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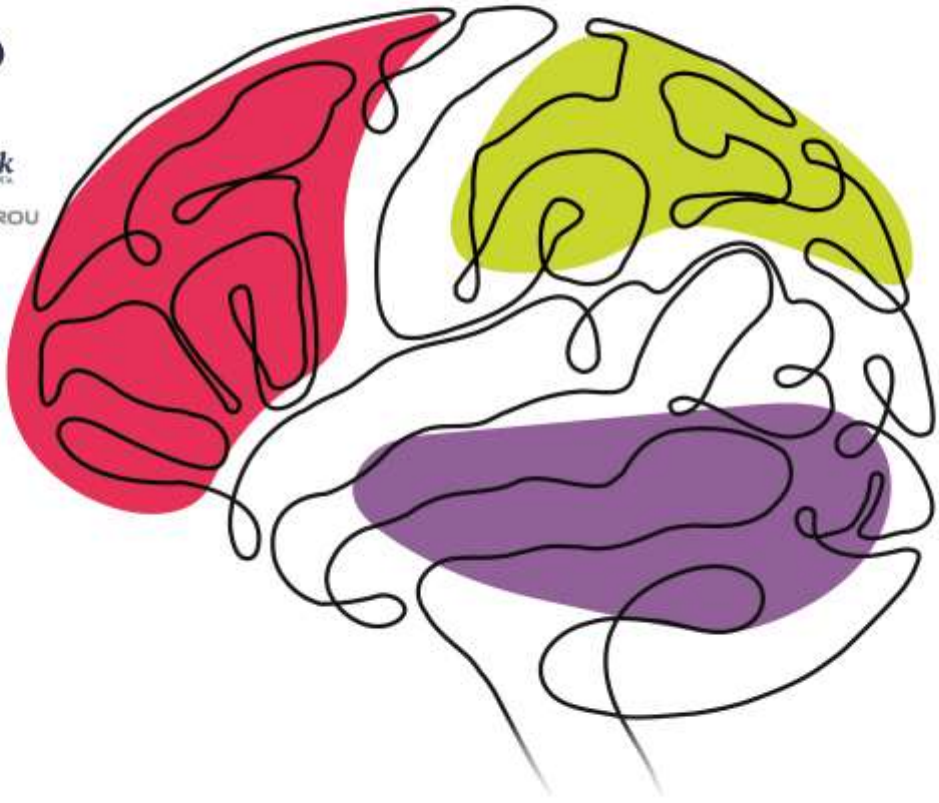
20th IRANIAN Epilepsy Congress

Iranian Epilepsy Association

25 - 27 October 2023

Shahid Beheshti University
Tehran,Iran

ABSTRACT BOOK



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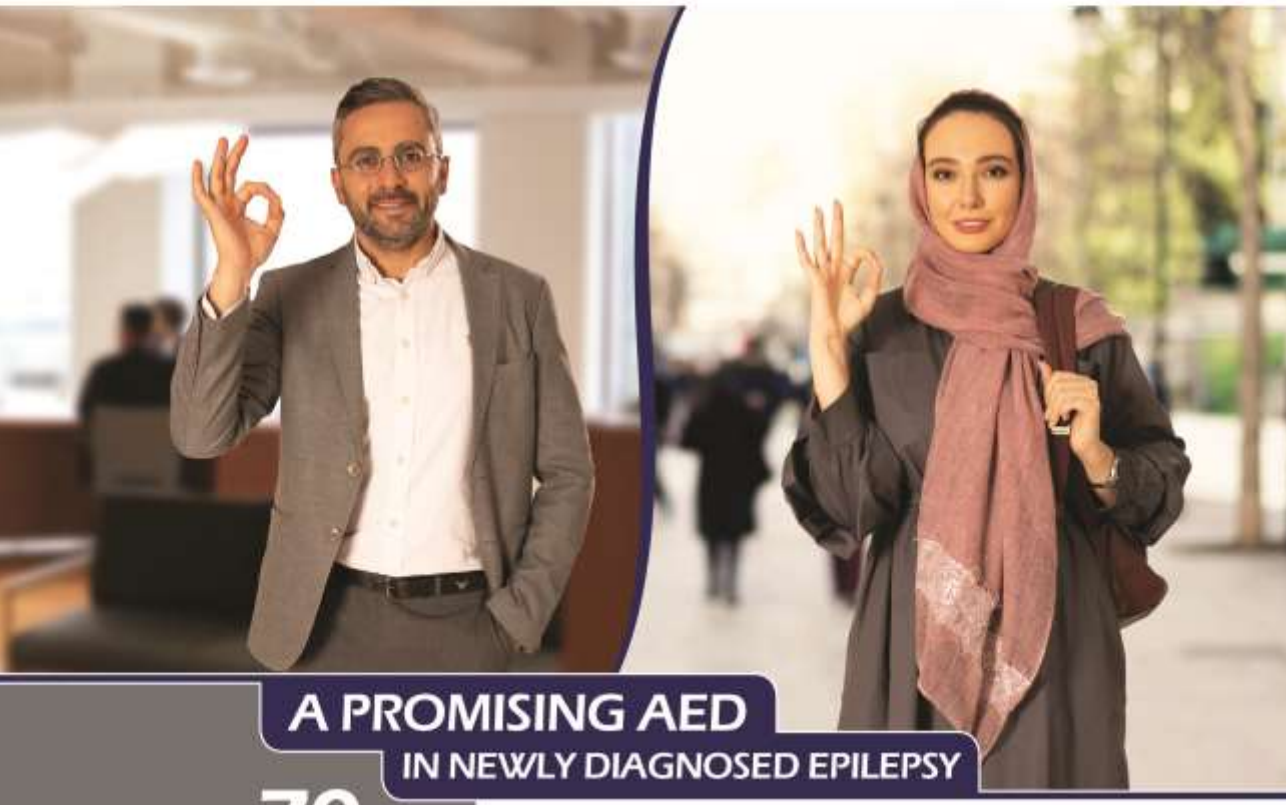

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Reference: Neurology 2007; 68: 402-408

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Welcome Messages

Seyyed Sohrab Hashemi Fesharaki, MD

President of Congress
Professor of Neurology & Epileptologist

In the Name of God, the Compassionate, the Merciful

I would like to express my sincere gratitude to my colleagues for selecting me to host the "20th Iranian Epilepsy Congress." This year, we are thrilled to announce that, with the active participation of esteemed neurology professors and the collaboration of the Iranian Neurology Association, the Iranian Epilepsy Association, the Iranian chapter of ILAE, and the dedicated leadership of Dr. Reza Azizi Malamiri as the Chairperson, the 20th International Epilepsy Congress of Iran will take place.

The congress will cover a wide array of essential topics, including the social challenges of epilepsy in Iran, updates in the management of epilepsy in both children and adults, innovative diagnostic and treatment approaches, advancements in neuroimaging, and strategies for drug-resistant epilepsy, among others.

We anticipate that the congress will be greatly enriched by the cooperation and expertise of seasoned professors who share a keen interest in these subjects, ultimately resulting in a highly informative and productive event.

In closing, I extend my heartfelt appreciation to the dedicated organizers of this congress, whose unwavering commitment and tireless efforts have elevated this program to a magnificent level.

Welcome Messages

Reza Azizi Malamiri, MD

Scientific Secratory of Iranian epilepsy congress
Pediatric Neurologist

In the name of God,

Every physician's mission is to enhance the quality of life for their patients. Achieving this objective requires possessing up-to-date knowledge, maintaining an appropriate attitude, accumulating sufficient experience, and attentively considering patients' preferences. However, the relentless busyness of today's life poses a significant challenge for physicians in their quest to stay current.

One effective method for physicians to stay abreast of the latest developments is through participation in well-organized scientific conferences. These conferences not only offer a platform for the exchange of knowledge but also provide opportunities for young physicians to connect with seasoned researchers, thereby inspiring their future career paths.

As the Scientific Secretary of the 20th Iran Epilepsy Conference, I am honored to be of service. It is my hope that this event will serve as an invaluable forum for the exchange of ideas and the utilization of the knowledge and experiences of epileptologists and epilepsy researchers alike. I extend my heartfelt gratitude in advance to the dedicated scientific and executive teams who have made this event possible.

Best Regards,

Congress Organization

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Secretariat of Epilepsy Congress: **Reza Azizi Malamiri, MD**

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20th Iranian Epilepsy Congress

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A Case series of 3 patients with Tuber cinerum hamartoma

Sam Mirfendereski [1] © Ⓟ

[1] Department of Radiology,Isfahan university of medical sciences

Abstract: Background: Hamartoma of the tuber cinereum can be associated with various types of epilepsy, including gelastic seizures. The dedicated MRI of the hypophysis and a meticulous evaluation of hypothalamic structures are crucial for diagnosing tuber cinereum hamartoma. Methods: In this paper, we review the normal anatomy of the hypothalamus and describe the MRI findings of three patients. Findings: Tuber cinereum hamartoma was identified in the MRI scans of three patients with seizures. These findings are comprehensively described and illustrated in this article. Conclusion: Radiologists should possess a thorough understanding of the normal anatomy and imaging characteristics of tuber cinereum hamartoma to facilitate accurate diagnosis. Keywords: Tuber Cinereum Hamartoma, MRI

Epilepsy syndrome in infants and neonate

Mohammad Barzegar [1] © ℗

[1] Mardani Azari children hospital Tabriz university of medical sciences

Abstract: Epilepsy syndrome in infants and neonate Barzegar M MD Professor of Pediatric neurology and Clinical neurophysiology Mardani Azari Children Hospital- Tabriz University of Medical Sciences The International League Against Epilepsy (ILAE) has defined an epilepsy syndrome as 'a distinctive combination of clinical and electroencephalographic features, often accompanied by specific etiological factors such as structural, genetic, metabolic, immune, or infectious causes.' Diagnosing a syndrome in an individual with epilepsy frequently has significant implications for prognosis and treatment. Syndromes often manifest differently based on age and are associated with a range of specific comorbidities. Each syndrome template encompasses epidemiological data, clinical context, natural history, seizure types, electroencephalography (EEG) findings, neuroimaging results, genetics, and a differential diagnosis. The ILAE has proposed a framework for classifying and defining epilepsy syndromes that occur during the neonatal period and infancy. Syndromes can be broadly categorized into two groups: self-limited syndromes, where spontaneous remission is likely, and developmental and epileptic encephalopathies (DEEs), which involve developmental impairment related to the underlying etiology independent of epileptiform activity and the epileptic encephalopathy itself. Etiology-specific epilepsy syndromes are caused by a specific etiology associated with a clearly defined, relatively uniform, and distinct clinical phenotype in most affected individuals, along with consistent EEG patterns, neuroimaging findings, and/or genetic factors. In this age group, most etiology-specific syndromes fall into the category of developmental and epileptic encephalopathies (DEEs).

Treatment for seizures in catamenial epilepsy

Nasim Tabrizi [1] © Ⓟ

[1] Department of Neurology, Mazandaran University of Medical Sciences, Sari, Iran

Abstract: Approximately 10-70% of women with epilepsy experience catamenial seizure patterns during their reproductive years. These patterns are characterized by a more than twofold increase in seizure frequency during specific phases of the menstrual cycle, namely the perimenstrual (C1), periovulatory (C2), and luteal phase (C3). Catamenial epilepsy poses a formidable challenge in the realm of medical treatment due to the limited array of therapeutic options available and their potential impacts on various aspects of women's health, including reproduction, menstrual cycle regulation, bone health, and cardiovascular well-being. When addressing catamenial epilepsy in women with regular menstrual cycles, healthcare providers often weigh the advantages and disadvantages of hormonal and non-hormonal therapies. Non-hormonal treatment strategies encompass short-term interventions with medications such as clobazam or acetazolamide. In certain cases, physicians may recommend an adjustment in the dosage of antiseizure medications during vulnerable days within the menstrual cycle. Conversely, for women grappling with irregular menstrual cycles, a more assertive approach typically involves the administration of synthetic hormones or gonadotropin-releasing hormone analogs, aiming to achieve complete cessation of menstruation. This lecture delves into the multifaceted landscape of therapeutic choices available to women affected by catamenial epilepsy. It meticulously explores both the advantages and disadvantages of these treatment options while offering valuable recommendations to guide healthcare providers and patients alike in making informed decisions under challenging circumstances. Understanding the nuances of catamenial epilepsy and its treatments is paramount to enhancing the quality of life for the women it affects.

