational, recreation and family life areas. This group of children is more likely to have persistent difficulties with reading, social communication and hyperactivity/inattention, which all affect educational achievement.
Conclusion: Early treatment can reduce the Occupational performance problems of these children. For this purpose, greater understanding of DCD among educational and medical professionals and policy makers is crucial to improve the support provided for these individuals.

Neurosurgery

Nonneoplastic tumor-like lesions of the central nervous system

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Nonneoplastic tumor-like lesions of the central nervous system present a diagnostic challenge to the neurologist and neurosurgeon. The neurological complications of tumefactive demyelination, infectious disease, and idiopathic autoimmune inflammatory disease, mimic neoplastic disease of the brain. these diseases share clinical, radiographic, and pathologic features with nervous system tumors, but they are most often treated nonsurgically. Istarted stereotaxic biopsy of the brain lesions since 1988 and many interesting cases in this field referred to me for diagnostic biopsy. The clinical presentation, diagnostic approach, radiographic findings, and treatment strategy of some of these neoplastic mimics is discussion of this presentation.

A novel technique for reconstruction of hand in tetraplegia: can we change tetraplegia patient to paraplegics?

Mohammadreza Emamhadi

Background: Fifty-six percent of spinal cord injuries (SCI) result in quadriplegia. Most of cervical SCI occur C5, 6 vertebrae, which involve C6, 7 cord segments. These patients are left with good shoulder function and elbow flexion. In majority of them, wrist extension is also preserved but elbow extension and hand movements are impaired. We used a new surgical technique (nerve transfers) focusing on restoring of elbow extension, and hand opening and closing to improve function and quality of life.
Methods: We performed a total of 18 nerve transfers, in 9 upper limbs in 5 patients. Brachialis branch of musculocutaneous nerve was transferred to anterior interosseous nerve for fingers flexion and the nerve to the supinator was transferred to the adjacent posterior interosseous nerve to regain thumb and fingers extension.
Results: After an average of 18 months follow-up, one patient was excluded, thumb extension achieved M3 in 5 upper limbs and M4 in 2 and Finger extension scored M4 in all, according to the British Medical Research Council scale (MRC). All patients regained muscle Strength 4/5 function (MRC) for the FDP (first-and second-digit). No donor-site deficits were observed.
Conclusion: The nerve transfer techniques have been used for reconstruction of brachial plexus. More recently nerve transfers are effective for restoring of elbow and thumb extension, and finger extension and flexion in patients with cervical SCI. Nerve transfer, is a valuable method for restoration of hand function following SCI.

CNS Infections

Evaluation of the relationship between cognitive functions and inflammatory processes in Covid-19 patients

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Due to its neurotrophic nature, SARS-Cov-2 can invade CNS and result in transient or permanent cognitive impairment through triggering inflammatory responses and cerebral hypoxia. Since hallmark pathophysiologic finding of covid-19 infection is a cytokine storm and potential connection between inflammatory responses and cognitive function could be assumed, we reviewed reports including cognitive dysfunction of recovered COVID-19 patients and tried to clarify the interrelationship of inflammation with cognitive status of patients.

Based on published data, cognitive performance of Covid-19 recovered cases was exacerbated during some cognitive tasks such as Continuous Performance Test (CPT). Cognitive impairments of these patients were mild and mainly observed in sustained attention domain suggesting a frontal lobe dysfunction. Reportedly, there was a significant correlation between verbal fluency and executive function such as continuous attention and C-reactive protein (CRP) levels in COVID-19 patients. However, the underlying mechanisms of the high CRP related cognitive impairment is unknown, studies have proposed that CRP has an early effect on frontal lobe functioning. Taken together, either in acute phase or the long run, executive dysfunction may be anticipated to be a part of neurological subsequences of frontal lobe infection by covid-19 virus. Also, kynurenine pathway (KP) a tryptophan metabolite, is considerably activated in patients with COVID-19. KP metabolites have roles in regulating both inflammatory/immune responses and neurological functions. While the limbic, hippocampus and basal ganglia contain more inflammatory mediators and enzymes than other brain areas, neurocognitive processes such as memory, attention and emotion are more susceptible to viral invasion.

Novel coronavirus disease (Covid-19) and central nervous system complications: what neurologist need to know

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The novel coronavirus (Covid-19) is a family of large enveloped non-segmented positive-sense RNA viruses which has been considered as a global health concern as it has a very high transmissibility potential. Regarding to the similarity of the virus to SARS-CoV, it is postulated that the Covid-19 accumulates mainly in the nasal epithelia and lower respiratory airways. However, there is evidence suggesting the Covid-19 neurotropism which might contribute to respiratory failure. Here in we aim to review the central nervous system complications of the Covid-19 since the emergence of the virus.

