ILAE IRAN

# 22nd Iranian Congress on Epilepsy

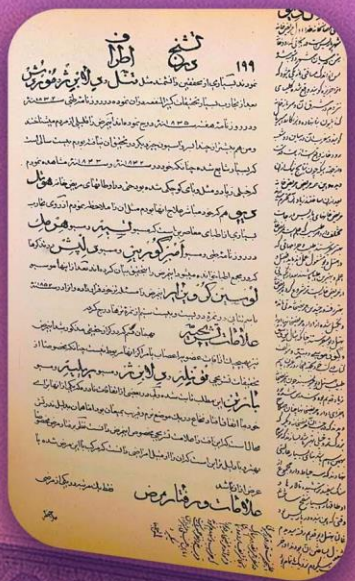
Iranian Epilepsy Association (IEA)

Tehran, Iran

University of Science and Culture

22-24 October 2025

# Abstracts



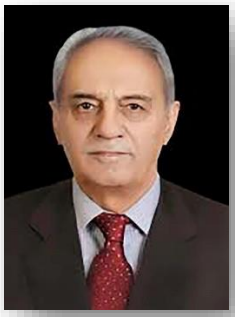
IBE

ILAE EUROPE

www.congress2025.iranepilepsy.org

**In the name of God**


CLOBALEPS
Clobazam
Oral Suspension
120ml
PRILEPS
Primidone
Oral Suspension
120ml
PRILEPS 50
Primidone
PRILEPS 250
Primidone
Product Information
VIGABALEPS
Vigabatrin 500 mg
Powder For Oral Solution
500 mg
30 Sachets
VIGABALEPS



## Dr. Majid Ghaffarpour
## Chairman 22nd Iranian Congress on Epilepsy

**Dear Colleagues and Friends,**

It is with great pleasure and deep respect that I welcome you to the Iranian Epilepsy Congress. This gathering brings together clinicians, researchers, and trainees who share a common commitment to improving the lives of people affected by epilepsy. Our congress stands as a testament to the strength of collaboration and the pursuit of excellence in the diagnosis, management, and understanding of this complex neurological disorder.

Epilepsy remains one of the most fascinating and challenging areas in neurology-demanding both scientific rigor and human empathy. This year's congress provides an exceptional platform for exchanging ideas, presenting innovative research, and fostering dialogue among experts from diverse disciplines. Together, we continue to build bridges between clinical practice and scientific discovery, advancing toward a future where every patient with epilepsy receives precise, effective, and compassionate care.

I extend my sincere gratitude to all speakers, contributors, and participants whose dedication makes this congress possible. May these days of learning and collaboration inspire new insights, strengthen professional bonds, and ignite future advancements in epilepsy care.

On behalf of the organizing committee, I wish you a productive and memorable congress.

**With warm regards and best wishes,**

## Dr. Abbas Tafakhori

**Congress Secretary**

**Professor at Tehran University of Medical Sciences**

**In The Name of God**

It is with great pride that we convene the The 22 nd National Epilepsy Congress - an esteemed scientific gathering that has become a central event for the exchange of knowledge and presentation of the latest advances in the field of epilepsy.
This congress serves as a platform for neurologists, epileptologists, and neuroscience professionals to share insights, clinical experiences, and cutting-edge research.

This year's congress will address a wide range of topics including epileptogenesis and epigenetics, innovations in neuroimaging, advancements in pharmacological and surgical treatments, the management of drug-resistant epilepsy, and the neuropsychiatric aspects of the disorder. These will be explored through keynote lectures, expert panels, and specialized workshops.

We hope that, through the active participation of neurologists, epilepsy fellows, researchers, and academic leaders, this congress will contribute meaningfully to improving the quality of care for individuals with epilepsy and foster opportunities for international scientific collaboration.

## Congress Organization

President of Epilepsy Congress: **Majid Ghaffarpour, MD**

Secretariast of Epilepsy Congress: **Abbas Tafakhori, MD**

### *Members of Scientific Committee*

- Reza Shervin Badv, MD
- Kurosh Gharagozli, MD
- Seyyed Sohrab Hashemi Fesharaki, MD
- Jafar Mehvari, MD
- Mahmoud Motamedi, MD
- Mahmoud Mohammadi, MD
- Abbas Tafakhori, MD
- Daryoosh Nasabi Tehrani, MD
- Sara Ranji, MD
- Behnam Safarpour Lima, MD

### *Members of executive Committee*

- Aida Ansari
- Narges Bayat
- Dr. Amir Mohammad Beigi
- Ali Bakhtiari
- Seyyedeh Sadaf Farzam
- Mohsen Faraj
- Nasrin Farrokhi
- Mohsen Golkaran
- Maryam Hoseinmardi
- Sara Jafari
- Fatemeh Javadi
- Sana Mizaffari
- Dr. Sheida Mobader
- Mina Rahmani
- Dr. Zohre Seddighi
- Dr. Mehrab Shadi
- Mahdis Taroumiha

# Table of Contents

## Oral Presentations

# Acute Symptomatic Seizures, Diagnosis and Treatment: A Systematic Review

**Dr. Shaida Shaafi** [1]

[1] **Tabriz University of medical science ,Neurology Professor**

**Background:** Following the International League Against Epilepsy (ILAE), an acute symptomatic seizure is defined as a clinical seizure occurring at the time of a systemic insult or in close temporal association with a documented brain insult. An acute CNS insult, which may be metabolic, toxic, structural, infectious, or due to inflammation" The aim of this review is to provide information on the most important aspects related to acute symptomatic seizures(AsyS) challenges that will allow clinicians to accurately choice the best approach and management of acute symptomatic seizures and continue or discontinue them. In contrast to epilepsy, based on the general concept of AsyS, seizures are not expected to recur once the precipitating factor or condition has been removed or reversed. However, in practice, an increased risk for the development of epilepsy exists after AsyS caused by structural brain pathologies such as strokes. Awareness of the potential of certain CNS pathologies to cause AsyS is important to provide prompt treatment. Moreover, the accurate distinction between an AsyS and an unprovoked seizure provides a different prognosis and alters treatment. This review aims to provide review about the management and choice of drug in acute symptomatic seizures.

**Methods:** Recent valued studies (2015-2025) were selected and reviewed. And diagnosis, approach and management of AsyS challenges were evaluated. Results: The high incidence of acute symptomatic seizures in the first year of life is associated with the relatively frequent occurrence of encephalopathies (e.g. hypoxic-ischemic encephalopathy), CNS infections, vascular etiologies and metabolic disorders in the neonatal period. Traumatic brain injuries, which occur predominantly in younger men, are the most common cause of acute symptomatic seizures in early adulthood. Alcohol and drug withdrawal is another common cause of acute symptomatic seizures that is more frequently seen in younger and middle-aged men. Cerebrovascular disease is the most common cause of acute symptomatic seizures in elderly patients. Acute symptomatic seizures, occurring shortly after a central nervous constitute nearly half of all seizure cases. However, there is a conspicuous absence of clear, comprehensive, and cohesive guidelines for the management of these seizures

# Acute Symptomatic Seizures, Diagnosis and Treatment:

# A systematic review

**Shaida Shaafi [1], Behnaz Ahmadi [1]**

[1] **Tabriz university of medical science**

**Background**: An acute symptomatic seizure "occurs in close temporal relationship with an acute CNS insult, which may be metabolic, toxic, structural, infectious, or due to inflammation. The aim of this review is to provide information on the most important aspects related to acute symptomatic seizures treatment that will allow clinicians to accurately choice the best drug for acute symptomatic seizures and continue or discontinue them. In contrast to epilepsy, based on the general concept of acute symptomatic seizures, seizures are not expected to recur once the precipitating factor or condition has been removed or reversed. However, in practice, an increased risk for epilepsy exists after acute symptomatic seizures caused by structural brain pathologies. This review aims to provide review about the management and choice of drug in acute symptomatic seizures. Methods: Recent valued studies (2015-2025) were selected and reviewed.

**Results:** Acute symptomatic seizures, occurring shortly after a central nervous constitute nearly half of all seizure cases.

However, there is a conspicuous absence of clear, comprehensive, and cohesive guidelines for the management of these seizures with anti-seizure medications, especially their duration of use. This lack of consensus on the optimal duration of therapy leads to prolonged treatments that may carry adverse consequences. It must be explored the risk of developing epilepsy for each specific etiology and identify the factors that influence this risk. Finally, to facilitate decision-making regarding treatment duration, and categorize acute seizures based on the temporal characteristics.

**Conclusion:** It seems intuitive that the use of antiseizure medications influences the risk of seizure occurrence. Nevertheless, data on the relation between prognosis of acute symptomatic seizures and antiseizure medications in adults are sparse. Short-term medical treatments of acute symptomatic seizures appear reasonable because, as in cohort studies, 30–40% of patients have multiple seizures during the acute phase of the underlying condition. even in presence of a structural brain pathology, most acute symptomatic seizures bear a low risk of subsequent unprovoked seizures. The initial treatment choice for acute symptomatic drug-induced seizures is benzodiazepines. In a randomized controlled trial, phenytoin as a primary prophylaxis prevented acute symptomatic seizures following traumatic brain injury.

# Adult Mitochondrial Diseases and Epilepsy

**Sadeghizadi [1], Sadegh Izadi [1]**

[1] clinical neurology research center of SUMS

**Overview:** Adult mitochondrial diseases are genetic disorders affecting cellular energy production, often presenting with multisystemic and progressive symptoms. - Neurological Manifestations: Epilepsy is common and frequently drug-resistant. Seizure types include focal, generalized tonic-clonic, and status epilepticus.

**Pathophysiology:** Impaired oxidative phosphorylation leads to neuronal energy failure. Mutations in mtDNA or nuclear DNA disrupt mitochondrial function.

**Diagnosis:** Based on clinical features, elevated lactate, neuroimaging, EEG, and genetic testing. - Treatment: Avoid valproate in POLG mutations. Use mitochondrial cocktails (e.g., CoQ10, L-carnitine), ketogenic diet, and tailored AEDs.