"Efficacy of different kinds of the ketogenic diet in Intractable Seizure, Neurometabolic disease and Autism (Based on the Registry System)"

Maryam Kachuei [1] © Ⓟ, Parvaneh Karimzadeh [2]

[1] Firouzabadi hospital,Iran university of medical sciences
[2] Pediatric neurology research center,shahidbeheshti university of medical sciences

Abstract: Abstract Background: The ketogenic diet, characterized by high fat, moderate protein, and low carbohydrate intake resulting in increased ketone body production, has shown promise in various medical conditions. In this study, we aimed to investigate and assess the beneficial effects of the ketogenic diet. Additionally, we introduced the first registry system for patients undergoing ketogenic diet treatment in Iran. Methods: This cross-sectional study included 65 patients, comprising 38 boys and 27 girls with a mean age of 7.8±3.09 years, who had epilepsy, autism, or neurometabolic diseases and were treated with the ketogenic diet at the pediatric neurology clinic of Mofid Hospital in Iran from 2019 to 2022. Information about these pediatric patients was systematically recorded. The sample size encompassed all children aged 1 to 18 years referred to pediatric neurology departments with refractory epilepsy, autism, and neurometabolic diseases amenable to treatment with the ketogenic diet. Results: The ketogenic diet led to a significant reduction in the frequency of seizures at both 1 and 3 months after initiation, compared to the period before commencing the diet. Moreover, there was a marked improvement in motor skills, language development, and cognitive abilities following the ketogenic diet. Conclusion: The ketogenic diet effectively controlled the frequency of seizures and had a positive impact on motor skills, language development, and cognitive function in the pediatric patients studied. Keywords: children, epilepsy, ketogenic diets, registration.

A challenging case of intractable epilepsy

Hoda Naghshineh [1] © ℗

[1] Tehran University of Medical Sciences

Abstract: Background: Approximately 30% of patients with focal epilepsy prove resistant to conventional pharmaceutical treatments. In cases where drug-resistant epilepsy is focal, roughly 25% of these patients can benefit from invasive EEG recording. Case Presentation: This presentation delves into a complex case of intractable epilepsy, providing an in-depth review of a systematic approach to establishing a well-defined anatomo-electro-clinical hypothesis. Results: The hypothesis is founded upon an analysis of seizure semiology, structural imaging, ictal and inter-ictal EEG findings, as well as a comprehensive neuropsychiatric evaluation. Discussion and Conclusions: This comprehensive approach aids in the identification of suitable candidates for invasive EEG investigations and considers critical factors such as whether the epileptogenic zone is likely to be unifocal or widespread, and whether surgical intervention is a viable option. Additionally, it underscores the occasional potential for MRI findings to be misleading.

A patient with band heterotopia and medication resistant epilepsy

Soheila Rezakhani [1] © Ⓟ

[1] Neurologist Epileptologist

Abstract: Background: Heterotopia refers to the presence of normally developed neurons displaced to abnormal locations due to abnormal neuron migration. These malformations manifest in various forms, with neurons located anywhere between the ventricle and the pia mater. Heterotopia is typically classified into subcortical forms, which can be laminar (band heterotopia) or nodular, and subependymal or periventricular forms, which are often nodular in appearance. Patients with epilepsy related to periventricular nodular heterotopia (PNH) often exhibit resistance to antiepileptic drugs, necessitating focal therapeutic interventions. PNH lesions are readily identifiable using MRI and are distributed along the lateral ventricles, typically with a predilection for the anterior or posterior regions. These lesions may be unilateral or bilateral and single or multiple. Anterior predominant bilateral PNH is a well-known X-linked disorder caused by mutations in the FLNA gene. Method: This report presents a case of bilateral band heterotopia treated with epilepsy surgery at our institute. Findings: Scalp EEG often reveals focal interictal epileptiform discharges (IEDs) consistent with the location of PNH. However, IEDs can also occur independently of the PNH location and may occasionally be found in the contralateral hemisphere. In patients with focal epilepsy associated with PNH, intracerebral EEG is considered the gold standard for delineating the epileptogenic zone. Conclusion: Epilepsy associated with PNH tends to be drug-resistant, and individuals with this type of lesion may be suitable candidates for focal surgical interventions. Recognizing the role of epilepsy surgery in managing PNH-related epilepsy is crucial, as it can offer potential relief for patients who do not respond adequately to medical treatment. Key Words: Heterotopia, epilepsy, surgery.

Abnormal neuroimaging findings of pediatric patients with epilepsy

ندا پاک [1] © Ⓟ

[1] Tehran university of medical science

Abstract: Imaging plays a pivotal role in the evaluation and management of pediatric patients with seizure disorders. Structural neuroimaging, particularly magnetic resonance imaging (MRI), is instrumental in determining the etiology of focal epilepsy and revealing anatomical changes associated with seizure activity. Various underlying causes of seizures in individuals with focal seizures, such as mesial temporal sclerosis, vascular anomalies, low-grade glial neoplasms, and malformations of cortical development, can be readily diagnosed through MRI. Accurately identifying and localizing epileptogenic foci are critical steps in the preoperative assessment of intractable seizures. However, some patients exhibit no abnormalities on routine MRI scans, necessitating the use of advanced imaging techniques. Positron emission tomography (PET), functional MRI, and diffusion tensor imaging-tractography are emerging methods in this regard, with PET being the most commonly used interictal functional neuroimaging technique, capable of revealing focal hypometabolic regions concordant with seizure onset. For the detection of subtle lesions, a tailored MRI approach designed for epilepsy cases is recommended. This includes three-dimensional (3D) T1-weighted images, gradient echo images, and 3D fluid-attenuated inversion recovery (FLAIR) images with isotropic voxels. Additionally, high-resolution coronal and axial T2-weighted images with a slice thickness of 2-3 mm are valuable for identifying focal cortical dysplasia (FCD) and mesial temporal sclerosis (MTS). A 3D susceptibility-weighted imaging (SWI) sequence is essential for detecting microbleeds and faint calcifications. Coronal T1 inversion recovery enhances the delineation of the gray-white matter interface, while 3D T2 and diffusion-weighted imaging (DWI) help identify possible ischemic lesions. In cases of inflammation or tumors, a post-contrast scan is necessary. Utilizing a 3T MRI system is preferable over regular 1.5T machines, and the successful outcome of surgical interventions often hinges on the use of advanced brain imaging techniques to pinpoint the epileptic focus.

An interesting patient with medication resistant epilepsy after autoimmune encephalitis

Mohammad-Amin Farzi, MD-Epileptologist [1] © Ⓟ

[1] Tehran university of medical sciences

Abstract: An interesting patient with medication resistant epilepsy after autoimmune encephalitis Mohammad-Amin Farzi, MD-Epileptologist Background: Autoimmune-related epilepsy is a prominent topic in the field of epilepsy. In this presentation, we discuss a case of a patient with this condition. Methods and Findings: We present the case of a 40-year-old female who initially presented to the hospital with seizures two years ago. Due to prolonged episodes of decreased consciousness, she required intubation. Brain MRI conducted at that time revealed bilateral mesial temporal hyperintensity. The patient was diagnosed with autoimmune encephalitis (AE) and received treatment with intravenous immunoglobulin (IVIG) and intravenous corticosteroids. Following treatment, her condition improved, and she was successfully extubated. Given the diagnosis, maintenance therapy with rituximab was initiated. Despite comprehensive autoimmune panel testing, no positive antibodies were identified. The patient was discharged home, but she continued to experience recurrent seizures despite the successive addition of antiseizure medications (ASMs) during a two-year follow-up. A repeat brain MRI showed bilateral mesial temporal sclerosis. As a result, the patient was admitted to the epilepsy monitoring unit. Video EEG monitoring revealed bilateral mesial temporal seizure onset, prompting the decision to proceed with stereo electroencephalography (SEEG) and depth electrode implantation. The SEEG identified the left mesial temporal region as the seizure onset zone. Subsequent neuropsychiatric assessments, including the Wada test, indicated lateralization of language and memory predominantly to the right side. Consequently, the patient underwent left subtotal amygdalohippocampectomy. Following the surgery, the frequency and severity of seizures significantly decreased. Conclusion: This case underscores the emergence of drug-resistant epilepsy (DRE) after autoimmune encephalitis (AE) and highlights the importance of considering epilepsy surgery as a therapeutic option, similar to other drug-resistant epilepsies. Keywords: Autoimmune-related epilepsy, Drug-resistant epilepsy (DRE), Stereo EEG (SEEG), Epilepsy surgery, Subtotal amygdalohippocampectomy.

Antiseizure Medication polytherapy in pregnant women with epilepsy

Seyed Navid Naghibi [1] © ℗

[1] Ahvaz Jondishapur University of Medical Sciences

Abstract: Epilepsy is one of the most common neurological conditions, affecting approximately 50 to 70 million people worldwide. It has been reported that 0.3% to 0.5% of all pregnancies are impacted by epilepsy, necessitating ongoing antiseizure medications (ASMs). Results from several pregnancy registries in different parts of the world have demonstrated that in utero exposure to various AEDs (antiepileptic drugs) can lead to numerous adverse effects, including intrauterine death, major fetal malformations (MCMs), intrauterine growth retardation, cognitive impairment, and behavioral problems. However, the majority of women with epilepsy (WWE) will experience uncomplicated pregnancies and deliver healthy babies. While most women with epilepsy will have a normal and safe pregnancy, achieving a safe pregnancy for women with epilepsy requires pre-pregnancy care. This care should focus on fully controlling seizures with the minimum effective dose and number of ASMs, selecting medications with the fewest side effects for both the mother and the fetus, choosing an appropriate contraceptive method, and incorporating folic acid supplements. Approximately 20% of women with epilepsy during pregnancy require the use of more than one ASM to control seizures. Selecting the optimal drug combination that minimizes adverse effects on the fetus while maximizing benefits for the mother is of utmost importance. Therefore, managing polytherapy in pregnant women with epilepsy presents its own set of challenges. Keywords: Epilepsy, Antiseizure medications, Pregnancy

Borderland Between Epilepsy and Movement Disorder

Dr. Ahmad Chitsaz [1] © Ⓟ

[1] MD. Professor of Neurology, Isfahan University of Medical Sciences. Fellowship of Movement Disorders

Abstract: Background: Movement disorders (MD) and epilepsy (EP) often present with similar symptoms, making their differential diagnosis challenging due to their overlapping features. Distinguishing between EP and MD can be especially tricky when seizures manifest as motor phenomena without a change in consciousness, potentially leading to confusion with paroxysmal movement disorders (PMD). Conversely, attacks of PMD can be mistaken for seizures because they are sudden, unpredictable, transient, and may respond to antiepileptic drugs. Objective: Despite the overlap in their clinical presentation, EP and MD have distinct origins. EP arises from abnormal synchronous bursts of neuronal discharge, whereas PMD results from altered functioning of subcortical structures. The most significant difference between EP and MD lies in the loss of consciousness and the presence of abnormal electrical activity on electroencephalography (EEG) in EP. The primary similarity between EP and PMD is the presence of abnormal movements. EP that may mimic MD includes: Focal motor seizures, Epilepsia Partialis Continua, and tonic and dystonic posturing. MD that may mimic EP include: Tremor, dystonia, tics, choreoathetosis, hyperekplexia, and exaggerated startle reflex. PMD that may mimic EP include: Paroxysmal kinesigenic dyskinesia, dystonic posturing, colonic tics, and alternative high-beat tremor. Facial muscle movements due to partial seizures may mimic hemifacial spasm and facial dyskinesia. Nocturnal movements and episodic phenomena like parasomnia and REM sleep behavior disorder can mimic sleep-related epilepsy. Nocturnal Paroxysmal Dystonia, a subtype of frontal lobe epilepsy (FLE), may mimic dystonic movements and chorea during sleep. Conclusion: Early differential diagnosis between psychogenic non-epileptic seizures (PNES), PMD, and EP is crucial to prevent poor outcomes and guide appropriate therapeutic approaches. In refractory and severe cases, a multidisciplinary team collaboration becomes essential for accurate diagnosis and effective management.

Clinical presentation of autoimmune encephalitis

Behnam Safarpour Lima [1] © ℗

[1] Assistant Professor of Neurology, Fellowship in Epilepsy Shahid Beheshti University of Medical Sciences Imam Hossein Educational Hospital

Abstract: Autoimmune encephalitis (AE) encompasses a group of immune-mediated inflammatory disorders affecting the brain parenchyma, and it manifests with a diverse range of anatomic-clinical syndromes. Identifying autoimmune encephalitis early in its course is crucial, as it provides an opportunity for initiating early immunotherapy, leading to better outcomes. Clinical indicators, such as the sudden or gradual onset of drug-resistant seizures, cognitive deterioration, psychiatric symptoms, dysautonomia, and movement disorders, offer suggestive evidence of an autoimmune origin. Some seizure types can even serve as telltale signs of an underlying immune etiology; for instance, Faciobrachial Dystonic Seizures (FBDS) are highly indicative of anti-leucine-rich glioma-inactivated 1 (LGI1) encephalitis. Several diagnostic scoring systems have been developed to aid in the identification of patients with autoimmune encephalitis. Among these, the APE2 score and ACES score can be employed to select patients who may benefit from neuronal antibody screening.

Comparative Safety of Antiseizure Medication Monotherapy for Major Malformations

Torbjörn Tomson [1] © Ⓟ

[1] Department of Clinical Neuroscience, Karolinska Institutet, Stockholm, Sweden

Abstract: The first report of congenital malformations in children exposed prenatally to antiseizure medications (ASMs) was published in 1968. Since then, significant efforts have been made to identify the safest treatment options for pregnant women with epilepsy, as many of them require ASM treatment during pregnancy. This information could also be relevant to women of childbearing potential who are taking ASMs for non-epilepsy conditions. To achieve this goal, epilepsy and pregnancy registries were established approximately 25 years ago, with the specific objective of comparing different ASMs in terms of their risk of causing major congenital malformations (MCMs). Consistently, these registries have reported that valproate is associated with a higher risk of MCMs compared to other ASMs. In contrast, the risks associated with levetiracetam, lamotrigine, and oxcarbazepine have been relatively low. These findings have been supported by a recent Cochrane analysis. Additionally, some registries have reported an increased risk associated with topiramate, while others have observed a dose-dependent relationship with exposure to valproate, phenobarbital, and carbamazepine. Data on most of the newer ASMs are limited, making it difficult to draw firm conclusions about their safety during pregnancy. Continued support for the epilepsy and pregnancy registries is crucial to enable ongoing risk assessment for these ASMs and to provide valuable information for healthcare providers and women facing treatment decisions during pregnancy.