Stroke or CJD?

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A 60 years old woman came to neurologic clinic due to right hemiparesis, scanning speech and memory impairment from 2-3weeks ago. There was no history of hypertension, diabetes, hyperlipidemia, cardiac disorders or positive familial history. she has been treated with ASA & Plavix due to acute ischemic stroke diagnosis. But during this time, the clinical symptoms progressed. In clinical reevaluation there was anxiety, insomnia, urinary incontinency and cognitive impairment. Therefore, second brain MRI, autoimmune encephalitis panel tests and CSF study were requested. In second brain MRI was seen T2/FLAIR hyperintensities within asymmetric bilateral fronto-parieto-occipital cortex that was shown diffusion restriction on DWI/ADC sequences. serum and CSF autoimmune panel tests were negative but increased levels of proteins 14-3-3 were detected in CSF. Diagnosis was sCJD. Creutzfeldt-Jakob disease (CJD) is a spongiform encephalopathy that results in a rapidly progressive dementia and other non-specific neurological features and death usually within a year or less from onset. It's not known what triggers sporadic CJD, but it may be that a normal prion protein spontaneously changes into an abnormal prion, or a normal gene spontaneously changes into a faulty gene that produces abnormal prions. Initial neurological symptoms of sporadic CJD can include: balance and co-ordination problems, slurred speech, dizziness, double vision and hallucinations. According to this patient it can be concluded that in patients with symptoms of stroke if symptoms progressed and cognitive symptoms were obvious You have to think about the rare disorders like autoimmune encephalitis or CJD.

Cerebellar artery aneurysm due to mucormycosis, rare cause of Subarachnoid hemorrhage

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True mucormycosis aneurysms are extremely rare cerebrovascular lesions with a dismal prognosis. Rhinocerebral form of the disease mainly affects diabetic or immunocompromised patients. mucormycotic have specific tropism for blood vessels leading to mucorthrombosis and less often to mycotic aneurysm. We report on a patient initially presenting with fever, facial swelling. He was known case of diabetes mellitus from 2 years. In examination he was had cavernous syndrome;left frozen eye and eye ptosis.V1 and V2 of fifth cranial nerve involvement with Bell's palsy in left side of facial. Paranasal CT scan found left ethmoid sinusitis. Rhino-orbital-cerebral mucormycosis confirmed with pathology. Brain MRI showed acute cerebellar infarction. Suddenly level of consciousness decreased, Brian CT preformed and Showed SAH, with CT angiography SCA aneurysm diagnosed after a SAH. why is this case important.1. cavernous sinus pathology because of mucormycosis.2. Aneurysm SAH.3.Cerebellar infarction as a heralding sing of an SCA aneurysm. As SAH due to true mycotic aneurysmal rupture is uniformly associated with a fatal outcome. Management of patients suffering from mucormycosis should be multidisciplinary and initiated without delay.

Neuroimaging

Headache with leptomeningeal enhancement with low CSF glucose: Case Report and review article

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In this study, we describe a rare case of disseminated CNS malignancy in a 24-year-old woman patient. The patient with headache, vomiting and vision loss was diagnosed with non-obstructive hydrocephalus and papilledema. Initial MRI revealed mild meningeal enhancement, however subsequent studies revealed Hydrocephalus, bilateral extradural and leptomeningeal enhancement of the brain and spinal cord. Elevated pressure and protein level, normal cytology in cerebrospinal fluid (CSF). The patient's symptoms and signs not improved after a ventriculoperitoneal shunting surgery. evaluation for infectious and inflammatory diseases (i.e., sarcoidosis, vasculitis) was performed and all of them were normal but repeated lumbar puncture revealed low CDS glucose until 20 mg/dl. Biopsy was eventually obtained from spinal mass with pathology report confirming leptomeningeal oligodendrogliomatosis. We discuss the recent description in literature of this rarely reported diagnosis. It has a unique clinicopathological identity, which can be easily mistaken for an inflammatory process. The diagnosis of this tumor can be complicated due to the rather nonspecific clinical presentation and findings on imaging.

Peripartum cerebrovascular events from imaging perspective

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The average age of pregnancy has increased from 24.6 to 27.2 in the past 30 years, increasing pregnancy-associated complications. Many of these neurological diseases can lead to devastating complications if not recognized early. As neurological diseases contribute to approximately 20% of maternal deaths, it is important to identify these at-risk population. Cerebrovascular complications are classified into ischemic infarctions, subarachnoid hemorrhage, eclamptic encephalopathy, postpartum cerebral angiopathy, and cerebral venous thrombosis.