**Prognosis:** Highly variable depending on mutation and organ involvement. Epilepsy may worsen with disease progression.

# Art & Epilepsy

**Amir Hossein Larijani** [1]

[1] Department of neurosurgery, tums

Art exhibits a multifaceted relationship with epilepsy, encompassing both the induction of reflex epilepsy and its treatment through art therapy. Reflex epilepsy is characterized by instances where seizures are provoked by specific stimuli, including music, reading, conversation, and praxis. Praxis induction (PI) is described as the onset of seizures and/or epileptiform EEG activity resulting from cognition-guided tasks. Gaining insight into how particular cognitive processes contribute to ictogenesis may assist in identifying the so-called tipping point, at which normal physiological functions culminate in neuronal hyperactivity and hypersynchrony.

Indeed, from a connectome perspective, creative cognition has been associated not only with cortical regions such as the dorsolateral prefrontal cortex (DLPFC) and the anterior cingulate cortex (ACC) but also with the dynamic interactions across extensive neural circuits. A deeper understanding of the neurobiology underlying creative thought could yield significant clinical implications, particularly in the context of brain surgery, especially during awake craniotomy for epilepsy surgery. Therefore, this exceptional human capability warrants more frequent evaluation in standard practice, especially among artists.

# Beyond the Seizure

**Dr. Nasabi Tehrani, Neurologist and Behavioral Scientist, Founder of the Iranian Epilepsy Association [1] © ℗**

[1] **founder of the Iranian Epilepsy Association**

Psychogenic Contributions to Refractory Epilepsy Refractory epilepsy affects ~30% of patients and persists despite adequate drug treatment. Psychogenic factors strongly influence treatment resistance: Depression & anxiety worsen seizure control and medication adherence. Psychogenic nonepileptic seizures (PNES) often coexist, leading to misdiagnosis.

Stress & poor coping increase cortisol and neuronal excitability. Personality traits (e.g., somatization, alexithymia) affect outcomes. Neurobiology: stress and psychiatric disorders impact limbic circuits, neurotransmitters, and inflammation, overlapping with epilepsy networks.

Clinical implications: Use neuropsychological testing and video-EEG in diagnosis. Treat with combined approaches: antiepileptic drugs + psychotherapy (e.g., CBT). Address psychiatric comorbidities to improve seizure control. Apply multidisciplinary care (neurology, psychiatry, psychology, rehabilitation).

**Key message:** Refractory epilepsy cannot be managed by medication alone. Psychogenic factors must be recognized and addressed to improve outcomes.

# Case Presentation

**Taybeh Abbasiou** [1]

[1] Arad Hospital

In my talk I am going to introduce 3 cases with different types of syncope previously treated as epilepsy by mistake and explain about different types of syncope. Syncope Induce Transient loss of consciousness caused by reduced brain blood flow It has 3 different types which **includes:** - Reflex -Orthostatic - Cardiac 1-Reflex syncope • Which Known as neutrally mediated syncope Is common • In this type of syncope the patient feels aura of light headedness and tunnel vision and in standing or sitting position Reflex syncope has different Types which includes Vasovagal, Situational , Carotid sinus - Vasovagal syncope These types of syncope usually Triggered by Stressful events, Pain, Prolonged standing ... -Situational syncope usually Occurs during specific activities like urination, defecation.. -Carotid sinus syncope • Caused by Pressure on carotid artery ,head rotation, tight collars … 2-Orthostatic syncope It caused by reduce venous return and decrease cardiac preload arises from rapid positional changes like moving from sitting or lying down to standing In this type of syncope blood pressure drops during positional changes & causes are body fluid reduction like diarrhea, Vomiting, diuretic drugs, sweating in hot conditions, Bleeding and vasodilator drugs and autonomic poly neuropathy 3-Cardiac syncope Caused by Arrhythmia (Vtach, 2 and 3 AV blocks (Complete heart block) and Structural causes: Aortic stenosis, Hypertrophic cardiomyopathy, MI, Tension pneumothorax and Pulmonary emboli In conclusion Seizure & syncope both can induce loss of consciousness By Precise history taking and Proper examination and evaluation we can prevent life threatening syncopal attacks

# Case Presentation of Reflex Seizure in Autoimmune Epilepsy

**Tella Mohammad Mehrabi** [1]

Reflex seizures, as defined by the International League Against Epilepsy (ILAE), are seizures that are consistently induced by specific exogenous stimuli such as flashing lights, reading, or hot water, or endogenous triggers like calculation and emotional states. Unlike spontaneous seizures, reflex seizures are predictable and stimulus-bound, with exposure reliably provoking events and avoidance often preventing them. In autoimmune epilepsies, reflex seizures are increasingly recognized and are typically triggered by cognitive tasks or sensory inputs due to antibody-mediated cortical hyperexcitability.

Autoantibodies such as GAD65, LGI1, CASPR2, and NMDA-R alter synaptic transmission and inhibitory circuits, lowering the seizure threshold in response to stimuli. Certain autoimmune epilepsies show characteristic triggers, for example, linguistic tasks in GAD65-associated epilepsy or sensory stimuli in LGI1 encephalitis. Reflex seizures may appear early, sometimes preceding spontaneous seizures or encephalopathy, and recognizing them is crucial because they often respond poorly to conventional antiseizure medications but improve with immunotherapy. They account for 4–7% of epilepsies overall, though their true prevalence in autoimmune epilepsy is likely underestimated. Identifying reflex phenomena provides diagnostic clues, guiding antibody testing and targeted EEG activation protocols such as reading tasks or photic stimulation. This facilitates early diagnosis and timely immunotherapy, improving outcomes. Diagnostic workup is multimodal, integrating electrophysiology, imaging, immunology, and neuropsychology.

Management involves both immune modulation and seizure control. Immunotherapy is central, with corticosteroids, intravenous immunoglobulin, or plasma exchange providing rapid benefit, while rituximab or cyclophosphamide may be used in refractory or relapsing cases. Early treatment can prevent disease progression. Antiseizure medications are typically adjunctive, while avoidance or modification of triggers supports seizure control. Multidisciplinary care, including neuropsychological assessment for cognitive triggers and oncologic evaluation in paraneoplastic cases, enhances management. Ongoing EEG monitoring and antibody testing enable assessment of treatment response and early detection of relapses. Overall, recognizing reflex seizures in autoimmune epilepsy is essential for accurate diagnosis and effective, timely intervention.

# Catamenial Epilepsy

**Amir Rezaei** [1]

[1] Neurologist, Epilepsy fellowship, SBMU

**Background:** Catamenial epilepsy is defined as a pattern of seizures that changes in severity during particular phases of the menstrual cycle, wherein estrogens are proconvulsant, increasing the neuronal excitability; and progesterone is anticonvulsant, enhancing GABA-mediated inhibition. Results: catamenial epilepsy is seen in 10 to 70% of women with epilepsy. Clearly, this range is rather big and is thought to be due to people using inconsistent definitions for catamenial epilepsy.

**Conclusion:** To optimize management in patients affected by CE, menstrual physiology must be understood, individualized hormonal contraception treatment considered, and adjustments and interactions with antiepileptic drugs addressed. key words: women with epilepsy, catamenial, progestrone, hormonal therapy

# Cognitive Rehabilitation After Temporal Lobe Epilepsy Surgery

**Kiana Amani [1], Abbas Tafakhori [1]**

[1] Iranian Center of Neurological Research, Neuroscience Institute, Tehran University of Medical Sciences, Tehran, Iran

**Background:** Cognitive sequelae after anterior temporal lobectomy (ATL) remain a major concern despite seizure benefits of surgery. Practical, scalable rehabilitation protocols for post-operative patients are underdeveloped.

**Objective:** To evaluate short-term cognitive outcomes following a structured, computerized rehabilitation program (RehaCom) in post-ATL patients.

**Methods:** Twelve adults completed 10 therapist-supervised RehaCom sessions targeting attention/working memory, memory, and executive functions. Pre-/post-assessments included Digit Span (DSF/DSB), Symbol Digit Modalities Test (SDMT), Rey Auditory Verbal Learning Test (RAVLT), Brief Visuospatial Memory Test–Revised (BVMT-R), Clock Drawing Test (CDT), and Category Fluency Test (CFT). Outcomes were summarized overall and by side of resection.

**Findings:** Group-level improvements were observed in verbal learning and delayed recall (RAVLT), attention/working memory (DSF/DSB), processing speed/executive function (SDMT), semantic fluency (CFT), and visuospatial learning (BVMT-R). Gains in verbal memory and attention were most pronounced among left-ATL patients; improvements in processing speed/executive function and semantic fluency did not differ by laterality. **Conclusions:** A brief, post-operative, computerized cognitive rehabilitation protocol was feasible and associated with multi-domain cognitive gains after ATL, with particularly strong effects on verbal memory in left-sided resections. Findings support integrating structured cognitive rehabilitation into routine post-surgical care and justify a controlled trial.

**Keywords:** epilepsy surgery, temporal lobectomy, cognitive rehabilitation, RehaCom

[1] Associate professor of neurology, Epilepsy fellowship, Mazandaran University of medical sciences, Sari, Iran.

**Dr.Nasim Tabrizi [1]**

The role of cannabis in the treatment of epilepsy Nasim Tabrizi Neurology Department, Mazandaran University of Medical Sciences, Sari, Iran. Cannabidiol (CBD), a non-psychoactive phytocannabinoid, has emerged as a valuable adjunctive therapy in the management of drug-resistant epilepsy.

It is currently approved for Lennox-Gastaut syndrome, Dravet syndrome, and tuberous sclerosis complex, based on robust evidence from randomized controlled trials. CBD is increasingly used off-label for other refractory epilepsies, including focal epilepsy and genetic epileptic encephalopathies, although high-quality evidence for these indications remains limited. CBD's antiseizure mechanisms is not fully elucidated but is hypothesized to involve modulation of GPR55, TRPV1, and adenosine-mediated pathways, among others. Clinically significant pharmacokinetic interactions are a critical consideration, particularly with clobazam and valproate. Routine monitoring of liver function tests is advised, especially during titration and in polytherapy regimens.