Comparison of the effectiveness of Lacosamide and Levetiracetam as adjuvant therapy in drug-resistant partial epilepsy

Mohammad Reza Najafi MD [1] © Ⓟ, Maryam Hosseini MD [2], Helia Hemmasian MD [3]

[1] Prof. of Neurology, Isfahan University of Medcal Sciences
[2] Resident of Neurology
[3] Assistant Professor of Neurology, Fellowship of epilepsy

Abstract: Background: Epilepsy is a neurological disorder characterized by recurrent seizures, with many patients not achieving complete seizure control using currently available antiseizure medications (ASMs). Levetiracetam (Levebel) and lacosamide (Lacsa) are two commonly used ASMs to manage various seizure types. This study aimed to assess the efficacy, tolerability, and safety of Levetiracetam and lacosamide in patients with drug-resistant focal epilepsy. Methods: This randomized controlled trial was conducted from March 2021 to October 2022 at the Neurology Department of Isfahan University of Medical Sciences. Eligible patients were randomly assigned in a 1:1 ratio to receive either Lacosamide (100-300 mg/day, based on individual response and tolerance) or Levetiracetam (1000-3000 mg/day). Baseline data, including seizure frequency over the preceding three months, demographic characteristics (age, gender), seizure type, and frequency, were collected. Patients continued treatment for three months and underwent monitoring at 1, 2, and 3 months during follow-up. Results: A total of 57 patients were enrolled, with a mean age of 38.07 ± 12.5 years. The majority (61.4%) were aged ≤ 40 years. Baseline seizure frequency did not significantly differ between the Lacosamide and Levetiracetam groups (P-value=0.487). Following 1-3 months of treatment, both groups showed a significant reduction in seizure frequency (P-value=0.002 for Lacosamide and P-value=0.001 for Levetiracetam). The response rate to treatment was higher in the Levetiracetam group (80%) compared to the Lacosamide group (63%), although this difference was not statistically significant (P = 0.15). Conclusion: This study suggests that Levetiracetam can be a valuable adjuvant therapy option for patients with drug-resistant partial epilepsy. Keywords: Efficacy, Outcome, Lacosamide, Levetiracetam, drug-resistant partial epilepsy

Depression, Psychologic distress and Sleep Quality in epilepsy patients: Comparison during and after the COVID-19 pandemic

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Abstract: Background: The emergence of the new coronavirus disease 2019 (COVID-19) has raised significant health concerns, marked by its rapid transmission rate. This study aimed to investigate the impact of the COVID-19 outbreak on depression, psychological distress, and sleep quality in patients with epilepsy. Methods: A total of seventy-six epilepsy patients and seventy-six non-epileptic individuals, admitted to our hospital from October to November 2021, were assessed for psychological distress, sleep quality, and depression using the Kessler Psychological Distress Questionnaire, Pittsburgh Sleep Quality Questionnaire, and Beck Depression Scale, respectively. These assessments were repeated in January and February 2023 to evaluate the lasting effects of the outbreak. Demographic and clinical data were recorded and analyzed using SPSS. Findings: Following the pandemic period, epilepsy patients exhibited a significant decrease in total Beck Depression Scale scores compared to the pandemic period ($P = 0.048$). Moreover, a significant difference was observed in the total scores of the Kessler Psychological Distress Questionnaire during and after the pandemic ($P = 0.032$). However, no significant difference in sleep quality was noted during and after the pandemic in patients with epilepsy ($P = 0.61$). In the control group, no significant differences were found in Beck, Kessler, and Pittsburgh questionnaire scores ($P > 0.05$). Notably, 26% of patients ($n = 20$) experienced an increase in seizure frequency after the pandemic period. Multivariate analysis identified the number of drugs and disease duration as predictors of increased seizure frequency. Beck Depression Scale scores correlated positively with disease duration, marital status, and seizure frequency. Patients of older age and lower educational levels were more likely to have higher scores in the Kessler Psychological Distress Questionnaire. Conclusion: The COVID-19 outbreak led to an increased tendency toward depression and psychological distress among patients with epilepsy. During public health crises, clinicians should not only prioritize seizure control in epilepsy patients but also address their mental well-being. Keywords: COVID-19; Depression; Sleep.

Epilepsy and ataxia: the hidden infection

Shadi Zamanian [1] ℗, Ebrahim Pourakbar [1] ©

[1] Social Security organization

Abstract: Background and Objectives: Whipple's disease, a rare condition caused by Tropheryma whipplei infection, can manifest with neurological symptoms in a subset of patients, including cognitive decline, epileptic seizures, and ataxia. This case report presents an atypical case of Whipple's disease with refractory seizures and emphasizes the importance of considering systemic complaints in evaluating refractory epilepsies with no apparent cause. Methods: This report details a single case presentation. Results: A 72-year-old patient with no significant medical history was initially admitted due to recurrent focal seizures characterized by speech impairment and eyelid myoclonus, progressing to bilateral tonic-clonic seizures. An EEG revealed predominantly left temporal epileptiform activity. The patient was treated with various antiepileptic drugs, including levetiracetam, valproate, phenobarbital, midazolam, and perampanel. Laboratory tests revealed hypothyroidism and vitamin B12 deficiency. Lumbar puncture, brain MRI, and screening for malignancy were all unremarkable. The patient was discharged with a combination of antiepileptic medications. Several years later, the patient returned to the ED with gait imbalance, double vision, diarrhea, and weight loss. Neurological examination revealed vertical nystagmus, dysarthria, limb and gait ataxia. Brain MRI remained normal, but cerebrospinal fluid analysis was abnormal. Consequently, targeted antibiotic therapy was initiated, leading to significant clinical improvement. Furthermore, the patient was successfully weaned off antiepileptic drugs without seizure recurrence. Conclusion: This case represents an unusual presentation of Whipple's disease, characterized by the absence of typical clinical signs during the early stages, making diagnosis challenging. It underscores the necessity of investigating systemic complaints in the assessment of refractory epilepsies when an identifiable cause is not readily apparent. Early recognition and management of Whipple's disease can prevent unnecessary use of antiepileptic drugs and improve patient outcomes.

Epilepsy classification in children

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Abstract: The objective of this abstract is to describe epilepsy syndromes that typically emerge during childhood, specifically between the ages of 2 and 12 years. The 2017 International League Against Epilepsy classification has introduced a three-tier system for identifying epilepsy syndromes, with the syndrome identification occurring at the third level. While not all children with epilepsy can be assigned a specific syndrome, the identification of one can provide valuable guidance for both management and prognosis. Childhood-onset epilepsy syndromes typically exhibit both mandatory seizure types and interictal electroencephalographic (EEG) features. In accordance with the 2017 Classification of Seizures and Epilepsies, some syndrome names have been updated to directly describe the characteristics of the seizure semiology. These childhood-onset syndromes can be broadly categorized into three main groups: Self-limited focal epilepsies (SeLFEs), which encompass conditions such as self-limited epilepsy with centrotemporal spikes, self-limited epilepsy with autonomic seizures, childhood occipital visual epilepsy, and photosensitive occipital lobe epilepsy. Generalized epilepsy syndromes, which are believed to have a genetic basis and include childhood absence epilepsy, epilepsy with myoclonic absence, and epilepsy with eyelid myoclonia. Developmental and/or epileptic encephalopathies (DEEs), which often manifest with a combination of focal and generalized seizures. Examples of DEEs include Lennox–Gastaut syndrome (LGS), developmental epileptic encephalopathy with spike-and-wave activation in sleep (DEE-SWAS), and epileptic encephalopathy with spike-and-wave activation in sleep (EE-SWAS). Some DEEs may solely involve generalized seizures, as seen in epilepsy with myoclonic atonic seizures (EMAtS), or focal/multifocal seizures, as observed in hemiconvulsion–hemiplegia–epilepsy syndrome (HHE) and febrile infection-related epilepsy syndrome (FIRES). In the subsequent sections, we will discuss each syndrome in detail, focusing on the mandatory seizures, EEG features, phenotypic variations, and key findings from diagnostic investigations.

Epilepsy Mimickers in Children

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Abstract: Epilepsy is a critical paroxysmal neurological disorder in childhood, but it's important to note that many other conditions can mimic epileptic seizures in children. This misdiagnosis of epilepsy is unfortunately common and can have detrimental effects on children's lives. A pivotal moment in a pediatric neurologist's career is when they gather a clear medical history of breath-holding spells (BHS) in a child previously diagnosed with epilepsy, as noted by E. Brett. Surprisingly, around 20 to 30% of patients referred to specialized epilepsy clinics with a suspected epilepsy diagnosis are ultimately found to be suffering from other mostly benign conditions. Common mimicking conditions include syncope, fainting episodes, breath-holding attacks, and various sleep disorders. Non-epileptic events resembling seizures in childhood can be categorized based on age of onset: Newborn, Infancy, Childhood, and Adolescence. For instance, symptoms like jitteriness, clonus, hyperexplexia, and benign neonatal sleep myoclonus typically emerge in newborns. Breath-holding spells, shuddering attacks, and self-gratification syndrome usually begin in infancy. Childhood-onset conditions encompass night terrors, episodic dyscontrol & rage attacks, day dreaming, and PNES. Finally, conditions such as syncope & fainting, movement disorders, tics, dystonia, and PNES are more common in adolescence. Accurate diagnosis and differentiation of these conditions are vital to ensure that children receive appropriate care and avoid the unnecessary burden of an epilepsy label. It is crucial for medical professionals and caregivers alike to recognize these distinctions and provide the best possible care for children experiencing these paroxysmal events.

Etiologies of epilepsy

Meysam Aghaei Meibodi [1] © ℗

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Abstract: Introduction: Epilepsy is often a manifestation of underlying neurological disorders. Accurately pinpointing the root causes of epilepsy is vital for determining its clinical course and prognosis. This article provides an overview of the major etiological categories of epilepsy according to the latest classification by the International League Against Epilepsy (ILAE). Summary: Seizures and epilepsy result from imbalances in excitation and inhibition within specific areas of the central nervous system (CNS). The ILAE Task Force classifies epilepsy into six primary etiological categories: genetic, structural, metabolic, infectious, immune, and unknown. It's worth noting that some individuals with epilepsy may exhibit multiple etiological factors simultaneously. Structural Etiology: This category encompasses detectable abnormalities revealed through neuroimaging that can reasonably be linked to the patient's seizures, supported by electroclinical assessments or clinical findings. These structural abnormalities can have genetic or acquired origins, including conditions such as mesial temporal sclerosis (MTS), trauma-related changes, and cortical malformations. Genetic Etiology: Genetic etiology involves established or presumed disease-causing variants within specific genes or copy number variations, with seizures as a common phenotype. Depending on the affected genes, these variants can lead to focal or generalized epilepsies or epileptic encephalopathies. Infections: Infections of the CNS are a significant risk factor for epilepsy and, in some regions, represent the most commonly identifiable cause. Globally, neurocysticercosis stands out as a leading contributor to this etiology, while various viral, fungal, and bacterial infections can also trigger epilepsy. Metabolic Etiology: Metabolic epilepsy includes disorders directly resulting from known or presumed metabolic irregularities, with seizures as a central symptom. While some of these conditions have a genetic basis, others are acquired. Immune Etiology: An immune etiology is suspected when epilepsy has an unknown origin in patients who test positive for neural-specific antibodies and show evidence of autoimmune-mediated CNS inflammation. Additional Etiologies: It's essential to consider other potential contributors to epilepsy, such as degenerative conditions like dementia. Keywords: Epilepsy, Etiology of Epilepsy, Seizure

Evidence-based approach to the Medical Treatment of Epilepsy

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Abstract: Currently, antiseizure medications are effective in preventing seizures but have not been definitively proven to have disease-modifying or antiepileptogenic effects in humans. Consequently, it is more precise to refer to them as antiseizure medications rather than antiepileptic drugs. The selection of the most appropriate therapy for epilepsy patients requires a comprehensive evaluation process that considers various factors. These include the most compelling evidence regarding a medication's efficacy and tolerability, the clinical expertise of attending physicians, and the values and preferences of the patients themselves. An evidence-based approach is a crucial aspect of making informed treatment decisions for epilepsy. This approach places a strong emphasis on the outcomes of high-quality randomized controlled clinical trials and systematic reviews of such trials. By relying on evidence-based medicine, healthcare professionals aim to integrate the most robust research findings with their clinical expertise and the unique preferences of individual patients. This ensures that treatment decisions are tailored to the specific needs and circumstances of each patient. In practice, every clinical decision should consistently incorporate these three essential components: evidence-based research, clinical expertise, and patient values and preferences. This holistic approach not only helps in choosing the most suitable antiseizure medication but also fosters a patient-centered care model where the patient's voice and individuality are central to the decision-making process. Ultimately, the management of epilepsy involves a collaborative effort between healthcare providers and patients, with a focus on the best available evidence, the expertise of the medical team, and the patient's personal preferences and goals. This multifaceted approach ensures that epilepsy treatments are not only effective in preventing seizures but also align with the overall well-being and quality of life of each individual patient.