Some are easily recognized by obstetricians and are managed without significant neurological input unless seizures develop. Others are relatively benign, but should be recognized by neurohospitalists as they are often reasons for consults. Some diseases initially present with nonspecific symptoms such as headache. However, headache is a common complaint in pregnant women and distinguishing the benign headache from one that is a sign of serious disease is often not considered until serious neurological complications develop.

Computed tomography scanning is insensitive to many of the acute neurologic conditions that affect pregnant and postpartum women. A CT study should be avoided due to a significant increase of the X-ray exposure and to the necessity of administering intravenous contrast unless the information is critical to guide therapy. There is no evidence of adverse fetal effects in humans to the magnetic field exposure for magnetic resonance imaging (MRI). Although a possible teratogenic effect has been found in some studies on animal models, MRI is the preferred imaging option in pregnancy. This review aims to highlight on determinative neuroimaging findings of main cerebrovascular events in peripartum period.

Spinal cord lesions: clinical and radiological approach

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In patients with myelopathy, spinal cord signal abnormality on MRI, particularly increased T2 signal, can occur with a wide variety of diseases intrinsic and extrinsic to the spinal cord. To arrive at a specific diagnosis for such myelopathic signal abnormality or a limited imaging differential diagnosis, additional clinical and imaging features must be evaluated. Additional imaging features include the cross-sectional pattern of involvement, the longitudinal extent, cord expansion, associated findings in the spinal cord, enhancement, any extrinsic compressive/adhesive cause of myelopathic signal, and findings outside the spinal canal.

IV administration of gadolinium with postcontrast T1-weighted imaging performed in at least the sagittal plane, if not also the axial plane, is recommended for complete evaluation of suspected intrinsic myelopathy with blood–spinal cord barrier breakdown. Inclusion of diffusion-weighted imaging in the MRI protocol is suggested for any hyperacute or acute myelopathy, particularly to help assess for infarct. The central canal can be physiologically prominent and thereby evident as a normal variant on MRI this is thin, usually only a few millimeters in diameter, and should not be confused with a syrinx. The normal gray matter is slightly more hyperintense than the white matter, which may simulate abnormal T2 hyperintensity anteriorly and centrally on sagittal T2-weighted images. This presentation focuses on causes of myelopathy for which advanced imaging (particularly MRI but also CT or CT myelography) can provide specific diagnoses or short lists of differential considerations.

Sleep Disorders

Effects of melatonin and vitamin E on plasma MDA level, sleep quality in shift working nurses

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Background: Melatonin regulates sleep-wake cycle and has antioxidant properties. Vitamin E has also antioxidant effects. The present study aimed to investigate the effect of melatonin and vitamin E on the plasma MDA level and the sleep quality of shift working female nurses.
Methods: A total of 46 female nurses were selected randomly from hospitals in Arak and divided into four groups: (1) melatonin (3 mg/day) + vitamin E (200 IU/day); (2) vitamin E; (3) melatonin; (4) vehicle. Before and after two months of consumption, the PSQI was completed by participants, plasma MDA level was measured. Finally, the findings were compared in each group before and after the intervention and also between experimental groups.
Results: The mean sleep quality was significantly improved compared to the baseline in interventional groups. Oxidative stress levels in the rotational shift nurses treated with vitamin E plus melatonin were significantly different before and after intervention, so that plasma MDA levels decreased significantly after co-administration of vitamin E and melatonin.
Conclusion: Our results revealed that simultaneous use of melatonin and vitamin E was able to improve sleep quality and decreased plasma level of MDA.

Prolonged sleep apnea in two patients with a history of opium abuse: A case report

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Background: Obstructive sleep apnea (OSA) is a highly prevalent sleep-disordered breathing (SDB).
Case Presentation: Two 53 and 51-year-old male cases with daytime sleepiness and opium abuse and severe sleep apnea and long respiratory events duration (200 and 275 seconds respectively) noted in polysomnography were reported at Ebn-e-Sina and Razavi hospitals, in Mashhad, Iran. After positive airway pressure (PAP) therapy respiratory events resolved and patients' daytime alertness improved.
Conclusion: The long duration of sleep apnea could be the result of opium abuse. Therefore, drug history should be carefully considered in the evaluation of SDB patients. The PAP device was effective in the management of sleep respiratory events and the improvement of patient's complications.