Despite its increasing use, significant uncertainties persist regarding optimal dosing strategies. The therapeutic window varies widely among patients, and individual titration is necessary. Long-term effects of sustained high-dose CBD remain unclear, as do potential impacts on development in pediatric patients. Additionally, variability in bioavailability across formulations complicates standardization of dosing. Common adverse events include somnolence, decreased appetite, diarrhea, and transaminase elevations. While generally well-tolerated, careful titration and monitoring are essential to minimize risks.

Emerging areas of interest include the use of CBD in epilepsies with comorbid neuropsychiatric symptoms, potential disease-modifying effects, and alternative delivery systems to enhance bioavailability. As real-world data accumulates and research expands into additional epilepsy syndromes, the role of CBD is likely to broaden within individualized treatment paradigms. Neurologists must remain informed on evolving evidence, drug interactions, and regulatory developments to integrate CBD effectively into clinical practice.

# Drug Interactions and Rational Polytherapy

**Saeed Charsoui [1]**

**[1] Tabriz University of Medical Sciences**

Drug interactions and rational polytherapy Saeid Charsouei ,MD,Associate Professor of Neurology , Epilepsy Fellowship, Tabriz University of Medical Sciences Rational polytherapy is defined as identify AEDs combinations that maximize efficacy and minimize side effects. When the first antiepileptic drug monotherapy fails, the second-line AED should be tried as an alternative monotherapy, while polytherapy should be considered only after the failure of at least two monotherapies. The addition of a fourth drug should be generally avoided, considering that the use of more than three AEDs tends to deeply reduce the safety and tolerability, due to the occurrence of adverse events (AEs) and a scarce improvement in seizure control . Co-medication may increase the risk of idiosyncratic reactions :

for example, valproate/lamotrigine combination augments the probability of lamotrigine-induced hypersensitivity. Enzyme-inducing AEDs/valproate associations increase the risk of pancreatitis, hyperammonaemia, hepatotoxicity and encephalopathy Postural and action tremor can be caused by either each drug or a summary effect of the combination of the valproate/lamotrigine. Generally, recommended dosing regimens for lamotrigine when used in combination with valproate are halves doses.

Phenobarbital, phenytoin and carbamazepine induce the metabolism of liposoluble drugs such as oral anticoagulants, antiretrovirals ,immunosuppressants, antiarrhythmics and oral contraceptives. There are several chronic adverse effects caused by enzyme induction such as sexual dysfunction, reduced bone density, changes in cholesterol concentration and other cardiovascular effects.

Carbamazepine, lamotrigine, ethosuximide, phenytoin and phenobarbital should be avoided in patients with hematological disorders since they can cause bone marrow suppression. Pregabalin, gabapentin, vigabatrin and valproate may lead to an increase in body weight and therefore, should be avoided in obese or diabetic subjects.

# Drug Therapy in Epilepsy: Advances and Emerging Strategies

**Dr. Mohammad Reza Najafi** [1]

[1] Professor of Neurology, Faculty of Medicine, Alzahra Hospital, Isfahan University of Medical Sciences

Drug Therapy in Epilepsy: Advances and Emerging Strategies Background: Epilepsy affects over 70 million individuals worldwide, with approximately one-third experiencing drug-resistant epilepsy (DRE), defined by failure to achieve seizure freedom despite trials of two or more appropriate antiseizure medications (ASMs). The limitations of traditional ASMs in efficacy and tolerability have driven the development of novel pharmacologic agents and adjunctive therapies.

**Methods:** This review integrates findings from recent randomized controlled trials, meta-analyses, and translational studies published between 2020 and 2024. Sources include PubMed, Cochrane Library, and clinical registries focusing on focal epilepsy, syndromic epilepsies, and pediatric populations. Emphasis was placed on mechanisms of action, clinical efficacy, safety profiles, and emerging therapeutic targets.

**Findings:** Cenobamate, a dual modulator of sodium channels and GABA-A receptors, has demonstrated ≥90% seizure reduction in up to 33% of patients with focal DRE. Fenfluramine significantly reduces seizure frequency and mortality in Dravet syndrome. Everolimus, targeting mTORC1, shows efficacy in tuberous sclerosis complex. Levetiracetam is increasingly favored in neonates due to improved neurodevelopmental outcomes compared to phenobarbital. Novel agents such as P2X7 receptor antagonists and histamine H3 modulators exhibit anti-inflammatory and neuroprotective effects. Natural compounds, including Lippia origanoides essential oil and benzyl isothiocyanate, offer promising adjunctive benefits. **Conclusion:** Recent pharmacologic innovations represent a paradigm shift in epilepsy management. Personalized therapy, targeting seizure control and minimizing adverse effects, is increasingly feasible.

Future directions include pharmacogenomics, drug synergy optimization, and integration of neuroprotective adjuncts.

**Keywords:** Epilepsy, Drug-Resistant Epilepsy, Antiseizure Medications, Cenobamate, Fenfluramine, Pediatric Epilepsy, Neuroinflammation, Natural Adjuncts, Personalized Medicine

# Drug Treatment in Generalized Epilepsy

**Dr. Kuroush Gharagozli [1]**

[1] Neurologist, Loghman Hakim Hospital SBMU

Idiopathic generalized epilepsies (IGE) includes about 20% of all types of epilepsies. These patients almost always have unknown based seizures with normal neurologic exam, intelligence, and imaging studies.

These are genetically related and have some subgroups of syndromes. The best seizure control condition can see in about 65-80% of patients with IGE , it's really noticeable that substantial group remains with incomplete control and poor long-term outcome.

Few anti seizure medications (ASM)have been studied in patients with IGE. The rational drug choice for these patients has been studied. Older ASMs continue to being used in the treatment of IGE. The first line monotherapy is still with sodium valproate, other drugs like lamotrigine, levetiracetam and topiramate, are increasingly used in the treatment of IGE. Further research on evidence-based treatment of IGE with new ASM is needed. New data from molecular genetics of IGE might have the potential to help clinicians choose the most appropriate antiepileptic therapy. In refractory patients, combination therapy and vagal nerve stimulation could be the next option. In the proper management of IGE, epileptologists may consider the predominant seizure type, patient gender, co-morbidities, and ASMs that may aggravate a specific seizure type.

# Drug withdrawal in epilepsy

**Mahyar Nourbakhsh** [1]

[1] Autoimmune Diseases Research Center, Kashan University of Medical Sciences , Kashan , Iran

The decision to withdraw anti-seizure medication (ASM) in a seizure-free patient remains one of the most nuanced challenges in epilepsy management. While the goal of freeing patients from long-term drug side effects and teratogenic risk is compelling, it must be carefully balanced against the risk of seizure relapse and its profound consequences, including injury, loss of driving privileges, and sudden unexpected death in epilepsy (SUDEP). This presentation will move beyond the conventional "two-year rule" to explore a modern, evidence-based framework for ASM withdrawal.

We will critically appraise landmark studies and recent meta-analyses that provide individualized recurrence risk estimates, highlighting the critical roles of epilepsy syndrome, seizure-free duration, and EEG findings. The core of the discussion will focus on integrating this quantitative risk with a qualitative assessment of the patient's lifestyle, fears, and aspirations. We will emphasize that the ultimate decision is not a purely medical calculation but a shared process, empowering patients to make an informed choice based on their personal risk tolerance and life goals. The presentation will provide clinicians with a practical strategy to navigate this complex process and optimize long-term outcomes.

# Effect of GABA-producing probiotic bacteria on decreasing seizures in children with refractory epilepsy

**Mehran Beiraghi Toosi [1], Shima Shekari [2], Monir-sadat Shakeri [3], Farah Ashrafzadeh [4]**

[1] Rare Pediatric Neurological Diseases Research Center, Mashhad University of Medical Sciences, Mashhad, Iran
[2] Department of Pediatrics, School of Medicine, North Khorasan University of Medical Sciences, Bojnurd, Iran
[3] Department of Food Biotechnology, Research Institute of Food Science and Technology, Mashhad, Iran
[4] Department of Pediatrics, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran

**Background:** Drug-resistant epilepsy (DRE) in children presents a significant therapeutic challenge, often persisting despite optimized polytherapy. Gamma-Aminobutyric Acid (GABA), an inhibitory neurotransmitter, plays a central role in regulating neuronal excitability. Probiotics capable of producing GABA have emerged as a promising adjunctive approach due to their influence on the gut-brain axis.

**Methods:** This double-blind, randomized, placebo-controlled clinical trial was conducted at the Pediatric Neurology Clinic of Ghaem Hospital, Mashhad, between September 2024 and January 2024. Sixty children aged 1–16 years with confirmed DRE were randomly assigned to either the intervention group (receiving GABA-producing probiotic strains including Lactobacillus brevis, L. bulgaricus, and L. plantarum) or the control group (receiving a visually identical placebo). The intervention lasted 30 days. The primary outcome was reduction in seizure frequency; secondary outcomes included seizure duration. Data were analyzed per protocol using Wilcoxon, Mann–Whitney, Chi-square, and Fisher's exact tests in SPSS. **Findings:** At the end of the study, 40% of children in the probiotic group achieved 50% reduction in seizure frequency, compared to 3.3% in the placebo group (P0.001). No statistically significant difference was observed in seizure duration (P= 0.107). No serious adverse events were reported.

**Conclusion:** Daily administration of GABA-producing probiotics appears to be a safe and effective adjunctive treatment for reducing seizure frequency in children with DRE.