FDG PET and SPECT in Epilepsy

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Abstract: Patients with non-lesional drug-resistant epilepsy pose a formidable challenge in neuroimaging, yet their precise localization of the seizure focus is of paramount importance, especially when surgical intervention or ablation of the epileptogenic focus is considered. Magnetic resonance imaging (MRI) is a cornerstone in the standardized epilepsy imaging protocol for such patients. Structural volumetric assessments and T2-weighted imaging changes often play a pivotal role in diagnosis, primarily by revealing early neuronal loss. MR spectroscopy, with a focus on "myo-inositol," is employed to detect glial alterations alongside neuronal markers. While diffusion-weighted imaging (DWI) excels in capturing acute epileptiform events, it typically lacks sensitivity to chronic glial and neuronal changes common in epilepsy. However, variants like diffusion tensor imaging hold promise for evaluating aberrant glial function in the future. In the evaluation of non-lesional patients with refractory epilepsy, SPECT and PET radioligands prove invaluable due to their high sensitivity and specificity. Brain SPECT during the ictal phase stands out as the most reliable method for localizing the seizure focus, while Brain FDG-PET in the interictal phase is increasingly accessible and serves as an effective tool for imaging epilepsy patients and pinpointing the seizure focus.

Focal genetic epilepsies

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Abstract: Focal epilepsies constitute 60% of all forms of epilepsy and have traditionally been considered primarily acquired disorders. However, recent research has revealed that genetic factors play a significant role in the pathogenesis of focal epilepsies. Nonlesional focal epilepsies encompass a heterogeneous group of syndromes. This group includes self-limited focal epilepsies of childhood and youth, rare familial focal epilepsies, epilepsies associated with brain somatic variants, and, to a large extent, nonfamilial epilepsies with a complex genetic or unknown background. Genetic testing is recommended in cases with a suggestive family history of monogenic inheritance and in cases exhibiting additional symptoms like intellectual impairment, autism, or dysmorphic features. The preferred method for genetic testing is whole-exome or whole-genome sequencing. Increasing evidence suggests the inclusion of genetic testing in the presurgical evaluation of individuals with drug-resistant epilepsy. It's worth noting that individuals harboring variants in genes related to the mammalian target of rapamycin (mTOR) pathway tend to have better seizure control after epilepsy surgery, while those with genetic epilepsies associated with channel function or synaptic transmission may have a poorer postsurgical outcome. Familial mesial temporal lobe epilepsy is typically a benign syndrome, accounting for one-fifth of new diagnoses of nonlesional mesial temporal lobe epilepsy. Seizures in this syndrome are usually easily managed with antiepileptic drugs and may even spontaneously remit. However, drug-resistant forms of the syndrome have also been documented. Autosomal dominant sleep-related hypermotor epilepsy or autosomal dominant nocturnal frontal lobe epilepsy is characterized by clusters of brief nocturnal focal motor seizures with hyperkinetic or tonic manifestations. This disorder displays autosomal dominant inheritance with a penetrance of approximately 70%.

Gene Therapy for Epilepsy

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Abstract: A seizure is characterized by uncontrolled and abnormal electrical activity in the brain, potentially leading to alterations in consciousness, behavior, memory, or emotions. Epilepsy, in its essence, involves recurrent unprovoked seizures. Globally, the age-adjusted prevalence of epilepsy varies from 2.2 to 41 per 1,000 individuals, while in Iran, it stands at approximately 16.6 per 1,000 people. Numerous underlying factors can predispose individuals to epilepsy, with some remaining unidentified. It's noteworthy that certain formerly idiopathic epilepsies are now recognized to have genetic roots. Epilepsy significantly impacts morbidity and mortality, with an age-standardized burden of 182.6 disability-adjusted life years (DALYs) per 100,000 population. Current therapeutic strategies for epilepsy encompass the use of anti-epileptic drugs (AEDs), surgical interventions to address specific brain lesions, deep vagus nerve stimulation, deep brain stimulation, and dietary modifications. While AEDs are the most commonly employed approach, they are not curative and are associated with significant side effects. In recent years, gene therapies have garnered substantial attention for addressing challenging disorders. For instance, one-time gene therapy for spinal muscular dystrophy (SMA) has received approval from the US FDA. Gene replacement and gene modification therapies, including CRISPR-based approaches, are being extensively researched for various conditions, such as storage disorders, hemoglobinopathies, and even chronic neurological disorders like Alzheimer's disease, ALS, and alcohol use disorder. As a result, genetic forms of epilepsy, such as PCDH19 clustering epilepsy, KCNQ2-DEE, and PDE-ALDH7A1, hold potential for gene replacement therapy. Strategies involving overexpression of inhibitory peptides, neurotrophic factors, inhibition of excitatory peptide release, and manipulation of ion channels and synaptic receptors have shown promise in pre-clinical models of genetic epilepsies and are under investigation in clinical settings. However, gene delivery methods still face challenges related to targeting neurons and specific cells, limited vector capacity, side effects, undesirable reactions to viral vectors, and the polygenic nature of epilepsy.

HISTORY OF PEDIATRIC EPILEPSY SURGERY IN SHIRAZ 10 YEARS EXPERIENCE

دکتر علی اکبر اسدی پویا [1], دکتر الهه رضایی [1], محمدصادق مسعودی دکتر [1] © Ⓟ
دانشگاه علوم پزشکی شیراز [1]

Abstract: Abstract: Background: While many epilepsy patients achieve seizure control through medication, approximately 30% develop intractable epilepsy, making them candidates for surgical intervention. Methods: This retrospective analysis assesses the clinical profiles and outcomes of 294 pediatric patients under 15 years old who underwent surgery for intractable epilepsy at our center between 2014 and 2023. Surgical procedures included lesionectomy and topectomy (145 cases), callosotomy (50), vagal nerve stimulation (75), hemispherectomy (15), and resection of hypothalamic hamartoma (9). Results: Post-operative complications included infections (13 cases), and one patient experienced acute post-operative hematoma. Transient neurological deterioration was observed in 11 patients. A single patient, operated on prior to 2020, succumbed to COVID-19 infection. The study found total or near-total seizure control in 65% of patients and a worthwhile outcome in 25% of patients. Conclusion: This ten-year experience with epilepsy surgery in children in Shiraz demonstrates that epilepsy surgery can be an economically viable, safe, and effective approach for refractory cases. Keywords: drug-resistant, epilepsy, surgery.

How to involve the patient in the treatment process?

Dr. Daryoosh Nasabi Tehrani [1] © Ⓟ

[1] Neurologist and Founder of the Iranian Epilepsy association

Abstract: When considering a patient's role in their treatment, a multitude of factors and issues come into play. The decision-making process for diagnosis and treatment is notably intricate, with patient involvement holding significant weight. Extensive research has delved into this subject, primarily in cases where various treatment options yield similar results. In these situations, the choice of treatment has, to some extent, been left to the patient. Yet, the outcomes have often remained inconclusive. In the realm of epilepsy, the involvement of both patients and their families is undeniably crucial in the treatment journey. However, the specifics of how these decisions are made, the conditions under which they occur, and ultimately, the doctor's role in guiding them, warrant thoughtful consideration. Among the pivotal determinants are the patient's level of knowledge and the broader contextual factors, including environmental, cultural, religious, and economic influences. This article will briefly explore these factors and their impact on the decision-making process.

How to Treat Adults With Epilepsy

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Abstract: The treatment of epilepsy varies across infants, children, and adults, primarily depending on the underlying cause (e.g., encephalopathic epilepsy syndromes in infancy and early childhood), the potential adverse effects of medications on neonates and infants' developmental domains, and age-related differences in the metabolism of anti-seizure medications (ASMs), as well as their associated adverse effects. Managing epilepsy centers on controlling seizures, minimizing or avoiding side effects, and preserving or restoring the patient's quality of life. Effective treatment hinges on an accurate diagnosis of epilepsy and seizures, understanding the frequency and intensity of seizures, identifying potential triggers (e.g., sleep, alcohol, light), recognizing medication-related adverse effects and legal implications, addressing the possibility of epilepsy-related and ASM-induced psychiatric issues, considering comorbidities and concurrent medications, understanding the impact of ASMs on comorbid conditions, and evaluating potential interactions between ASMs and other co-medications. It's essential to have a comprehensive knowledge of available ASMs, including their mechanisms of action, while also considering patient preferences. In cases involving women, their attitudes towards pregnancy planning and the use of oral contraceptives, as well as cosmetic concerns influenced by ASMs, should be taken into account. Furthermore, it's crucial to be aware of driving-related laws. In this discussion, we aim to address the aforementioned issues, including newer perspectives, the choice between monotherapy and combination therapy, how to initiate and discontinue ASMs, withdrawal schedules, the risk of seizure recurrence after discontinuation, and independent risk factors or predictors for recurrence. Keywords: Epilepsy, Treatment, Antiepileptic drugs.

ILAE epilepsy classification

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Abstract: The International League Against Epilepsy (ILAE) classification of epileptic seizures and epilepsies is a robust framework designed to establish a standardized and globally recognized system for the classification and diagnosis of epilepsy. This abstract offers an overview of the ILAE epilepsy classification, emphasizing its key components and implications for clinical practice. The ILAE classification adopts a multidimensional approach that considers several factors, including seizure semiology, electroencephalographic findings, etiology, and syndrome classification. It categorizes epileptic seizures into three main types: focal seizures, generalized seizures, and seizures of unknown onset. Focal seizures are further subdivided based on the individual's awareness level, distinguishing between aware and impaired awareness seizures, and whether they manifest with motor or non-motor symptoms. Beyond seizure classification, the ILAE system also provides a structure for categorizing epilepsies based on their underlying causes and syndrome characteristics. Etiology-based classification takes into account whether the epilepsy results from structural, genetic, infectious, metabolic, immune factors, or remains of unknown origin. Syndrome classification, on the other hand, groups epilepsies based on their clinical manifestations and electroencephalographic patterns. The ILAE classification holds significant implications for clinical practice, as it serves as a guide for treatment decisions, prognosis evaluation, and research endeavors. It enhances communication and comprehension among healthcare professionals, researchers, and patients, thereby facilitating the exchange of information and the development of personalized treatment strategies. In summary, the ILAE epilepsy classification stands as a valuable tool in the realm of epilepsy, furnishing a standardized and comprehensive system for the classification and diagnosis of epileptic seizures and epilepsies. Its multidimensional approach considers a range of factors, enabling a more precise and tailored understanding of epilepsy. Keywords: ILAE, child, epilepsy, classification

Investigation of cross-reactivity between phenobarbital and levetiracetam in children with epilepsy: A prospective, observational multicenter study

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Abstract: Objectives: Allergic reactions to antiseizure medications (ASMs) pose significant challenges in patient management. Identifying alternative ASMs that are both effective and unlikely to cause allergies can be a complex task. This study aims to investigate the potential cross-reactivity between phenobarbital and levetiracetam in children receiving treatment for seizure control. Materials & Methods: This prospective, observational study was conducted by independent assessors and involved 30 children with epilepsy who had exhibited hypersensitivity to phenobarbital therapy. To assess cross-reactivity, phenobarbital was replaced with levetiracetam as the seizure control medication. Over a six-month period, the patients were closely monitored for any allergic reactions or seizure recurrences. Results: Of the children in the study, 53% were female, with an average age of 42.4 months. Notably, none of the patients exhibited cross-reactive responses during the follow-up period. In the first six months of monitoring, the seizure recurrence rate was 30%, but with an increase in dosage during the subsequent six months, it decreased to 10%. Conclusion: The findings of this study suggest that when children with epilepsy, previously controlled by phenobarbital, experience allergic reactions to phenobarbital, levetiracetam may serve as a suitable alternative medication. This provides valuable insights into managing patients with drug allergies and optimizing their seizure control.