Sleep quality and related determinants among stroke patients: results of a cross-sectional study

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Background: Effective rehabilitation and better quality of life among stroke patients are function of several factors such as quality and pattern of sleep. The present study aimed to evaluate sleep quality and related determinants in such patients.
Methods: A cross-sectional study was conducted from October 2019 to December 2019 among stroke patients who admitted to Sina Hospital, Hamadan, Iran. Pittsburgh Sleep Quality Index (PSQI) was used in order to determine the sleep quality. Significant determinants of the global score of PSQI were identified via multivariable linear regression.
Results: A total of 97 stroke patients (age 67±79 years, 55.7% male) were enrolled into the study. The prevalence of poor sleep was 0.84 (95% CI: 0.75, 0.91) in stroke patients. Patients with nervous tension, with surgical treatment method and with cardiac problems had a predicted increase of 1.98, 3.50 and 2.27 in the mean of the global PSQI score (P≤0.05), respectively. The association between smoking and global PSQI score was negative with (β= -1.71, 95% CI: -3.42, -0.004).
Conclusion: Smoking, nervous tension, treatment method, results of CT scan and cardiac problem were the most effective factors on post-stroke sleep disorder.

Neurophysiology

Palm vitamin E reduces locomotor dysfunction and morphological changes induced by spinal cord injury and protects against oxidative damage

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Background: Spinal cord injury (SCI) occurs following different types of crushes. External and internal outcomes of SCI are including paralysis, cavity, and cyst formation. Effects of dietary derived antioxidants, such as palm vitamin E on central nervous system (CNS) encourage researchers to focus on the potential therapeutic benefits of antioxidant supplements. In the present study, experiments were carried out to evaluate the neuro-protective effect of the palm vitamin E on locomotor function and morphological damages induced SCI.
Methods: Seventy-two male rats (Sprague-Dawley) were randomly divided into four groups: sham (laminectomy); control (supplemented with the palm vitamin E at a dose of 100 mg/kg/ day); untreated-SCI (partial crush, 30–33% for 20 sec); treated-SCI (partial crush, 30–33% for 20 sec supplemented with the palm vitamin E at a dose of 100 mg/kg/day).
Results and Conclusion: The treatment with the palm vitamin E significantly improved the hind limb locomotor function, reduced the histopathological changes and the morphological damage in the spinal cord. Also, the palm vitamin E indicated a statistically significant decrease in the oxidative damage indicators, malondialdehyde (MDA) level and glutathione peroxidase (GPx) activity in the treated-SCI compared to the untreated-SCI.

Antidepressant–like effects of fish, krill oils and Vit B12 against exposure to stress environment in mice models: current status and pilot study

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Oxidative stress has significant role in pathophysiology of any kind of depression through actions of free radicals, non-radical molecules, and unbalancing antioxidant systems in body. In the current study, antidepressant responses of fish oil (FO), Neptune krill oil (NKO), vitamin B12 (Vit B12), and also imipramine (IMP) as the reference were studied. Natural light was employed to induce stress in the animals followed by oral administration of the drugs for 14 days. The antidepressant effect was assessed by tail suspension test (TST) and forced swimming test (FST), antioxidant enzymes and oxidative stress markers were then measured in the brain tissue of the animals. The administration of FO and NKO could significantly reduce the immobility of the animals; while, increasing climbing and swimming time compared to the normal saline in CUS-control group in TST and FST, similarly to IMP but not with Vit B12. Vit B12 could not effect on SOD activity and H2O2 level, but, cause decrease of the malondialdihydric (MDA) level and CAT activity, as well as increased the GPx and GSH activities. The rest treatments led to decrease of MDA, H2O2 levels and CAT activity and increase of GPx, SOD, GSH activities.

Quantitative EEG in chronic back pain patients

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Chronic pain is one of the most frequent chronic diseases. The largest subgroup of chronic pain conditions is lower back pain which is often considered as the one condition causing the largest financial damage to the economy in terms of treatment and workdays lost. The literature search was performed using the electronic databases in PMC, Science Direct, Neuroscience, PubMed and Cochrane library databases. We also used the following search terms: “QEEG”, ”Back Pain”. The present information is available reviewing the articles from 2000 to 2021 through the search of the resources. Considerable information on the central neural mechanisms of chronic severe neurogenic (or neuropathic) pain has been obtained from studies on specific thalamocortical patterns. According to this approach there is a relationship between neurogenic pain and thalamocortical dysfunctional rhythmic activity. This pattern originates in the presence, due to thalamic diafferentiation of low threshold calcium spikes (LTS) with a mean interburst discharge rate of 4 Hz at the limit between the delta and theta ranges.