These findings support further large-scale and long-term clinical trials to validate and expand upon these results. Key Words:Drug-resistant epilepsy, GABA, Probiotics

# Epilepsy Pharmacotherapy in Metabolic Disorders

**Mahmoud Reza Ashrafi** [1]

[1] Tehran University of Medical Sciences

Inborn errors of metabolism are rare as individual entities, but their estimated combined incidence is 1 in 3000 live births. Neurometabolic disorders are not a frequent cause of epilepsy, but epilepsy is a frequent comorbidity in many Neurometabolic disorders. Seizures are common manifestations of many inborn errors of metabolism, especially in neonates, infants, and children. Although IEMs are responsible for only a fraction of epileptics, it is imperative to identify them, as there is often treatment available which can mitigate or even prevent major neurological sequelae. It is important to consider the possibility of an IEM in a patient presenting with seizures of an unknown cause not only due to the amenability to causal treatment of the seizures and the possible co-morbidities, but also in order to adequately perform genetic counseling and to more accurately predict the disease trajectory and prognosis. The particular type of seizure can occasionally raise suspicion for a specific disorder.

In the majority of metabolic epilepsies, however, the particular etiology of seizures cannot be predicted from its semiology: Epilepsia partialis continua - POLG related disorder, Migrating partial seizures of infancy – CDG, Drop attacks and Lennox- Gastaut syndrome – GAMT, infantile-onset seizures primarily of the absence type - GLU1DS and Early myoclonic encephalopathy (EME) – IEMs, such as NKH In a few of IEMs, epilepsy responds to specific treatment by diet or supplementation. In most IEMs conventional antiepileptic drugs must be used, often with no great success. However, because uncontrolled epilepsy will hamper development and may even lead to further cerebral damage, treatment is necessary.

# Fever-Associated Seizures or Epilepsy(FASE)

**Daryaei Ebrahim MD -Neurologist-Epilepsy Fellowship [1]**

[1] TUMS

In addition to central nervous system infections, fever and seizures may occur together in several neurological disorders.

Formerly, based on the clinical features and prognostic evolution, the co-association of fever and seizures included classical febrile seizures (FS) divided into simple, complex. Later, this group of disorders has been progressively indicated, with a more inclusive term, as “fever-associated seizures or epilepsy” (FASE) that encompasses: (a) FS divided into simple, complex; (b) FS plus; (c) severe myoclonic epilepsy in infancy (Dravet syndrome); (d) genetic epilepsy with FS plus; and (e) febrile infection-related epilepsy syndrome (FIRES). Among the FASE disorders, simple FS, the most common and benign condition, is rarely associated with subsequent epileptic seizures.

The correlation of FS with epilepsy and other neurological disorders is highly variable. The pathogenesis of FASE is unclear but immunological and genetic factors play a relevant role and the disorders belonging to the FASE group show to have an underlying common clinical, immunological, and genetic pathway. In this presentation, i will review the clinical data of each of the heterogeneous group of disorders with a greater focus on febrile convulsion. **Keywords:** febrile seizures (FS), febrile infection-related epilepsy syndrome (FIRES), Dravet syndrome (DS), genetic epilepsy with FS plus (GEFS+), new-onset refractory status epilepticus (NORSE), fever-associated seizures or epilepsy (FASE)

# Frontal Lobe Epilepsy; a mysterious story!

**Zahra Rezaei [1], Narges Mashayekhi [2], Sasan Saket [3], Neda Pak [4]**

[1] 1- Children's Medical Center, Pediatrics Center of Excellence, Tehran University of Medical Sciences 2- Pediatric and Adolescence Multidisciplinary Epilepsy Research Center (PAMERC), Tehran University of Medical Sciences
[2] Department of Pediatrics, Children's Medical Center, Pediatrics Center of Excellence, Tehran University of Medical Sciences
[3] Pediatric Neurology Research Center, Research Institute for Children Health, Shahid Beheshti University of Medical Sciences,Tehran,IRAN
[4] Department of Radiology, Children's Medical Center, Pediatrics Center of Excellence, Tehran University of Medical Sciences

A 7-year-old girl was referred to the Pediatric Epilepsy Clinic due to abnormal movements and a tic disorder, after previously seeing several psychiatrists and trying various medications with no adequate response. She was a 1st grade student with normal physical and Neurological examinations.

Past medical history was negative, and early developmental milestones were achieved on time. Video electroencephalography (EEG) monitoring, as well as a Dedicated Brain MRI performed for further evaluation.

After advanced workup, interictal and ictal discharges were captured to originate from the left anterior region. Semiology of events was consistent with frontal lobe epilepsy. Brain MRI revealed multiple foci in favor of focal cortical dysplasia (FCD) in both frontal regions. During a short time follow-up, she is symptom-free with the prescription of appropriate anti-seizure medication.

**Conclusion:** Frontal lobe epilepsy is characterized by bizarre motor presentation and could be misdiagnosed as movement or psychiatric problems for a while. Having high suspicion and attempting evaluation, followed by a precise treatment, is crucial to achieving the best outcome.

# Gene Therapy Approaches for Dravet Syndrome with a Focus on ASO-Based Treatment

**Hassan Rassouli** [1]

[1] Department of Regenerative Medicine and Biotechnology in Wound Healing, Medical Laser Research Center, Yara Institute Academic Center for Education, Culture and Research (ACECR), Tehran, Iran

Dravet Syndrome (DS) is a severe, treatment-resistant epilepsy caused by mutations in the SCN1A gene. It results in frequent seizures, cognitive delays, and motor issues. As conventional treatments are often ineffective, gene therapy has emerged as a promising solution by targeting the genetic root cause of the disease. Among the various gene therapy strategies, viral vector-based gene therapy, CRISPR-Cas9 gene editing, and Antisense Oligonucleotide (ASO) therapy are the most studied. Viral Vector Gene Therapy (e.g., AAV) aims to deliver a healthy copy of the SCN1A gene to affected neurons.

This therapy utilizes viral vectors to transport the therapeutic gene to the brain, potentially correcting the genetic mutation. While preclinical studies have shown promise, challenges persist in ensuring efficient delivery and maintaining long-term gene expression in neurons. CRISPR-Cas9 Gene Editing directly targets and edits the SCN1A gene to correct the mutation. This method offers a precise approach to gene correction, but it is still in early research stages. A key obstacle is the difficulty in delivering CRISPR components to neurons, and concerns remain about off-target effects.

In contrast, Antisense Oligonucleotide (ASO) Therapy represents a more refined and potentially safer approach. ASOs are short strands of RNA or DNA designed to bind to specific mRNA molecules, blocking the production of harmful proteins or correcting RNA splicing errors in the SCN1A gene. ASO therapy is advantageous due to its targeted action, reduced invasiveness, and the ability to provide long-lasting effects with fewer risks compared to other gene-editing methods. However, there are challenges such as the efficient delivery of ASOs to the brain and the variability in patient responses. Conclusion ASO therapy presents a promising approach for treating Dravet Syndrome by targeting the underlying genetic defect. While challenges like delivery efficiency and patient response variability remain, ASOs offer a safer, more targeted alternative to more invasive gene-editing methods. As research advances, ASOs could become a key treatment for Dravet Syndrome and other genetic disorders. Keywords: Dravet Syndrome, Targeted Gene Therapy, SCN1A Mutation, Antisense Oligonucleotides (ASOs) & RNA Splicing

# Genetic Diversity in Early Infantile Epileptic Encephalopathy (EIEE): A Three-Year Cohort Study Running title: Three-Year Study on Early Epileptic Encephalopathy

**Paria Najarzadeh Torbati1 Mostafa Salehirozveh3 [1], Shima Imannezhad4 Ehsan Ghayoor Karimiani1 [2], Hanieh Sadat Mirzadeh5 [3]**

[1] 1. Department of Medical Genetics, Next Generation Genetic Polyclinic, Mashhad, Iran 2. Department of Biology, Mashhad Branch, Islamic Azad University,n Mashhad, Iran 3. Department of Chemistry, University of Isfahan, Isfahan 81746-73441, Iran 4.
[2] 1. Department of Medical Genetics, Next Generation Genetic Polyclinic, Mashhad, Iran 2. Department of Biology, Mashhad Branch, Islamic Azad University, Mashhad, Iran 3. Department of Pediatrics, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran
[3] 5. Shahid Fahmideh Children Hospital, Iran University of Medical Science, Tehran, Iran

**Background:** Early infantile epileptic encephalopathy (EIEE) represents the most severe form of developmental and epileptic encephalopathies (DEEs), characterized by early-onset, drug-resistant seizures that lead to progressive psychomotor impairment, intellectual disability, and early mortality.

**Method:** This three-year cohort study aimed to elucidate the genotype-phenotype correlations in EIEE cases from Northeastern Iran. Clinical assessments were conducted by specialists, and genomic DNA was extracted for Whole Exome Sequencing (WES), with Sanger sequencing used to validate EIEE-related variants in affected individuals and their parents.

**Result:** We identified 61 genetic variants associated with 34 types of EIEE across 65 unrelated families. Among these, 38 variants (62.3%) were novel, while 23 variants (37.7%) had been previously reported. Notably, we identified founder variants that were repeated among patients from specific regions. Among all the variants detected, 44 (72.13%) were classified as pathogenic or likely pathogenic, while 17 (27.87%) were categorized as variants of uncertain significance (VUS). All affected individuals experienced seizures with onset before one year of age and exhibited Global Developmental Delay (GDD).

**Conclusion:** This study represents the largest case series of EIEE in the Khorasan Razavi Province. Our findings underscore the importance of early genetic diagnosis and the development of a comprehensive gene panel to identify both recurrent and novel variants, particularly founder mutations, responsible for various types of EIEE. These insights will inform clinical management and pave the way for personalized treatment strategies, highlighting the promising future of genetic testing and precision medicine in epilepsy care.

**Key words:** Epilepsy, Neurology, Whole Exome Sequencing, Encephalopathy, Child Development, Genetic Disorders

# Good Practice in the Diagnosis and Management of Epilepsy in Children

**Gholamreza Zamani** [1]

[1] Children's Medical center,Tehran University of Medical Sciences

**Background:** Epilepsy is one of the most common chronic neurological disorders in childhood, with significant implications for neurodevelopment, quality of life, and psychosocial well-being. Good practice in pediatric epilepsy care requires a structured, patient-centered approach that integrates accurate diagnosis, individualized treatment, and comprehensive support for the child and family.