Lafora Disease: A Case Report of Progressive Myoclonic Epilepsy

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Abstract: Lafora disease is an uncommon genetic disorder associated with glycogen metabolism, inherited in an autosomal recessive manner. It is characterized by the formation of cytoplasmic inclusion bodies called Lafora bodies in various tissues, including the heart, liver, muscle, and skin. This condition primarily manifests as a neurodegenerative disorder that affects the development of cerebral cortical neurons. Most Lafora disease cases result from mutations in the EPM2A or NHLRC1 genes. We present the case of a 16-year-old female who has been experiencing recurrent falls, generalized tonic-clonic seizures, progressive cognitive decline, intermittent headaches, and myoclonus for the past two years. Despite receiving treatment with various anticonvulsant medications, including levetiracetam, ethosuximide, valproic acid, and clonazepam, the patient's seizures persisted. Consequently, she was admitted for further evaluation and seizure management. Diagnostic assessments included brain MRI, EEG (which revealed generalized slowing with polyspike-wave complexes), and a punch biopsy of skin from the axillary region. The skin biopsy confirmed the presence of intracytoplasmic PAS-positive bodies consistent with Lafora bodies. Genetic testing is currently underway to confirm the diagnosis. This case represents one of the rare reported instances of Lafora disease, highlighting the importance of considering this condition in the differential diagnosis of progressive myoclonic epilepsy and conducting the necessary diagnostic evaluations. Keywords: Lafora Disease, Progressive Myoclonic Epilepsy, Skin Biopsy

Legal aspects of epilepsy for neurologists

MOHAMMADALI ARAMI [1] © Ⓟ

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Abstract: Epilepsy entails several legal considerations that every neurologist should consistently account for in their clinical practice. Legal cases involving epileptic patients frequently arise in judicial courts, and in some instances, physicians may face litigation. Allegations of medical malpractice, including issues related to diagnosis, treatment, and patient confidentiality, can be raised against healthcare professionals. This presentation aims to shed light on essential legal aspects that may pose challenges for neurologists. We will begin by addressing the critical responsibility of ensuring accurate diagnoses and provide guidance on preparing comprehensive medical reports and issuing accurate medical certificates for patients with epilepsy. Additionally, we will delve into the legal intricacies surrounding patient treatment and the associated responsibilities that clinicians must uphold.

Management of epilepsy with comorbidity: Conceptual Framework

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Abstract: Background: Epilepsy is a prevalent neurological disorder affecting approximately 50 million people worldwide. Among those with epilepsy, more than 50% experience one or more somatic or psychiatric conditions. These comorbidities can be categorized into neurologic, psychiatric, and other medical conditions. Five mechanisms of association have been identified: conditions that cause epilepsy (causative), conditions caused by epilepsy (resultant), conditions sharing similar risk factors with epilepsy, conditions linking epilepsy with other medical issues, and conditions that can both result from and lead to epilepsy (bidirectional). Additionally, some associations between epilepsy and other conditions may be artifacts. Comorbidities have significant implications for epilepsy diagnosis and prognosis, negatively impacting quality of life and healthcare costs. Epilepsy is not merely a standalone condition but a symptom of broader systemic dysfunction, necessitating the diagnosis and treatment of all associated symptoms and conditions. This review aims to explore these issues and the conceptual and therapeutic framework of comorbidities. Methods: This review delves into the more notable somatic and psychiatric comorbidities of epilepsy, examining their mechanisms of association and their implications for treatment. Results: Psychiatric comorbidities are the most common among individuals with epilepsy. Various mechanisms of association have been identified, including incidental, causative, resultant, bidirectional, and shared risk factors. Studies drawing from population-based data, medical records databases, and different survey methods consistently reveal that over 50% of people with epilepsy experience one or more somatic or psychiatric conditions. The choice of medication should consider interactions, seizure threshold, side effects, and complications that may affect the patient's quality of life. Conclusion: Over the past 15 years, numerous studies have shed light on the prevalence of comorbidities in epilepsy, highlighting that some disorders are more common among epilepsy patients compared to the general population. These comorbidities significantly impact the diagnosis and prognosis of epilepsy, as well as the individual's quality of life and healthcare costs. Epilepsy is, therefore, not an isolated condition but rather a symptom of systemic dysfunction, demanding the comprehensive diagnosis and treatment of all associated conditions.

Managing Headaches in Patients with Epilepsy

Dr. Fatemeh Seddigh Marvasti [1] © ℗

[1] Neurologist

Abstract: For centuries, people have recognized a connection between epilepsy and migraines (or headaches in general), though a comprehensive understanding of this relationship remains elusive. Both migraines and epilepsy are episodic disorders characterized by intermittent bursts of temporary cerebral dysfunction. These conditions often co-occur in clinical practice. Furthermore, primary headache disorders and epilepsy rank among the most prevalent neurological conditions and may share common triggers, such as sleep deprivation. The pathogenesis of both conditions involves modifications in membrane channel function and imbalances in excitatory and inhibitory factors. Headaches and epilepsy can be categorized based on their temporal relationship: 'inter-ictal headache' does not occur in conjunction with seizures, while 'peri-ictal headache' manifests before, during, or after a seizure. Epidemiological data indicate that individuals with epilepsy are more likely to experience headaches, including migraines, than those without epilepsy. In fact, the lifetime prevalence of migraines is 52% higher in individuals with epilepsy. Some medications can effectively manage both seizures and headaches. In the context of headache treatment, there are two primary approaches: waiting until a headache begins (e.g., using analgesics or triptans during migraine attacks) or employing prophylactic treatments. Certain antiseizure medications, such as topiramate, levetiracetam, and valproate, have demonstrated efficacy in reducing migraine frequency.

managing seizure in patients with brain tumor

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Abstract: Background: Epilepsy frequently co-occurs with brain tumors, presenting a substantial clinical challenge in patient care. This abstract explores the various factors contributing to epilepsy in patients with brain tumors, including tumor location, histology, and treatment approaches. It underscores the significance of a multidisciplinary approach, involving neurologists, neurosurgeons, oncologists, and epileptologists. The treatment approach typically comprises several components: Diagnosis and Evaluation: Advanced neuroimaging techniques, such as MRI and PET scans, are employed to identify the brain tumor's location, type, and the presence of epileptogenic zones. A comprehensive evaluation of the patient's seizures, encompassing their type, frequency, and triggers, is imperative. Treatment of Brain Tumor: The primary objective is to address the brain tumor itself. Treatment options may encompass surgery, radiation therapy, chemotherapy, or a combination of these approaches. Effectively managing the tumor can frequently result in a reduction in seizure frequency. Antiepileptic Drugs (AEDs): AEDs are prescribed to control seizures. There is no one-size-fits-all "drug of choice"; the choice of medication depends on the type of seizures and potential interactions with other medications used for brain tumor treatment. Surgical Interventions: For patients with drug-resistant epilepsy or specific tumor locations, surgical resection of the epileptogenic zone may be considered. In some cases, minimally invasive surgical options like responsive neurostimulation (RNS) devices or laser interstitial thermal therapy (LITT) can be utilized. Radiation Therapy: In situations where surgical intervention is not feasible or effective, radiation therapy, such as stereotactic radiosurgery, may be employed to target the epileptogenic zone while minimizing harm to surrounding healthy tissue. Long-Term Follow-Up: Patients should receive ongoing care and follow-up to monitor for tumor recurrence, potential side effects of treatment, and adjustments in AEDs. Keywords: Seizure, brain tumor, treatment

Myoclonic jerk, a scientometric study

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Abstract: Background: Myoclonus is characterized by sudden, brief, and involuntary muscle jerks. This study aimed to conduct a scientometric and content analysis of articles related to "myoclonic publication." Materials and Methods: This study is categorized as applied research with the objective of scientometrics descriptive content analysis. It involves scientific publications on myoclonic issues indexed in Web of Science, PubMed, and Scopus up to June 2023, resulting in 9,855 retrieved articles. Results: The results reveal a significant increase in the number of articles published from 2014 onwards, with a total of 33,419 authors contributing to these articles. Among these, 946 articles were authored by a single individual. The annual growth rate was 7.6%. Prominent journals like "EPILEPSIA," "NEUROLOGY," and "BRAIN" featured prominently in the publications. Leading countries in contributing articles included the USA, Australia, Italy, and Germany. The study identified trending topics such as Microglia, developmental and epileptic encephalopathy, neuroinflammation, and antiseizure medication. Conclusion: Scientometric analyses of myoclonic research provide a valuable topic map that can inform policy-making and research prioritization in this field. By examining these indicators, less-explored areas of research can be identified, shedding light on potential future research topics. Keywords: myoclonic jerk, scientometric, epilepsy

Natural course and prognosis of epilepsy

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Abstract: The trajectory of epilepsy can significantly differ from person to person. While some individuals may only experience a few seizures in their lifetime, others might contend with frequent and severe ongoing seizures. Medication can effectively control epilepsy for many, but in cases where drugs prove ineffective, ongoing seizure activity can persist. Furthermore, the frequency and severity of seizures can evolve over time, with some individuals witnessing a decrease in seizure activity as they age, while others may encounter an escalation in seizures or the emergence of new seizure types. It is imperative for patients with epilepsy to maintain a close partnership with their neurologist in managing their condition. This involves regular assessments to review and adjust medication dosages, diligent monitoring for potential side effects, and the implementation of necessary lifestyle modifications. Additionally, individuals with epilepsy should take precautions to minimize the risk of injury during a seizure episode. In conclusion, the natural course of epilepsy remains unpredictable and varies among individuals. Therefore, it is essential for those with epilepsy to work closely with their healthcare team to effectively manage their condition and enhance their quality of life. Recognizing and accepting epilepsy as a reality is a crucial first step for patients, as embracing life with epilepsy can lead to significant positive outcomes and a fulfilling life.

Neuroimaging anatomy related to seizure

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Abstract: Epilepsy is a neurological condition characterized by the occurrence of two or more unprovoked seizures in a patient. It affects approximately 1% of the population, with a significant portion, around 75%, of epilepsy cases developing during childhood. Understanding the anatomical regions associated with seizures is crucial for both classification and treatment. The neocortical regions and the hippocampus, which are brain areas responsible for learning and memory processes, are particularly susceptible to seizures. In individuals with epilepsy, structural changes may be observed in various regions of the brain, including the hippocampus, amygdala, frontal cortex, temporal cortex, and olfactory cortex. These changes can contribute to the manifestation of seizures and may provide valuable insights for diagnosis and management. The localization of the seizure onset zone plays a critical role in the semiology (the study of the signs and symptoms) of epilepsy. Identifying the specific anatomical regions involved in epilepsy helps pinpoint the location of abnormal electrical activity within the brain. This knowledge is essential for accurate diagnosis and guides the development of effective treatment strategies. In summary, epilepsy is a neurological condition that involves recurrent seizures. Understanding the anatomical regions associated with seizures, such as the neocortical regions and the hippocampus, is essential for classifying the condition and determining the most appropriate treatment and management approaches. Additionally, recognizing anatomical changes in the brain can aid in the diagnosis and provide valuable insights into the underlying mechanisms of epilepsy.

Neuroimaging review of Autoimmune Encephalitis

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Abstract: Autoimmune encephalitis (AE) encompasses a group of inflammatory disorders primarily affecting the brain parenchyma, particularly the limbic system. These disorders manifest through a wide spectrum of clinical symptoms, as well as variations in neuroimaging and laboratory findings. The early identification and prompt management of autoimmune encephalitis are crucial for achieving complete resolution of the disease and ensuring favorable long-term outcomes. The diversity of clinical features is mirrored in the variability of imaging and laboratory findings. MRI with contrast is considered the most sensitive imaging modality for detecting autoimmune encephalitis. However, not all patients exhibit abnormal MRI findings, particularly in the early stages of the disease. Recognizing distinctive abnormalities within limbic structures, which may suggest autoimmune encephalitis, is a critical diagnostic clue. Certain subtypes of AE present with more typical imaging findings, such as T2-FLAIR hyperintensity in the mesial temporal lobes, restricted diffusion, contrast enhancement, involvement of brain regions beyond the hippocampus, amygdala and hippocampal swelling, and perivascular radial enhancement extending from the ventricles. It's important to note that the association between brain MRI findings and disease prognosis, as well as their impact on seizure outcomes, remains a subject of ongoing research and has not yet been fully elucidated.

Pharmacological management of mental disorders in patients with epilepsy

Mohammad Arbabi [1] ℗, Niayesh Mohebi [2], Mojan Radmehr [2] ©

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Abstract: Psychiatric disorders affect one-third of individuals with epilepsy and arise from a complex interplay of psychosocial and biological factors that can lead to discrimination and social withdrawal. Epilepsy still carries a significant stigma, with consequences like the loss of the ability to drive, while the unpredictability of seizures can result in low self-esteem and depression. From a neurobiological perspective, neuroimaging studies in individuals with primary psychiatric illnesses, such as depression or schizophrenia, have revealed abnormalities in brain networks. Notably, some of these abnormalities overlap with brain regions implicated in conditions like temporal lobe epilepsy, especially the amygdala and hippocampus. People with epilepsy may experience psychiatric symptoms during different phases of a seizure (peri-ictal) or as a result of treatments, including anticonvulsant drugs or epilepsy surgery. These mental disorders may stem from common neurobiological mechanisms, result from epilepsy itself, or occur as the unfortunate co-occurrence of two conditions in one individual. Regardless of their origins, managing these individuals can be challenging. Therefore, it is imperative that clinicians identify comorbid psychiatric disorders and consider them in comprehensive individualized management plans. This necessitates a multidisciplinary approach, with specialists from various fields, including psychiatrists, clinical psychologists, neurologists, clinical pharmacists, nurses, and social workers, working collaboratively to provide the best care for these patients.

postsurgical evaluation and imaging findings in phakomatosis

Reza basiratnia [1] © ℗

[1] assistant professor , neuroradiologist

Abstract: Neurocutaneous disorders, also known as phakomatoses, exhibit distinctive features such as multiple hamartomas and congenital malformations, predominantly affecting structures of ectodermal origin, including the nervous system, skin, retina, and the globe along with its contents. While visceral organs may also be impacted, it is typically to a lesser degree. Traditionally, this group encompassed four diseases: von Recklinghausen's neurofibromatosis, tuberous sclerosis (Bourneville disease), retinocerebellar angiomatosis (von Hippel-Lindau disease), and encephalotrigeminal angiomatosis (Sturge-Weber disease). However, since then, more than 60 hereditary diseases have been categorized as neurocutaneous syndromes. Discussing all the described neurocutaneous disorders exceeds the scope of this presentation. Instead, we will focus on those most frequently encountered in moderate- to large-sized outpatient and inpatient practices.