Summary of content: Approach begins with a thorough clinical evaluation, emphasizing a detailed seizure history, eyewitness accounts, and identification of seizure types and syndromic patterns. Neurological examination, EEG, and targeted neuroimaging form the backbone of the diagnostic work-up, while genetic and metabolic investigations are increasingly recognized as essential in selected cases, particularly in early-onset, refractory, or syndromic epilepsies. Avoiding misdiagnosis such as mistaking non-epileptic paroxysmal events for seizures is a critical component of best practice. Management aims not only at seizure control but also at optimizing cognitive, behavioral, and psychosocial outcomes. Selection of antiseizure medications (ASMs) is guided by seizure type, epilepsy syndrome, age, comorbidities, and potential side effects.

Regular monitoring for drug efficacy, tolerability, and impact on growth and development is essential. In drug-resistant epilepsy, early referral to specialized centers for surgical evaluation, ketogenic diet, or neuromodulation should be considered. Holistic care extends beyond pharmacological treatment, encompassing counseling, education, and coordination with schools to support learning and safety. Special attention should be given to addressing stigma, ensuring adherence, and preparing adolescents for transition to adult services.

**Conclusion:** Emerging advances including precision medicine approaches, targeted genetic therapies, and digital seizure monitoring offer promising avenues for improving individualized care. However, their integration into routine practice requires careful evaluation of evidence, accessibility, and cost-effectiveness.

**Key words:** Good practice,epilepsy management

# Ictal atrial fibrillation during focal seizures

**Shadi Zamanian** [1]

[1] Social Security organization mashhad iran

Cardiac arrhythmias are a common but often overlooked symptom that occur during or after epileptic seizures.

The characterization of seizure-related heart rhythm disorders could shed light on the functional organization of the so-called “central autonomic network” and possibly on the pathophysiology of sudden death of epilepsy patients (SUDEP).

Indeed, epileptic discharges may affect the heart through the involvement of cortical regions selectively driving autonomic functions.

Ictal atrial fibrillation is an exceedingly rare phenomenon, usually associated with generalized tonic-clonic seizures. Here, we report a case of paroxysmal atrial fibrillation as a core presenting feature of a focal non-motor seizure in a 68-year-old man, at first misdiagnosed and treated for a typical cardiogenic arrhythmia.

# Ictal blinking: case report and reviewed

**Hossein Ali Ebrahimi Meimand** [1]

[1] Neurology Research Center, Kerman University of Medical sciences, Kerman, Iran

**Introduction:** Ictal blinking is rare and one of the oculomotor signs, that may be seen in various types of epilepsy. Blinking involves the closing and opening of the upper and lower eyelids, which may be accompanied by brief downward eye movements. Blinking should be differentiated from myoclonus of generalized and focal epileptic seizures, which may be accompanied by upward gaze, or contraction of other facial muscles. The exact mechanism of its occurrence is not known.

**Case report:** A 44-month-old left-handed girl child suffers a concussion following an accident and is in a coma. Examination reveals frequent blinking attacks (It can be seen in the video clip) accompanied by nystagmus and decreased left limb movements. A CT scan of the brain shows bleeding in the right occipital. An MRI scan is performed one month after the accident, and a hypo-signal lesion is seen in this area.

EEG shows slow waves in the right temporo-occipital region. The patient is started on 270 mg of sodium valproate daily, and the blinking disappears.

**Discussion:** It is seen in occipital, temporo-occipital, frontal, and insular lesions. It is often associated with left hemisphere lesions. In our left-handed patient, the lesion causing the lesion is the right occipital. The EEG shows slow waves in the right occipitotemporal region.

# New Update of Epileptic Seizures classification

**Dr. Mohammad Sayyad Nasiri** [1]

[1] Associate Professor of Neurology and Epilepsy Fellowship, University of Rehabilitation Sciences and Social Health, Tehran, Iran

New Update of Epileptic Seizures Classification Mohammad Sayadnasiri, Associate Professor of Neurology, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran In 2017, the International League Against Epilepsy (ILAE) revised the original framework for classifying epileptic seizures, which had been in use for more than three decades.

In this revised classification, some terms such as partial seizures, simple and complex partial seizures, which were not generally accepted in the scientific community or were ambiguous or misleading to the layperson, were removed and replaced with new terminologies. ILAE presented its new classification in two basic and expanded versions. The basis of this classification was based on three key features of the seizure attacks (Where seizures begin in the brain, Level of awareness during an attack, and other semiological features).

With this approach, epileptic seizures were initially divided into focal, generalized, unknown, and focal to bilateral types. In 2025, ILAE revised the 2017 classification, which, while maintaining the main framework of the classification, included changes in some terms (for example, replacing the word " awareness " with "consciousness "), the addition of some new terms (For example, adding negative myoclonus to the list of seizure types), a revision of seizure descriptors, and ultimately a significant simplification from 63 types of epileptic seizures in the 2017 version to 21 types.

# Normal Variants in Electroencephalography

**Meysam Aghaei Meibodi** [1]

[1] Shahid Sadoughi Yazd University of medical science

**Background:** Electroencephalography (EEG) is a cornerstone of epilepsy diagnosis, yet its interpretation is complicated by the presence of normal variants that closely mimic epileptiform discharges. Misinterpretation of these benign patterns can lead to diagnostic errors, unnecessary patient anxiety, and inappropriate initiation of antiepileptic drug therapy. Therefore, the accurate identification of these variants is a critical skill for any clinician involved in EEG interpretation.

**Methods:** Our aim is to consolidate the defining electrophysiological characteristics, prevalence, and clinical significance of the most common normal variants that pose a diagnostic challenge. The analysis focuses on their specific morphological features, typical state-dependent occurrence, and key differentiating factors from pathological epileptiform discharges.

**Results:** We identify a core group of benign patterns frequently mistaken for epileptiform activity. These include wicket spikes, small sharp spikes (benign epileptiform transients of sleep), rhythmic mid-temporal theta of drowsiness, and 14- and 6-Hz positive bursts. These variants are typically observed during drowsiness or light sleep and are characterized by their stereotypic morphology and restricted field.

Crucially, they exhibit no clinical correlation with epilepsy. Mastery of their distinct features—such as arch-like morphology, after going slow wave absence, or characteristic location—is fundamental to avoiding misdiagnosis and preventing the consequent unnecessary therapeutic interventions.

**Conclusion:** Normal EEG variants represent inherent physiological rhythms that can serve as pitfall patterns for the unwary. A thorough, nuanced understanding of their presentation is indispensable for accurate EEG analysis and optimal patient management. Enhancing diagnostic precision requires a sustained commitment to education, with an emphasis on dedicated training and repeated exposure to these benign patterns within neurophysiology curricula and continuous professional development.

**Keywords:** Electroencephalography; Normal variants; Epilepsy; EEG interpretation; Benign EEG patterns; Diagnostic error.

# post-traumatic epilepsy mechanisms and treatments

**Soheila Rezakhani** [1]

[1] **Neuroscience Research Center, Neuropharmacology Institute, Kerman University of Medical Sciences, Kerman, Iran**

While a definitive cure for post-traumatic epilepsy (PTE) following a traumatic brain injury (TBI) remains elusive, significant strides are being made in understanding its mechanisms and exploring potential treatments. Here's an overview of the newest findings and current

approaches: P2X7 Receptor as a Potential Target, Inflammation's Role. The primary goal of current treatment is to manage seizures and improve the quality of life for individuals with PTE.

Approaches include: Antiseizure Medications (ASMs), • Vagus Nerve Stimulation (VNS), Responsive Neurostimulation (RNS), DBS, surgery. Research efforts are focused on: Developing preventative therapies, Precision medicine, Drug repurposing and combination therapy.

# Psychosis and Epilepsy

**Helia Hemasian** [1]

[1] Assistant professor of neurology,firoozgar hospital,Iran university of medical science,tehran,Iran

Psychotic Disorders in Epilepsy Summary: This presentation explores the complex relationship between epilepsy and psychotic disorders, which occur at a rate eight times higher in epileptic patients compared to the general population.

Psychotic syndromes in epilepsy are classified based on their temporal relationship to seizures: Ictal psychoses occurring during epileptic discharge Post-ictal psychoses emerging after a seizure cluster following a lucid interval of 12-120 hours Interictal psychoses developing without chronological link to seizures Post-ictal psychoses typically present as affective psychoses with acute onset and resolution, lasting approximately 10 days, while interictal psychoses often resemble schizophrenia. Notably, anti-epileptic medications themselves may contribute to psychotic symptoms across all classifications.

**Clinical Implications**: Effective management requires integrated neuropsychiatric care with close collaboration between epileptologists and psychiatrists. Antipsychotic medications can be safely administered to epileptic patients when indicated. Despite their clinical significance, psychotic disorders in epilepsy remain poorly understood, frequently under-diagnosed, and inadequately treated in current practice.

**Keywords:** Epilepsy; Psychosis; Antiepileptic Treatment; Antipsychotics; Neuropsychiatry

# Radiosurgery for Epilepsy: Clinical Experience and Potential Antiepileptic Mechanisms

**Mark Quigg 1, John Rolston 2, Nicholas M Barbaro 2,3 [1]**

[1] **Iman Sabzeglin Presenter**

Stereotactic radiosurgery, well established in the noninvasive treatment of focal lesions that are otherwise difficult to access through open surgery, is an emerging technology in the treatment of focal epileptic lesions.

Recent studies suggest that seizures from hypothalamic hamartomas and mesial temporal lobe epilepsy remit at clinically significant rates with radiosurgery, but large variations among different studies have raised questions about appropriate treatment protocols and mechanisms.

Proposed anticonvulsant mechanisms include neuromodulatory effects or ischemic necrosis of epileptic tissue. An ongoing trial that directly compares efficacy, morbidities, and cost of radiosurgery versus open surgery for mesial temporal lobe epilepsy is underway

# SEEG and its performance

**Sarah Renji** [1]

[1] Iranian Center of Neurological Research, Neuroscience Institute, Tehran University of Medical Scienc

Stereoelectroencephalography (SEEG) was designed and developed in the 1960s in France by J. Talairach and J. Bancaud. I

t is an invasive method of exploration for drug-resistant focal epilepsies, offering the advantage of a tridimensional and temporally precise study of the epileptic discharge. It allows anatomo-electrical correlations and tailored surgeries. Whereas this method has been used for decades by experts in a limited number of European centers, the last ten years have seen increasing worldwide spread of its use.

Moreover in current practice, SEEG is not only a diagnostic tool but also offers a therapeutic option, i.e., thermocoagulation. this presentation will be about indications and limits of SEEG; planning and management of SEEG; surgical technique; electrophysiological technical procedures; interpretation of SEEG recordings; and SEEG-guided radio frequency thermocoagulation.

# Seizure incidence after deep brain stimulation: a meta-analysis of risk factors and target-specific outcomes in non-epileptic disorders

**Amir Reza Bahadori [1], Parisa Javadnia [2], Erfan Naghavi [3], Ladan Heidaresfahani [4], Iman Sarmadi [5], Mohammad Rajabi [6], Afshan Davari [7], Saba Dahaghin [3], Sara Ranji [8], Sajad Shafiee [9], Abbas Tafakhori [8]**

[1] School of medicine, Shiraz University of Medical Sciences, Shiraz, Iran
[2] Department of Neurosurgery, School of Medicine, Iran University of Medical Sciences, Tehran, Iran
[3] School of medicine, Tehran University of Medical Sciences, Tehran, Iran
[4] Faculty of Medicine, Tehran Medical Sciences, Islamic Azad University, Tehran, Iran
[5] School of medicine, Alborz University of Medical Sciences, Karaj, Iran
[6] School of medicine, Hamadan University of Medical Sciences, Hamadan, Iran
[7] Medical colleges, Tehran University of Medical Sciences, Tehran, Iran
[8] Iranian Center of Neurological Research, Neuroscience Institute, Tehran University of Medical Sciences, Tehran, Iran
[9] Mazandaran University of Medical Sciences, Sari, Iran

**Introduction:** The reports of seizures following Deep Brain Stimulation (DBS) are low; however, these seizures would be debilitating. Current literature has not provided a comprehensive analysis of seizure incidence post-DBS across various neuropsychiatric disorders. Additionally, there is a lack of insight into the contributing factors and the underlying mechanisms associated with this occurrence.

**Aim:** This systematic review and meta-analysis investigated the incidence of epilepsy in patients with neurological disorders who have undergone DBS, excluding those with drug-resistant epilepsy.

**Method and material:** The study was conducted according to PRISMA guidelines and involved thorough data extraction from several databases, specifically PubMed, Scopus, Embase, Web of Science, and the Cochrane Library, until 28-Feb-2025. We performed this Meta-analysis by using Comprehensive meta-analysis (CMA) software version 3.0 for the statistical analysis

**Results:** This systematic review and meta-analysis encompassed 33 studies, and 5,488 patients. The most frequently neurological disorder which underwent DBS in this review, was Parkinson's Disease. Our meta-analysis revealed that the incidence of seizures following DBS was 2.9% (95% CI: 0.020 to 0.042; p-value  0.001). A strong positive correlation was identified between the rate of intracerebral hemorrhage (ICH) and seizure occurrence, with a Pearson correlation coefficient of 0.635 (p-value: 0.007). Furthermore, there is a significant increase in the likelihood of seizure occurrences following globus pallidus internus- DBS compared to subthalamic nucleus- DBS.

**Conclusion:** Patients with neurological disorders following DBS may experience seizures; however, the incidence of such occurrences is low and typically resolves spontaneously.

# Semiology of Temporal lobe Epilepsy

**Mostafa Asadollahi** [1]

[1] Neurologist, Epilepsy Fellowship, Assistant Professor of Shahid Sadoughi University of Medical Sciences, Yazd, Iran

The semiology of Temporal Lobe Epilepsy (TLE) provides a critical roadmap for localization and lateralization, guiding both diagnosis and surgical evaluation. This abstract synthesizes the characteristic ictal manifestations, organized hierarchically from initial aura to evolving seizure complexity. The episode typically begins with a stereotyped aura, the most reliable localizing sign. Visceral sensations (epigastric rising) and experiential phenomena (déjà vu, fear) are highly characteristic of mesial temporal onset.

Auditory or vertiginous auras may suggest lateral temporal neocortical involvement. The ictal core often features an arrest of activity with impaired awareness, accompanied by automatisms. Orofacial automatisms are ubiquitous, while manual fumbling or purposeless movements of the limbs are common.

Dystonic posturing of the contralateral upper extremity is a highly reliable lateralizing sign, pointing to the hemisphere opposite to the posture. As the seizure propagates, additional signs emerge. Post-ictal aphasia robustly lateralizes to the language-dominant hemisphere, while early head version, if present, often suggests contralateral spread.

The progression from aura to motionless stare, to automatisms with contralateral dystonia, and finally to post-ictal confusion and aphasia, forms a classic sequence highly predictive of TLE. A precise understanding of this semiological hierarchy remains indispensable for synthesizing non-invasive data and formulating a hypothesis for intracranial monitoring or curative resection. Key words: Temporal Lobe Epilepsy, Aura, Automatism

# SUDEP in epilepsy

**Hoda Naghshineh** [1]

[1] Tehran university

SUDEP is the leading cause of death in people with uncontrolled seizures.

The main risk factor is frequent generalised tonic clonic seizure( GTCS). Method and **materials:** The principal underlying pathologies are postulated to be cardiac and respiratory dysfunction.

**Result and conclusion:** Every patient, especially those at higher risk, should be consulted. Risk factors should be identified and prevented. Investigational medicines and safety devices could facilitate SUDEP prevention

# Syncope and Arrhythmia in Epilepsy

**Asieh Mehramiri** [1]

[1] Ahvaz Jundishapur University of Medical Sciences, Assistant professor of neurology, Epilepsy fellowship

**Background:** Epilepsy affects over 46 million people worldwide and is associated with increased cardiovascular morbidity and mortality. Individuals with epilepsy have a 30–40% higher long-term risk of cardiac arrhythmias compared with the general population, highlighting the emerging concept of the "epileptic heart."

**Objective:** To review the bidirectional relationship between epilepsy and cardiac function, with emphasis on arrhythmogenic mechanisms, diagnostic challenges with syncope, and strategies for cardiac monitoring.

**Methods:** Clinical and electrophysiological data from recent literature were synthesized to examine the acute and chronic cardiac consequences of seizures, including ECG alterations across ictogenesis phases and the impact of antiseizure medications on cardiac electrophysiology.

**Results:** Seizures can trigger transient autonomic and electrophysiological disturbances such as ictal tachycardia, bradycardia, and QT prolongation.

Chronic epilepsy is linked to myocardial fibrosis, hypertrophy, and atherosclerosis.

Cardiac channelopathies (e.g., SCN1A, KCNH2, RYR2 mutations) underline shared pathophysiological pathways between the heart and brain. Misdiagnosis between epileptic seizures and cardiogenic syncope remains common.

Modern monitoring methods, including implantable loop recorders and AI-based ECG analysis, enhance detection of arrhythmias and SUDEP risk.

**Conclusion:** Epilepsy and cardiac dysfunction are tightly interconnected through neurocardiogenic and channelopathic mechanisms. Routine ECG evaluation, cardiological collaboration, and individualized risk assessment are essential to prevent sudden cardiac death in patients with epilepsy.

# The Immunopathogenesis of Epilepsy: From Immune Mechanisms to Personolized Immunotherapy

**Farhad Seif** [1]

[1] Department of Photodynamic, Medical Laser Research Center, Yara Institute, Academic Center for Education, Culture, and Research (ACECR), Tehran, Iran

The immunopathogenesis of epilepsy is a complicated process involving a dynamic interaction of immune cells, signaling cascades, and special genetic and epigenetic condistions. Key mechanisms include activated microglia and astrocytes releasing pro-inflammatory cytokines such as IL-1β, IL-6, and TNF-α, which disrupt synaptic transmission and blood-brain barrier integrity.

The adaptive immune system contributes through T lymphocytes and humoral immunity via autoantibodies against neuronal surface antigens (e.g., NMDA-R, LGI1, GABAB1-R, AMPA-R). Specific autoantibodies (e.g., anti-GluR3, anti-NMDA-R) actively disrupt neuronal function, decisively triggering a process of neuroinflammation in patients with refractory seizures. Genetic susceptibility is prominent, with immune-related genes such as IL-1β, SCN1A, CHRNA4, and GABRG2 linking febrile seizures to later epilepsy. Furthermore, early-life nutrition and epigenetic mechanisms, potentially altered by antiepileptic drugs, can program the immune system and influence disease risk. This understanding necessitates the use of immunotherapy, including corticosteroids, intravenous immunoglobulins (IVIG), plasmapheresis, and chemotherapeutic or monoclonal agents (e.g., rituximab).

However, critical knowledge gaps remain. Proper trials are warranted to define the role of steroids in autoimmune limbic encephalitis and to establish plasma exchange's position, especially for patients refractory to steroids or IVIG. Elucidating the humoral immune response in specific clinical conditions is crucial to identify ideal candidates for plasma treatment. Future research must also rigorously assess the risk-benefit ratio of both current and novel therapies. Ultimately, linking immuno-epileptology with genetics and epigenetics will be vital for developing personalized, effective treatments for immune-mediated epilepsies.

# The role of channelopathies in precision medicine of pediatric intractable epilepsy

**Hossein Islamieh** [1]

[1] shahid sadoughi university of medical science, Yazd, Iran

**Background :** Epilepsy affects approximately 1-2 % of children worldwide, with nearly 20-30% developing medication-resistant epilepsy (MRE) .Studies estimate that 50% of pediatric epilepsy cases have a significant genetic cause however in adults this include 15% of cases. single gene defects in ion channels have emerged as a critical etiological subgroup .Precision medicine aims to tailor treatment based on individual genetic and environmental factors , making it particularly relevant for channelopathy-related epilepsy Methods and materials: A systematic literature search was conducted across PubMed, Embase, Scopus, and Web of Science from January 2010 to May 2025. Keywords included “channelopathies,” “pediatric epilepsy,” “intractable epilepsy,” “precision medicine,” and “genetic epilepsy.”