Precision medicine and its limitation in clinical practice

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Abstract: Precision medicine and genetic advancements hold great promise for transforming the management of pediatric epilepsy. However, several factors need to be considered as the practical application of these approaches evolves: 1-Availability and Interpretation of Genetic Testing: Access to genetic testing can be limited in certain healthcare settings, and affordability may be a barrier for some patients. Additionally, interpreting genetic test results can be complex and often requires specialized expertise in genetics. 2-Limited Genetic Understanding: While significant progress has been made in uncovering genetic mutations associated with specific epilepsy syndromes, the genetic basis of many cases remains unknown. This limits the practical application of precision medicine for those cases. 3-Clinical Significance of Genetic Findings: Even when genetic mutations are identified, their clinical significance can vary. Some mutations have clear implications for treatment and prognosis, while others may have uncertain or limited clinical relevance. Further research is needed to fully understand the implications of specific genetic findings. 4-Integration into Clinical Care: Incorporating precision medicine and genetic advancements into routine clinical practice requires resources, infrastructure, and specialized multidisciplinary teams. Healthcare professionals need ongoing education and training to effectively utilize these tools. 5-Ethical and Privacy Concerns: The use of genetic information raises ethical and privacy considerations. Protecting patient confidentiality, obtaining informed consent, and addressing potential social, psychological, and insurance-related implications are essential aspects of using genetic data responsibly. Despite these challenges, the field of precision medicine in pediatric epilepsy is rapidly advancing. As research continues and technology becomes more accessible, the potential for improving diagnosis and treatment for children with epilepsy remains promising. Keywords: precision medicine ,epilepsy, limitations

Prevalence of Epilepsy

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[1] Neurologist

Abstract: Epilepsy has garnered increasing attention in the realm of public health due to persistent health and socioeconomic disparities experienced by patients, despite advancements in treatment and care. Epidemiological patterns of epilepsy exhibit substantial diversity across countries and regions. In developed nations, the lifetime prevalence of epilepsy ranges from 3.5 to 10.7 per 1000 individuals. In contrast, in Asia, sub-Saharan Africa, and Latin America, this figure varies widely from 0.9 to 74.4 per 1000 individuals. Notably, the lifetime prevalence of epilepsy tends to be higher in rural areas compared to urban centers. Furthermore, a nationwide, population-based survey conducted in Iran revealed a lifetime prevalence of epilepsy at 16.6 per 1000 individuals, surpassing the global lifetime prevalence. This discrepancy may be attributed to a higher incidence of traumatic events, particularly road traffic injuries, occupational accidents, and injuries stemming from the Iran-Iraq war. It's noteworthy that the prevalence in Iran exceeds that of developed countries, including the USA, Canada, Japan, France, and Germany. These variations in epilepsy epidemiology across different countries can be attributed, in part, to a multitude of risk factors and differences in research methodologies. Additionally, it is imperative to acknowledge that epilepsy diagnosis heavily relies on a patient's medical history. In the absence of a standardized diagnostic pathway, differences in the criteria used in surveys further contribute to disparities in epidemiological findings.

Psychogenic non-epileptic seizures, psychoanalytical treatment

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Abstract: Background: Psychogenic nonepileptic seizures (PNES) represent a subgroup of organized repetitive movements that give rise to paroxysmal nonepileptic events in children and adolescents. While the precise cause remains unclear, several factors may contribute, including genetic and biological influences, family dynamics, a predisposition to negativity in personality traits, diminished awareness or difficulties in processing emotions, and learned behaviors. Methods: This study involved a systematic review of literature retrieved from MEDLINE via PsychINFO. Our selection criteria encompassed controlled studies, including case series, to evaluate the efficacy of psychoanalytical interventions in managing PNES. Psychoanalytic sessions comprised an initial interview script, a script for elaborating the psychoanalytic diagnosis, diagnostic interview sessions, psychoanalytic treatment sessions, and a finalization interview script. Findings: The results of our study indicate that some individuals with PNES achieve freedom from seizures following the completion of psychoanalytic interventions. Moreover, clients who underwent this intervention reported a significant reduction in the frequency of seizures. Conclusion: The findings suggest that psychoanalytic interventions present a promising alternative to the current treatment options available for individuals with PNES. Keywords: Psychogenic, nonepileptic seizures, psychoanalytical, treatment

Review of Association between Infections, Seizures and Drugs

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Abstract: Background: Seizures can often manifest as a common symptom of central nervous system (CNS) infections, either during the active phase of viral infections or in the post-recovery phase. Viruses can infiltrate the brain or cerebrospinal fluid and spread through hematogenous routes. Additionally, certain antibiotics have been associated with an increased risk of seizures. This study aims to review the association between infections, seizures, and drugs. Methods: Following the PRISMA guidelines and adopting the PICO standard format, this study selected relevant, high-quality research articles and conducted an evidence-based analysis. The review focused on understanding the relationship between infections, seizures, and various drugs. Findings: The administration of drugs like imipenem and carbapenems, especially in high doses or in patients with renal dysfunction, brain lesions, or known epilepsy, has been linked to symptomatic seizures. Continuous EEG monitoring is recommended for patients with altered levels of consciousness. Infections, including meningitis, tuberculosis, herpes simplex, cerebral toxoplasmosis, and others, can lead to life-threatening status epilepticus, characterized by continuous unremitting seizures lasting longer than 5 minutes or recurrent seizures. Certain drugs, such as ticarcillin, amoxicillin, oxacillin, penicillin G, and ampicillin, have been associated with confusion, encephalopathy, and myoclonus. Penicillin G is reported to have the highest epileptogenic potential. Seizures have also been linked to the high-dose and prolonged use of metronidazole. Additionally, meropenem may reduce the concentration of valproic acid, while the combination of clarithromycin and erythromycin with carbamazepine requires careful monitoring due to the inhibition of CYP3A4. Conclusion: It is crucial to be aware of the potential for seizures associated with polypharmacy involving antibiotics and anti-seizure drugs. Further research is recommended to better understand the different mechanisms underlying the epileptogenic properties of antibiotics and their neurotoxicity. Keywords: Infections, Seizures, Antibiotics, Carbamazepine

Role of gamification in learning of Epilepsy epileptic syndromes

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Abstract: Gamification involves applying game principles to the teaching and learning process. To our knowledge, there has been a lack of research on incorporating gamification into epilepsy education. In this study, we employed crossword puzzles as an innovative approach to familiarize learners with the new terminology associated with early infantile epilepsy syndromes, as outlined by the ILAE Task Force on Nosology and Classification in their 2022 release. This educational initiative was implemented within a regional school supported by the Iranian chapter of ILAE, catering to adult and child neurologists as well as epileptologists. The evaluation of this approach was conducted using Kirkpatrick levels one and two, which assess participants' reactions and learning outcomes. The results were overwhelmingly positive, with excellent or very good ratings observed for almost all aspects of the intervention. This pioneering study not only introduces the concept of gamification into epilepsy education but also highlights its potential as an effective and engaging teaching method. By utilizing crossword puzzles, learners can actively participate in the acquisition of new terminology related to early infantile epilepsy syndromes. The positive evaluations underscore the success of this approach in enhancing learners' understanding and retention of the material. Further exploration of gamification in epilepsy education may yield valuable insights into improving the educational experience for healthcare professionals in this field.

seizure clstures, therapeutic approach

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Abstract: Cluster seizures, therapeutic approach Dr Roshanak Tirdad, MD Neurologist, Shahid Beheshti University of Medical Science Patients with epilepsy may experience seizure emergencies, such as status epilepticus and seizure clusters. While there is a recognized definition for status epilepticus, a clear consensus on the definition of seizure clusters has not emerged. This complexity is compounded by various empirically based definitions found in the literature, often developed for clinical trial purposes. Typically, individuals with refractory epilepsy face a significant risk of acute episodes characterized by increased seizure activity, referred to as seizure clusters (also known as acute repetitive seizures). These episodes differ from their usual seizure patterns. Seizure cluster definitions often incorporate duration (measured in hours or days), which may vary among patients, with some experiencing clusters lasting more than 24 hours, requiring prolonged treatment. Factors like the time between seizures and the potential acceleration in seizure frequency during clusters are also important considerations. Recognizing and promptly treating seizure clusters is crucial because untreated episodes can lead to injury, progression to status epilepticus, or even death. It's worth noting that most seizure clusters occur outside medical facilities, usually in the community, and are often managed by non-medical individuals. Therefore, healthcare providers would benefit from a clear description of these potential seizure emergencies. This description can serve as a valuable tool for educating patients and caregivers on how to promptly and appropriately identify seizure clusters and administer rescue therapy. This exploration covers epidemiologic studies on seizure clusters and status epilepticus, addresses inconsistencies in nomenclature and definitions related to seizure clusters, discusses the practical application of seizure cluster terminology, and explores the potential use of acute seizure action plans and patient-specific, personalized definitions in clinical settings. keywords:seizure clusters, Status Epilepticus,definition

Sexual Satisfaction in Iranian Women with Epilepsy

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Abstract: Background: Epilepsy is one of the most common neurological disorders, characterized by recurrent unprovoked seizures. Existing reports suggest that women with epilepsy (WWE) are more likely to experience sexual dysfunction (SD) compared to the general population. This study aimed to assess the level of sexual satisfaction among WWE. Methods: In this cross-sectional study, we included 150 married women who were diagnosed with epilepsy at least one year ago. We evaluated their sexual function using the Female Sexual Function Index. Findings: Among the 150 married WWE participants, the average duration of epilepsy was 9.8 years. Notably, 35 women (23.3%) had focal epilepsy, while 115 (76.6%) had generalized epilepsy. The mean overall sexual performance score among these patients was 19.8. Importantly, 32 patients (21.3%) reported decreased sexual function, with 78.2% indicating unfavorable sexual performance. Factors such as having generalized epilepsy, undergoing multi-drug treatment, having a disease duration exceeding 10 years, and being over 30 years of age were correlated with sexual dysfunction. Conclusion: Given the high prevalence of sexual dysfunction in women with epilepsy, it is crucial to provide specialized attention and appropriate management for these patients. Keywords: Sexual function; Female; Epilepsy.

Temporal lobe seizure semiology

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Abstract: Temporal lobe epilepsy (TLE) is the most common form of focal epilepsy. Several subtypes of TLE have been described based on the seizure onset zone, and each one exhibits distinctive seizure semiology. Typically, these seizures involve behavioral arrest, automatisms, and varying degrees of awareness loss, followed by postictal confusion, and last for up to 2–3 minutes. According to the literature, TLE can be categorized into mesial, lateral (neocortical), and temporal pole subtypes, each of which can produce specific semiological features. Some auras, such as olfactory or gustatory hallucinations or cognitive auras (e.g., déjà vu and jamais vu), are common in mesial TLE, while others, such as vertiginous and auditory auras, are common in lateral TLE. Oroalimentary automatisms are characteristic of TLE, and some features of temporal lobe ictal semiology have lateralizing value, such as unilateral dystonic posturing, postictal nose wiping, ictal speech, ictal/postictal cough, and spitting. The temporal pole is one of the most important locations for hypermotor seizures, and distinguishing it from frontal lobe epilepsy (FLE) is crucial. It's important to note that ictal semiology can be influenced by age, and ictal features in younger individuals may not provide clear lateralizing clues. In this presentation, I will provide a concise review of these various semiological features based on current literature. Keywords: Temporal lobe, Semiology, Seizure

The role of intracranial monitoring in refractory epilepsy

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Abstract: Electroencephalography (EEG) remains a 'gold standard' for defining seizures. In many cases, routine scalp EEG recording is insufficient. In such instances, it becomes necessary to record EEG data in proximity to the seizure focus, achieved by placing electrodes either on the brain's surface or within its substance. This is particularly important when seizures cannot be localized or when the epileptogenic zone is close to the eloquent cortex, requiring precise mapping of both areas. In the pre-surgical planning phase, the placement of electrodes, the choice of electrode types, and the planned duration of intracranial recording must be considered. While there are general principles, each medical center may approach this differently based on available technologies and the expertise of the epilepsy surgery team. The available electrode types include: Subdural grid/strip, Depth electrodes, Epidural peg electrodes. Stereotactic EEG (sEEG) is a less invasive option compared to subdural grids and strips. It involves small incisions in the scalp and skull for electrode placement. The electrodes are stereotactically placed, guided by three-dimensional imaging, allowing for implantation in both brain hemispheres. Complication rates are generally low, and most complications do not result in permanent deficits. Common adverse events include intracranial hemorrhage, superficial infection, elevated intracranial pressure, and cerebral infections.