Data on gene mutation type, clinical phenotype, therapeutic interventions, and outcomes were extracted and thematically analyzed Results: We could define some of the important Genetic Mutations in ion channels which have determined precision medicine : they include: • Sodium Channels: SCN1A (Dravet syndrome), SCN2A, and SCN8A • Potassium Channels: KCNQ2 and KCNQ3, KCNT 1 mutations. • Calcium Channels: CACNA1A, CACNA1H • Chloride Channels: CLCN2 Discussion: Different approaches have been implicated according to ion channel mutation• Repurposed Drugs: Sodium channel blockers should be avoided in SCN1A-related Dravet syndrome Ezogabine (retigabine) for KCNQ2-related epilepsy shows promise by enhancing potassium currents also ,Quinidine is effective in KCNT1 related epilepsies . fluoxetine and amphetamine have shown some benefits in other K channel related epilepsies . using Acetazolamide and verapamil are effective in calcium channelopathies • Gene Therapy & RNA-based Approaches: Early trials for antisense oligonucleotides in SCN1A mutations are underway . Conclusion: Precision medicine offers new hope for tailored therapies that improve outcomes and quality of life. Continued research and development of targeted treatments are essential to advance care for these vulnerable patients. Key worsd: channelopathy, Intractable epilepsy, child

# The Role of Diet in the Treatment of Epilepsy

**Zeinab Falsafi** [1]

The Role of Diet in the Treatment of Epilepsy falsafi Z.MD Neurologist.Epilepsy fellow TUMS Epilepsy is a neurological disorder marked by recurrent seizures caused by sudden, uncontrolled electrical disturbances in the brain. While medication remains the primary treatment, dietary therapy can support seizure control, particularly for individuals with drug-resistant epilepsy. One of the most effective dietary treatments is the Ketogenic diet (KD)—a high-fat, low-carbohydrate diet that induces Ketosis, producing ketone bodies with anticonvulsant effects. The classical KD typically uses a 4:1 fat to protein-plus-carbohydrate ratio. In Super-refractory status epilepticus (SRSE), ketogenic therapy has shown encouraging results. Reported response rates reach 87%, with clinical and EEG resolution achieved in about 71% of cases. The median time to seizure cessation is 8 days in children and 5.5 days in adults. A prior history of epilepsy and a defined etiology are associated with better outcomes, especially in mitochondrial or immune-mediated disorders.

The number of treatments before starting KD negatively affects response, but timing of initiation has less impact. Adverse effects occur in approximately 45% of patients but are generally manageable. Common complications include constipation, diarrhea, hypoglycemia, acidosis, hyperlipidemia, electrolyte imbalances, pancreatitis, and elevated liver enzymes. In some cases, seizure activity reappears after stopping KD and improves when restarted, indicating the need for gradual weaning. Contraindications include fatty acid oxidation disorders, Pyruvate carboxylase deficiency, Porphyria, and pregnancy. Adequate micronutrient intake is essential, and prophylactic carnitine supplementation may be needed in certain patients. When combined with immunotherapy or plasma exchange, interactions remain unclear. In patients on Renal replacement therapy, ketone loss and glucose absorption can reduce ketosis. The optimal duration and timing of KD remain uncertain. Long-term dietary therapy should be individualized, and carbohydrate should be reintroduced gradually during weaning. In conclusion, dietary therapy, especially the ketogenic diet, plays a significant role in managing epilepsy and SRSE. It can be effective and safe when used appropriately, offering hope for improved seizure control and quality of life in patients with refractory epilepsy.

**Keywords:** Ketogenic diet (KD) , Super-refractory status epilepticus (SRSE)

# Treatment of Refractory Status Epilepticus

**Mohammad-Amin Farzi** [1]

[1] Assistant Professor, Neurology Department, Tabriz University of Medical Science, Tabriz, Iran

Treatment of Refractory Status Epilepticus Mohammad-Amin Farzi: Assistant Professor, Neurology Department, Tabriz University of Medical Science, Tabriz, Iran, Background: Status epilepticus is a medical and neurologic emergency that requires prompt evaluation and treatment.Refractory status occurs in approximately 20 percent of patients with status epilepticus Definition – The International League Against Epilepsy (ILAE) follows the operational definition of generalized convulsive status epilepticus as having a duration of five minutes. RSE, however, is not defined by duration, but rather as status epilepticus that does not cease with administration of two antiseizure medications (administered in appropriate and adequate doses); usually an intravenous benzodiazepine, followed, if necessary, by a longer-acting antiseizure medication. RSE occurs in approximately one-quarter of status epilepticus cases and has higher morbidity and mortality. Super-refractory status epilepticus (SRSE) is defined as status epilepticus persisting or recurring after 24 hours or more of treatment with anesthetic drugs. Management: For patients with generalized convulsive refractory status epilepticus (RSE), essential management steps include transfer to an intensive care unit with continuous electroencephalography (cEEG) capability, intubation and mechanical ventilation, and highly sedating pharmacologic therapy to suppress seizures. Beyond pharmacotherapy, ketogenic diet, epilepsy surgery and neuromodulation and in cases with new onset refractory status epilepticus(NORSE) immunotherapy also should be in consideration. Keywords: Status epilepticus, refractory status epilepticus, super-refractory status epilepticus, NORSE

# Wada Test: Review of Indications, Performance and Complications

**Pouria Moshayedi MD PhD** [1]

[1] Assistant Professor of Neurovascular Diseases, Tehran University of Medical Science, Tehran, Iran

Wada test, also known as Wada-Milner test, is widely used in epilepsy surgery to plan for a safe and effective resection of epilepsy focus. In Wada test a transient suppression of unilateral hemispheric function is achieved by injection of a short acting neuronal suppressor, during which language and memory testing is performed by neuropsychiatrists. After suppressant's effect is ceased, testing continues to identify the hemispheric role in memory.

In this lecture we will discuss how predictive Wada test results are in post-surgical language and memory impairments. We will also discuss complication rate and ways to avoid untoward events during the procedure.

## Posters Presentation

# Alien hand ‘Rare Post-Ictal Phenomenon

**Shadi Zamanian** [1]

[1] Social Security organization mashhad iran

**Background and Aims:** Alien limb (AL) refers to involuntary limb activity in which patients report loss of control over the affected limb. Isolated AL is encountered in patients with well-defined lesions, such as stroke or tumour, while in neurodegenerative diseases, AL coexists with other motor and cognitive deficits. Methods: Clinical evaluation, video recordings and EEG recordings of two patients with post-ictal AL. Results: 51-yo female was admitted due to epileptic status.

caused by an old ischemic lesion in the left temporo-occipital cortex. Postictally, AL was observed in the right arm and leg along with right-sided neglect and Balint syndrome: optic ataxia, oculomotor apraxia and simultagnosia. The symptoms completely subsided after 4 days. 70-yo male was admitted after a series of seizures. caused by an old vascular lesion in the left occipito-parietal cortex . Post-ictal confusion, right arm Todd's paresis and postictal aphasia were followed by right arm AL that continued for 2 days. In all cases, prolonged EEG recordings ruled out seizure activity during episodes of AL. Conclusion: Transient post-ictal AL may be observed in patients with posterior cortical lesions. Pathophysiologically, it may arise from postictally suppressed parietal areas, causing disinhibition of the motor areas (transitory disconnection) along with a lack of sense of agency.

# Define the problems of treatment failure in epilepsy

**Dr. Shaida Shaafi** [1]

[1] Tabriz university of medical science

**Background:** One of the common and prevalent problems in the treatment of epileptic patients in practice is treatment failure and dissatisfaction of both the patient and the physician with the outcome. We discuss addressing the factors of treatment failure in this paper. A key pitfall in epilepsy treatment is under treatment with sub-optimal drug doses, potentially preventing seizure remission. Another major issue is failure to recognize and treat pseudo-seizures or status epilepticus. Furthermore, medication non-adherence and adverse effects can also hinder effective treatment. The prevalence of treatment failure remains virtually unchanged despite the many new epilepsy medications available, and side effects continue to be a major cause of failure. Treatment failure is not a uniform entity; instead, there are several patterns that we see in the clinic.

A common pattern is an incomplete reduction in seizure frequency or severity, but some seizures continue to interfere with the patient's life. In another pattern, the medicines have no discernable effect on the seizures. Still another response pattern is that seizures are controlled for varying periods before they return and are no longer controlled. These different observations have several potential mechanistic implications. Under treatment: Using inadequate doses of antiepileptic drugs (AEDs) can prevent patients from achieving full seizure control. It's crucial to consider dose increments unless there are signs of toxicity. Failing to recognize and treat genuine seizures as status epilepticus (SE) can have dire consequences. Similarly, misdiagnosing seizures as pseudo seizures (non-epileptic seizures) can lead to delayed or incorrect treatment. Leaving insufficient time between drug doses can be detrimental, potentially exacerbating adverse effects.

Patient non-adherence to medication regimens, poor understanding of treatment routines, lack of belief in medication efficacy, and side effects concerns can hinder effective management. AEDs can have various side effects, including fatigue, mood changes, and cognitive difficulties. These side effects can lead to medication discontinuation and impact quality of life. Some patients with epilepsy may not respond to standard AEDs, leading to treatment resistance. Before confirming treatment resistance, it's crucial to rule out pseudo resistance due to factors like incorrect diagnosis or non-adherence. Epilepsy can be associated with psychiatric conditions

# Determining the Effectiveness of Carbamazepine Alone versus Combined Carbamazepine and Lacosamide in Patients with Uncontrolled Epilepsy Referred to the Neurology Clinics of Besat Hospital During 2023-2025

**Mehrdoht Mazda [1], Niloufar Abdi [1], Mina Rahman Doost [1], Zahra Mozaffari [1]**

[1] Hamedan university medical science

Introduction and Objective: Limited studies have been conducted on the efficacy of carbamazepine and lacosamide in patients with uncontrolled epilepsy. This clinical trial aimed to determine and compare the effectiveness of carbamazepine monotherapy versus combined carbamazepine and lacosamide therapy in patients with uncontrolled epilepsy referred to the Neurology Clinic of Besat Hospital between 2023 and 2025. Methods: In this clinical trial, 100 patients diagnosed with uncontrolled epilepsy (≥2 seizures in the preceding 3 months) were randomly and equally assigned to two groups: carbamazepine 200 mg/day alone or combined with lacosamide 100 mg/day for 2 weeks. If seizures occurred, carbamazepine was increased to 800–1200 mg and lacosamide to 400–600 mg. Both groups were compared for seizure frequency during the first 6 months post-treatment and adverse effects. Results: The two groups showed no statistically significant differences in demographic characteristics, epilepsy type, or pre-treatment seizure frequency.

In the first 6 months post-treatment, 50% of monotherapy patients (carbamazepine) and 70% of combination therapy patients (carbamazepine + lacosamide) remained seizure-free (P=0.041). Among patients who experienced seizures during this period (25 monotherapy vs. 15 combination therapy), seizure frequency was significantly higher in the monotherapy group (1.4 ± 0.3 vs. 1.2 ± 0.7, P=0.001). Only 2% of combination therapy patients discontinued treatment, compared to 12% in the monotherapy group (P=0.112). No serious adverse effects were observed in either group.

The most common side effects in the combination group were anxiety (24%) and dizziness/headache (19%), while the monotherapy group reported dizziness/headache (42%) and depression (34%).

**Conclusion:** Based on the findings, carbamazepine combined with lacosamide demonstrates superior efficacy in managing uncontrolled epilepsy due to better seizure control and fewer adverse effects. However, larger-scale studies with longer follow-up periods are warranted to confirm these results.

**Keywords:** Epilepsy, Carbamazepine, Lacosamide

# Etiology and Final Outcome of the First Afebrile Seizure (FUS) in Children Hospitalized in the Pediatric Neurology Ward from 2017 to 2022

**Seyyed Parham Ahmadi [1], Narges Hashemi [1], Mehran Beiraghi Toosi [1], Setareh Mashahiri [1]**

[1] Department of Pediatrics, School of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran

**Background:** Seizures can cause significant emotional and social distress for children and their families. The first unprovoked seizure (FUS) in children often prompts thorough diagnostic evaluations due to concerns about recurrence, epilepsy development, and neurodevelopmental impact. Seizures constitute around 2% of pediatric emergency visits. While some resolve spontaneously, others may indicate serious underlying issues. Recurrence is a key factor in determining the need for antiepileptic treatment. This study aimed to assess the etiology and outcomes of FUS in hospitalized children. Methods: This retrospective study assessed the etiology and outcomes of FUS in children admitted to the Pediatric Neurology Department of Ghaem Hospital, Mashhad, from 2017 to 2022. Data from medical records included demographics, seizure characteristics, EEG and MRI findings, laboratory results, and antiepileptic drug (AED) use.

Outcomes focused on seizure recurrence and AED management. Findings: The study included 159 children (52.8% male, mean age 6.3 years, 56.6% 5 years). Generalized seizures occurred in 72.3%, and the mean seizure duration was four minutes. Hyponatremia, hypoglycemia, and hypocalcemia were seen in 20.9%, 9%, and 1.5% of patients, respectively. Brain MRI was normal in 74.7%, while the remaining cases showed nonspecific findings. EEG was normal in 53.4%, abnormal in 27.1%, and nonspecific in others. Etiology remained unknown in 98.7%. Seizure recurrence occurred in 33.0%, mostly (64.9%) within the first six months. Recurrence rates at 1, 2, and 5-years were 27.7%, 32.1%, and 33%. While male gender and age ≥5 years were associated with recurrence in univariate analysis, only older age remained significant in multivariate analysis. Family history, seizure type, and MRI/EEG findings showed no significant association. Conclusion: In the vast majority of children (98.7%), the etiology of FUS remained unknown. Recurrence occurred in 33.0%, with most (64.9%) within the first six months post-discharge. These findings emphasize the necessity of close follow-up during this period to guide treatment planning. Among analyzed factors, only male gender was significantly associated with recurrence. However, MRI and EEG findings showed no significant correlation, which may have implications for optimizing diagnostic approaches and reducing unnecessary healthcare costs.

**Keywords:** First afebrile seizure, etiology, outcome, recurrence

# Hypothalamic hamartoma surgery in a setting with limited resources

**Mohammad Sadeq Masoudi** [1]

[1] Shiraz University of Medical Sciences

Three years ago (in 2020), we at the epilepsy center in Shiraz, Iran, started an endeavor to initiate a surgical program for patients with hypothalamic hamartoma (HH). We discussed that although minimally invasive techniques are desired, they are not available in the nation. We decided to proceed with open disconnection and resection surgery techniques. The current manuscript presents the results of the HH surgery program at our center as a case series. **Methods:** This study included all patients with a diagnosis of HH who were referred to Shiraz Epilepsy Center with drug-resistant epilepsy and who underwent HH surgery from October 2020 to January 2023 at our epilepsy center, Namazi Hospital, Shiraz, Iran. Results Seven patients were included. All patients had gelastic seizures. Four patients (57%) underwent total resection of HH, and the lesions were disconnected and partially resected in three other patients (43%). Three patients (43%) became seizure-free after surgery, and three patients (43%) had more than 50% reduction in their seizure frequencies. Three patients (43%) had no post-operative complications. Only one patient (14.3%) suffered from a permanent postoperative complication (right hemiparesis). The mortality rate was zero. Five parents (71%) were satisfied with the surgery outcomes.

**Conclusion**: Hypothalamic hamartoma surgery is feasible even in centers with limited resources if a close collaboration exists between the epileptology and neurosurgery teams. Careful planning based on the expertise of the team members and the available resources is required to foster success

# Investigation of the Causes, Treatment, and Prognosis of Intractable Seizures in Children

**Maryam Kachuei [1], Atefeh Faraji [2], Mohammad Rezazadeh [3]**

[1] Pediatric neurology department, Aliasghar children hospital, school of medicine, Iran university of Medical Sciences
[2] School of medicinr Iran university of medical sciences
[3] Medical student , school of medicine , Iran university of medical sciences

Seizure is one of the most common neurological emergencies in childhood and is associated with significant mortality and disability. The prevalence and causes of seizures in children are influenced by numerous factors, including age, sex, fever status, central nervous system infections, and metabolic disorders. The aim of this study was to investigate the clinical and demographic characteristics, laboratory and imaging findings, as well as the clinical outcomes of children hospitalized with seizures at a tertiary care educational hospital.

This cross-sectional, descriptive-analytical study was conducted on children with seizures. Data collected included age, sex, presence of fever, family history, seizure type, laboratory and imaging findings, drug therapy, and discharge status. A total of 37 children (23 boys, 14 girls) were reviewed. The highest frequency of seizures was observed in the 1 to 2-year age group (45.5%). Fever was present in 24.4% of the children, and a family history of seizures was reported in 12.2% of cases. Imaging findings were abnormal in 51.2% of patients, and the most commonly prescribed drug for seizure control was phenytoin (70.7%). Ultimately, 61% of patients were discharged with improvement, while 39% died.

The results of the present study indicate that seizures in children occur more frequently at younger ages, and metabolic disorders and abnormal imaging findings play a significant role in their occurrence. Given the considerable mortality rate, attention to precise screening, timely treatment, and long-term follow-up is essential. These findings are consistent with similar reports from developing countries and emphasize the need to strengthen diagnostic and treatment facilities for this patient group.

# The Effect of Combined Treatment with Carbamazepine and Astaxanthin Supplement in a Pentylenetetrazol-Induced Seizure Model

**Fatemeh Bagheri Tadi [1], Fariba Karimzadeh [2], Mansoureh Soleimani [1]**

[1] Department of Anatomy, School of Medicine, Iran University of medical Sciences, Tehran, Iran
[2] Cellular & Molecular Research Center, Iran University of Medical sciences, Tehran, Iran

**Background:** Seizures are prevalent neurological disorders caused by an imbalance between excitatory and inhibitory brain systems. The GABAergic pathway, as the major inhibitory mechanism, is crucial for seizure regulation. Carbamazepine, a commonly prescribed antiepileptic drug, enhances neuronal inhibition but is associated with depressive side effects. Astaxanthin (AXT), a potent antioxidant with neuroprotective properties, may improve seizure control by reducing oxidative stress and supporting inhibitory neurotransmission.

**Methods:** Male Wistar rats were divided into seven groups: sham (olive oil), seizure control, carbamazepine-treated groups (25 and 75 mg/kg), seizure with AXT group (4 mg/kg), and combination groups receiving AXT (4 mg/kg) with carbamazepine (25 and 75 mg/kg). Seizures were induced with pentylenetetrazol (35 mg/kg), and behavioral seizure scores were recorded for 30 minutes post-injection. Depressive-like behaviors were evaluated using the tail suspension test and elevated plus maze. Western blot analysis was performed to assess GAD65 expression in the hippocampus and sensorimotor cortex regions. Results: AXT alone reduced seizure severity compared to the seizure group.

Combination therapy significantly increased seizure onset latency and reduced seizure severity more effectively than either monotherapy. Western blot findings showed that combined treatment GAD65 expression in hippocampus and cortex. Additionally, rats receiving polytherapy exhibited reduced depressive-like behaviors compared to the seizure control, suggesting that AXT mitigated carbamazepine's depressive side effects.

**Conclusion:** Combined administration of carbamazepine and astaxanthin potentiates the GABAergic pathway, decreases seizure severity, and alleviates depressive-like behaviors in a PTZ-induced epilepsy model. Astaxanthin's neuroprotective and antioxidative properties appear to enhance the therapeutic efficacy of carbamazepine while counteracting its adverse effects.

This combination may represent a promising adjunctive strategy for improving epilepsy management. kye word: seizure, Carbamazepine, astaxanthin