Third generation anti-seizure medications

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Abstract: The primary objective of pharmacologic therapy for epilepsy is to achieve seizure control with minimal side effects. However, it is noteworthy that nearly one-third of patients treated with currently available Antiepileptic Drugs (AEDs) continue to experience uncontrolled seizures, and approximately 20–30% of individuals with epilepsy discontinue their therapy due to intolerable adverse drug effects. Newer AEDs tend to exhibit several pharmacokinetic characteristics that align with the ideal AED profile. They typically feature rapid and complete absorption from the gastrointestinal tract, pharmacokinetics that are linear and dose-proportional, renal excretion, low plasma-protein binding, and a terminal half-life that allows for once- or even twice-daily dosing. Furthermore, compared to conventional AEDs, third-generation AEDs have a reduced propensity for drug interactions. This attribute can be attributed to their limited impact on hepatic enzyme activity, both in terms of inhibition and induction. The third generation of AEDs includes rufinamide (RUF), stiripentol (STP), lacosamide (LAC), eslicarbazepine acetate (ESA), perampanel (PER), brivaracetam (BRV), and everolimus (EVR). LAC, BRV, and ESA are approved for the treatment of focal seizures, both with and without secondary generalization, in pediatric and adult patients. PER, on the other hand, is indicated for the treatment of generalized and focal seizures specifically in adult patients. Some third-generation AEDs, such as LCM and PER, employ novel mechanisms of action, providing new options for rational combination therapy. Third-generation AEDs are often associated with improved tolerability and milder adverse effects compared to their first- and second-generation counterparts. Considering these advantages, even though their efficacy may not surpass that of older AEDs, there is a growing trend to consider third-generation AEDs earlier in the treatment of epilepsy.

Third generation antiseizure medications in children

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Abstract: Third generation antiseizure medications in children Ali Nikkhah Assistant professor of Pediatric Neurology Abstract Epilepsy, a common and disabling condition in children, has seen the use of numerous antiseizure drugs over the years. With the dawn of the 21st century, the introduction of so-called 3rd generation antiseizure drugs has broadened the treatment options for seizure disorders in pediatric patients. This overview provides a concise summary of the utilization of select 3rd generation antiseizure drugs in children. Rufinamide (RFM), a triazole derivative, finds its indication in Lennox-Gastaut syndrome (LGS) and refractory focal epilepsies among children aged one year and older. Stiripentol (STP), which augments GABA activity, is recommended for Dravet syndrome (DS) and refractory generalized seizures in children aged six months and above. Everolimus (EVO), an oral mTOR kinase inhibitor, is prescribed for refractory focal seizures associated with tuberous sclerosis complex (TSC) in children aged two years and older. Cannabidiol (CBD) is employed in the management of certain epileptic syndromes, including LGS, DS, and TSC. Perampanel (Fycompa), functioning as an antagonist of AMPA-type glutamate receptors, is utilized in cases of refractory focal seizures among children aged four years and older. Brivaracetam, a compound akin to levetiracetam but with a 20-fold greater binding affinity, is deployed in the treatment of both focal and generalized seizures among children aged one month and older. Keywords: Seizure; epilepsy; antiseizure medications; children

Transient lesions on brain MRI after epileptic seizures

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Abstract: Background and Aims: Epileptic seizures can lead to transient cerebral alterations, making their detection crucial to avoid invasive procedures. These alterations are often described in cases of status epilepticus but can also occur in isolated seizures. Methods: We present two cases: one of status epilepticus and another of isolated epileptic seizures with transient brain magnetic resonance imaging (MRI) abnormalities (MRIb). Results: Case 1: A 48-year-old man with a history of secondary generalized focal epilepsy, previously normal MRIb and EEG, experienced 10 hours of focal seizures characterized by clonic movements in the lower left limb. MRIb revealed signal alterations at the cortico-subcortical level in the right hemisphere and left caudate nucleus, with diffusion restriction. An EEG indicated epileptiform activity in the right temporal bone. Three weeks later, both MRIb and EEG had normalized. Case 2: A 34-year-old man had a focal visual seizure marked by left palinopsia. EEG showed no epileptiform activity. CMRI indicated a hyperintense focus in the right occipital lobe on T2 and FLAIR images, with diffusion restriction. A follow-up MRIb at two months showed normalization. Conclusion: Identifying these lesions in patients who have experienced seizures can help avoid invasive procedures. The characteristics of these lesions vary, emphasizing the importance of conducting follow-up MRIb to confirm their transient and benign nature, which can persist for up to 12 months.

Unusual presentation of temporal lobe epilepsy, A case presentation

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Abstract: The patient is a 13-year-old girl who has been hospitalized and closely monitored due to uncontrolled epilepsy. Her medical history reveals that her first seizure occurred when she was just one year old, coinciding with a high fever. The second seizure happened at the age of three and was characterized by lip smacking and swallowing movements. Initially, these symptoms were misdiagnosed as gastric reflux, but in 2016, epilepsy was correctly diagnosed. Additional diagnostic tests, including EEG and Brain MRI, were conducted, leading to the initiation of treatment with carbamazepine and levetiracetam. However, her seizures were not consistently controlled by this regimen. The clinical manifestations of her seizures typically involve an initial sensation of a specific taste, followed by automatic movements in her fingers, resembling the action of counting money. Occasionally, these movements extend to involve her toes. Importantly, she remains fully conscious throughout the seizure and can respond accurately to questions. After approximately one minute, the symptoms subside, and she tends to feel drowsy, often transitioning into sleep. Notably, in her most recent seizure, despite attempting to follow the nurse's instructions, she struggled to recall them fully. Diagnostic assessments, including EEG, have revealed epileptic discharges such as spikes, sharp waves, and waves in the right temporal region, observed during both sleep and wakefulness. Furthermore, epileptic discharges originating in the right temporal region were noted during the ictal phase. Brain MRI findings have indicated atrophy and sclerosis in the right temporal lobe. Consequently, the diagnosis is temporal lobe epilepsy originating from the right temporal lobe, and the patient is considered a candidate for selective amygdalohippocampectomy.

Updates in monotherapy and rational polytherapy of epilepsy

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Abstract: Epilepsy is initially treated with first-line monotherapy, with approximately 50% of patients achieving seizure freedom after their first trial of an Anti-seizure medication (ASM). When selecting the initial therapy, clinicians must take into account various factors, including the relative efficacy and potential adverse effects of each drug. The decision to start treatment is based on a combination of drug-specific factors, the type of seizures, and individual patient characteristics. Several patient-specific factors should be considered when choosing the first drug, including age, sex, weight, comorbidities, psychosocial factors, seizure type, epilepsy type, and the safety and tolerability of the drug. If the first ASM fails due to intolerability or ineffectiveness, it should be replaced with another monotherapy. However, if the first-line monotherapy is effective in reducing seizures, it should be escalated to the maximum tolerated dose to strive for seizure freedom. In cases where seizures remain partially controlled even with the optimal dose of the first-line monotherapy or when two monotherapy regimens have failed, combination therapy should be considered. Rational polytherapy has certain principles: the two ASMs used should have different mechanisms of action and should not share a common side effect profile or cause pharmacokinetic interactions. All the principles applied to monotherapy selection should also be considered when choosing the second ASM. It's important to exercise caution when using ASMs in combination therapy for elderly patients and during pregnancy. The majority of patients who achieve seizure freedom do so with the use of two ASMs. In rare instances, a third or even fourth ASM may be added, although the benefits are relatively low. When two monotherapies or a combination of two ASMs fail to achieve seizure freedom, the patient is considered to have drug-resistant epilepsy.

Visual field defect after Anterior Temporal Lobectomy in Refractory Temporal Lobe Epilepsy

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Abstract: Background: Temporal lobe epilepsy (TLE) is the most common form of focal drug-resistant epilepsy. Surgical approaches like Anterior Temporal Lobectomy (ATL) or Selective Amygdalohippocampectomy are often employed, with approximately two-thirds of patients achieving seizure freedom. The extent of mesial temporal structure resection during these procedures, specifically through the inferior horn of the lateral ventricle, plays a significant role in seizure outcomes. However, this approach may damage Meyer's loop, the anterior part of the optic radiation along the roof and lateral wall of the temporal horn, leading to visual field defects (VFD), commonly referred to as "pie in the sky." The incidence of VFD varies across studies, ranging from 52% to 97% of patients post ATL. The concern arises that in pursuit of better seizure control, more extensive resections may be required, potentially increasing the prevalence of VFD. This study aimed to investigate the relationship between post-operative seizure outcomes and VFD. Method: This retrospective cohort study assessed 31 patients with refractory TLE who underwent standard ATL between 2018 and 2021. The surgical technique involved locating the collateral sulcus to identify the most inferior part of the lateral wall of the temporal horn, subsequently opening the lateral ventricle. This approach aimed to minimize proximity to the optic tract. Resection of medial temporal structures included the amygdala, head of the hippocampus, and at least 1.5 cm of the body behind the choroidal fissure. Patients were followed up for at least one year post-surgery. Findings: Seizure control was achieved in 62.5% of patients, and moderate to severe VFD was detected in only 19.4% of patients. There was no association observed between achieving a seizure-free state and worsening VFD following ATL. Conclusion: The approach to the temporal horn using the collateral sulcus as a landmark during ATL may reduce the risk of post-operative VFD while still achieving seizure control.

A novel PCDH19 gene mutation in a hemizygous male with epilepsy, new insight to the pathophysiology

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Abstract: Background and Aims: PCDH19 stands as the second most relevant gene associated with epilepsy. Despite its location on the X chromosome, the existence of hemizygous males with epilepsy has remained elusive. All reported cases of PCDH19-clustered epilepsy have thus far involved heterozygous females or mosaic males, which deviates from the anticipated pattern of X-linked inheritance. An intriguing hypothesis of cellular interference has been proposed to account for this unusual inheritance pattern. According to this theory, the intermingling of wild-type and mutant cells in heterozygous females and mosaic males disrupts the function of the PCDH19 protein in adhesion and synaptogenesis, ultimately leading to epilepsy. In contrast, hemizygous males, who possess a uniform cell type, do not manifest epileptic symptoms. However, alternate pathogenic mechanisms for PCDH19 mutations have also been suggested, including female-related allopregnanolone deficiency, altered steroid gene expression, compromised Gamma-aminobutyric acid receptor (GABAA) function, and blood-brain barrier (BBB) dysfunction. Methods: Our patient, a 2-year and 8-month-old boy and the only child of consanguineous parents (second cousins), presented with clusters of febrile tonic seizures at the age of one. Whole exome sequencing identified a hemizygous variant in the PCDH19 gene. Sanger sequencing subsequently confirmed this mutation as hemizygous in the proband and heterozygous in his mother, who served as a carrier. The existence of this hemizygous male challenges the prevailing cellular interference model used to describe the pathophysiology of PCDH19-linked epilepsy. Consequently, we undertook a comprehensive literature review to explore alternative pathogenic mechanisms. Results: PCDH19 exhibits diverse functions mediated through extracellular or intracellular domains, impacting adhesion or intracellular signaling pathways, respectively. Conclusion: PCDH19 mutations can precipitate epilepsy in individuals of any gender, whether with or without cellular interference. However, the specific pathogenic mechanisms may vary among affected individuals. Keywords: Protocadherin 19, seizure, genetics, X-linked, pathogenic mechanism

Beneficial effects of Saffron on hippocampal neurons and reduction of seizure indices in chemically-induced seizures in animals

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Abstract: Background: Epilepsy, a prevalent and debilitating brain disorder, is characterized by abnormal electrical activity in the cerebral cortex. Although several FDA-approved anti-convulsant drugs exist, they are often associated with significant adverse effects. As a result, natural products have garnered interest due to their potential anti-convulsant properties with minimal side effects. This study aimed to investigate the anti-convulsant mechanisms of saffron pruriens. Method: Seizures were induced in animals through intraperitoneal injection of picrotoxin, strychnine, and pilocarpine hydrochloride. Subsequently, the animals were treated with varying doses of saffron (25, 50, 100 mg/kg), diazepam (7.5 mg/kg), or haloperidol (5 mg/kg). The study recorded the onset of convulsions and mortality rates. Histoarchitectural and immunohistochemical examinations of the brain tissue were also conducted. Findings: The data revealed a significant delay in the onset of convulsions across the treatment groups. Furthermore, the duration of convulsions was markedly reduced in animals treated with saffron. Mortality rates saw a substantial decrease in saffron-treated animals. Additionally, an increase in hippocampal nuclear factor erythroid 2-related factor (NRF2) expression was observed in the treated mice. In conclusion, this study suggests that saffron may reduce the occurrence of seizures and subsequent mortality through mechanisms involving GABAergic expression and increased hippocampal NRF2 expression. Keywords: Saffron, Seizure, Hippocampus.

Case series of malformation of cortical development (MCDs)

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Abstract: Background: Malformations of cortical development (MCDs) encompass a diverse group of cortical lesions and are recognized as significant contributors to epilepsy. Neuroimaging, particularly MRI, plays a pivotal role in identifying these lesions. This case series highlights the importance of meticulous MRI evaluation for diagnosing MCDs. Methods: We present the neuroimaging findings of various cortical malformations in pediatric patients treated at Imam Hossein Hospital, Isfahan University of Medical Sciences. Findings: This case series provides detailed descriptions of the neuroimaging findings in patients with cortical malformations. Conclusion: Pediatric radiologists should have a comprehensive understanding of the neuroimaging findings associated with cortical malformations, as elucidated in this case series. Keywords: Malformations of cortical development, MRI.

Cerbral amyloid angiopathy-Related inflammation(CAA-ri) presenting with a seizure and stroke-like episode: case report

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Abstract: Cerebral amyloid angiopathy-related inflammation (CAA-ri) is a rare neurological condition characterized by perivascular inflammation triggered by the deposition of β-amyloid (Aβ) in cerebral blood vessels. This inflammation leads to progressive dementia, focal neurological deficits, seizures, and intracerebral hemorrhages. Magnetic resonance imaging (MRI) typically shows patchy or confluent hyperintensities on T2/fluid attenuation inversion recovery (FLAIR) sequences in the cortex and subcortical white matter, often corresponding to areas with pre-existing microhemorrhages. While a definitive diagnosis usually requires a brain biopsy, it is rarely performed due to its invasive nature. We present the case of a 69-year-old woman who presented with a range of symptoms, including headache, generalized tonic-clonic seizures, aggressive behaviors, decreased level of consciousness with restlessness, and mild right hemiparesis over the past week. Extensive diagnostic evaluations were conducted to rule out other potential causes, including viral encephalitis, autoimmune encephalitis, acute stroke, neoplastic syndromes, neurosarcoidosis, primary brain lymphoma, metastasis, posterior reversible encephalopathy syndrome, and other important differentials. Ultimately, the patient met the criteria for a diagnosis of CAA-ri. The patient was treated with high-dose corticosteroid therapy and cyclophosphamide, resulting in an improvement in her overall condition. She was discharged with medication instructions and scheduled for follow-up treatment. This case represents one of the few reported instances of CAA-ri and highlights the importance of considering this condition in the differential diagnosis of patients with specific neurological symptoms.
Keywords: Cerebral Amyloid Angiopathy, Seizure, Inflammation, Brain MRI Lesions, Cerebral Small Vessel Disease

Gene therapy in interactable epilepsy: Recent researches

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Abstract: Introduction: Epilepsy, a common neurological disorder, remains poorly understood in approximately 75% of patients, previously categorized as 'idiopathic' or attributed in part to genetic factors. Current pharmacological treatments fall short for about one-third of epilepsy patients, especially those with genetic epileptic syndromes, often yielding unsatisfactory outcomes. Surgical interventions, effective for a select group with localized lesions or identifiable seizure foci, face limitations due to the widespread origin of abnormal brain activity and intricate epileptic networks. Even patients with focal epileptic zones face potential risks, including injuries to vital brain regions during invasive procedures. Therefore, innovative treatments are urgently needed, with gene therapy emerging as a promising alternative. Advances in sequencing techniques over recent decades have identified several monogenic epilepsies, many involving ion channel alterations. Additionally, some epilepsy forms, including certain acquired types, are thought to have complex inheritance patterns influenced by multiple genes and their interactions with environmental factors. In this article, we provide a comprehensive overview of recent research in this field. Methods: We conducted an exhaustive search of Medline, Embase, and Cochrane databases for studies published within the last decade. Results: Recent research in gene therapy for epilepsy explores various approaches, aiming to achieve antiepileptogenic, anticonvulsant, or disease-modifying effects, both during epileptogenesis and after disease onset. Notably, gene therapy employing AAV vectors carrying genes for neuropeptide Y and its Y2 receptor has shown efficacy in suppressing seizures across multiple animal models of epilepsy. Studies have also demonstrated the potential of on-demand inhibition of neuronal activity in reducing seizures in both mice and human mini-brains. Conclusion: Gene therapy presents a promising alternative to traditional pharmacotherapy and surgical interventions for refractory epilepsy. Therapeutic cargos may encompass genes encoding neuropeptides, neurotrophic factors, channel proteins, receptors, and more. Additionally, emerging therapeutic strategies, such as gene editing, optogenetics, and chemogenetics, offer further potential for advancements in epilepsy treatment. Keywords: Gene therapy, intractable epilepsy, seizures, epileptogenesis, neurotrophic factors, ion channels, gene editing, optogenetics, chemogenetics.

Hypothalamic Hamartoma surgery in iran

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Abstract: Abstract Background: In 2020, the epilepsy center at Shiraz, Iran, embarked on establishing a surgical program for patients with hypothalamic hamartoma (HH). While minimally invasive techniques were preferred, they were not available in the region, leading to the adoption of open disconnection and resection surgery methods. This manuscript presents the outcomes of the HH surgery program at the center in the form of a case series. Methods: The study encompassed all patients diagnosed with HH, referred to the Shiraz Epilepsy Center due to drug-resistant epilepsy, and who underwent HH surgery between October 2020 and January 2023 at Namazi Hospital, Shiraz, Iran. Results: Seven patients were included in the study, all of whom experienced gelastic seizures. Total resection of HH was performed in four patients (57%), while the lesions were disconnected and partially resected in three other patients (43%). Following surgery, three patients (43%) became seizure-free, and three patients (43%) experienced a reduction of more than 50% in seizure frequency. Post-operative complications were observed in three patients (43%), with one patient (14.3%) experiencing permanent postoperative right hemiparesis. There were no cases of mortality, and five parents (71%) expressed satisfaction with the surgical outcomes. Conclusion: This study demonstrates the feasibility of conducting hypothalamic hamartoma surgery, even in centers with limited resources, through close collaboration between epileptology and neurosurgery teams. Successful outcomes can be achieved with careful planning, leveraging the expertise of the team members, and utilizing available resources effectively. Keywords: Brain; Epilepsy; Seizure; Surgery; Treatment.

Mitochondrial myopathy, encephalopathy, lactic acidosis and stroke-like episodes (MELAS): Case report

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Abstract: Mitochondrial myopathy, encephalopathy, lactic acidosis, and stroke-like episodes (MELAS) is a maternally inherited multi-organ disorder resulting from a mutation in a mitochondrial gene. This condition manifests with recurrent migraine headaches, seizures, cerebral insults leading to hemiparesis and hemianopia, progressive hearing loss, and cognitive impairments. Here, we present the case of a 30-year-old woman with a history of seizures, recurrent headaches, transient cerebral ischemic attacks, anorexia, nausea, and vomiting. Her symptoms escalated, including generalized tonic-clonic seizures, headaches, blurred vision, dysarthria, behavioral changes, ataxia, and a decline in consciousness, prompting hospitalization. Due to her critical condition, she was admitted to the intensive care unit. A comprehensive evaluation was conducted to determine the underlying cause, ruling out viral encephalitis, autoimmune encephalitis, paraneoplastic syndromes, and stroke. Diagnostic measures encompassed brain MRI, MRS, lumbar puncture, abdominal and pelvic CT scans, echocardiography, and laboratory tests, with a focus on serum and cerebrospinal fluid lactate levels. Based on the presence of clinical symptoms, imaging abnormalities, and elevated lactic acid levels, a diagnosis of MELAS syndrome was strongly considered. The patient received appropriate anticonvulsant therapy and pulse corticosteroids, resulting in significant improvement. Subsequently, the patient's overall condition improved, and she was discharged. Genetic testing is underway to identify the specific gene responsible for this condition. Keywords: Mitochondrial Encephalomyopathies, Stroke, Seizure, Lactic Acidosis

Neuroimaging findings of Phakomatosis

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Abstract: Background: Neurocutaneous disorders (Phakomatosis), such as Tuberous sclerosis and Sturge Weber syndrome, can manifest with epilepsy. It is crucial for both radiologists and pediatric neurologists to be well-versed in the imaging findings of these patients, as these findings can sometimes be subtle. Methods: In this article, we provide an overview of the imaging findings of phakomatosis in pediatric patients at Imam Hossein Hospital, Isfahan University of Medical Sciences. Findings: Various imaging findings associated with phakomatoses are thoroughly discussed and illustrated in this article. Conclusion: Pediatric radiologists should have a good understanding of neuroimaging in phakomatosis to facilitate accurate diagnoses. Keyword: Phakomatosis, Neuroimaging.

Petit Mal's epilepsy the perspective of Avicenna

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Abstract: Background and Aim: The World Health Organization (WHO) has recognized traditional medicine as a valuable complement to modern healthcare. Persian medicine, a rich and ancient tradition with roots spanning thousands of years in Iran, holds a special place in this heritage. One of its luminaries, Avicenna, authored a seminal work on medicine known as "al-Qanun fit-Tibb" in the 11th century. This study qualitatively explores Avicenna's insights on epilepsy as documented in his influential book. Methods: This research relies on a qualitative approach, drawing its primary source from Avicenna's "al-Qanun fit-Tibb." This historic text serves as a comprehensive reference for the study of epilepsy, among other medical topics. Results: Avicenna dedicates a dedicated chapter within his book to epilepsy. Within this chapter, he delves into the various types of epilepsy and their potential causes. He provides insights into the individuals most susceptible to developing epilepsy and offers guidance on preventing epileptic seizures and treating each specific type. Notably, Avicenna describes a condition he terms "Shokhoos," characterized by a state where the patient remains unaltered with open eyes. Breathing and heart function continue normally, and the duration of this state is relatively short. Conclusion: In light of the contemporary limitations in paraclinical facilities, Avicenna's observations align closely with the symptoms of what is now known as Petit Mal epilepsy. He aptly termed this condition "Shokhoos." It is recommended that Avicenna's treatment methods for this condition be subjected to modern clinical trials to evaluate their efficacy and relevance. Keywords: Persian medicine; Avicenna; epilepsy; Petit Mal epilepsy

Potential role of physical activity in people with epilepsy

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Abstract: Potential role of physical activity in people with epilepsy: A systematic review and meta-analysis Abstract Background: Prior research suggests that engaging in physical activity can lead to improvements in the psychological dimension, comorbid conditions, and overall quality of life for individuals with epilepsy. However, there is a need for evidence-based guidelines for prescribing physical activity in this population. This review aims to systematically evaluate and meta-analyze available data on the potential effects of physical activity training programs for people with epilepsy. Methods: A systematic search of four electronic databases (MEDLINE/PubMed, PEDro, SPORTDiscuss, and Scopus) was conducted from their inception until April 2022. The search targeted randomized controlled trials, comparative studies, and non-controlled studies that provided information on the effects of physical activity training programs for people with epilepsy. Results: Fourteen studies, with methodological quality ranging from good to low, met the inclusion criteria, encompassing a total of 331 individuals with epilepsy. Significant improvements were observed in the exercise intervention groups concerning quality of life, fitness level, psycho-affective outcomes, and neurocognitive outcomes. A meta-analysis indicated that moderate exercise led to a non-significant decrease in seizure frequency, while a significant effect was observed in terms of quality of life, with a mean improvement of 4.72 percentage points. Conclusion: Engaging in exercise training can lead to improvements in the quality of life of people with epilepsy. These improvements include better social integration, reduced depression and anxiety, protection against osteopenia and cardiac diseases, and enhanced sleep. Overall, these findings suggest that individuals with epilepsy can benefit from regular exercise. Keywords: Systematic review, Epilepsy, Quality of life, Physical activity. References: Methodology European journal of research methods for the behavioral and social science (June 2023), Journal of epilepsy research 2023 (March 2023) Authors: Dr.Nasser Zangiabadi, associate professor of neurology, Head of Epilepsy Department in Khatam-Ol-Anbia hospital Vida Golpaygani, Master of physiology of sports nutrition Farideh Mesgari, LTM nurse.

Transient lesions on brain MRI after epileptic seizures

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Abstract: Background and Objectives: Epileptic seizures can induce transient cerebral alterations, which are crucial to identify to avoid unnecessary invasive procedures. While these alterations are frequently described in cases of status epilepticus, they can also occur in isolated seizures. This study presents two cases, one involving status epilepticus and the other isolated epileptic seizures, both exhibiting transient brain magnetic resonance imaging (MRI) abnormalities (MRIb). Methods: 1st Case: A 48-year-old man with a history of secondary generalized focal epilepsy, previously normal MRIb, and EEG, presented with 10 hours of focal seizures characterized by clonic movements in the lower left limb. MRIb revealed signal alterations in the right hemisphere at the cortico-subcortical level and isointensity in T1 with hypertensity in long TR in the left caudate nucleus, along with diffusion restriction. EEG demonstrated epileptiform activity in the right temporal region. After three weeks, both MRIb and EEG normalized. 2nd Case: A 34-year-old man experienced a focal visual seizure featuring left palinopsia. EEG did not show epileptiform activity. Brain MRI exhibited a hyperintense focus in the right occipital lobe in T2 and FLAIR sequences with diffusion restriction. A follow-up MRIb performed two months later showed a normal result. Conclusion: Detecting transient cerebral alterations in patients who have experienced seizures is essential to avoid unnecessary invasive procedures. These alterations can manifest with diverse characteristics. Follow-up MRIb is crucial to confirm the transient and benign nature of these lesions, which can persist for up to 12 months. Timely recognition and appropriate monitoring can spare patients from invasive interventions and provide reassurance regarding the temporary nature of these abnormalities.

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