Iranian Epilepsy Association

19th International Epilepsy Congress

نوزدهمین کنگره بین المللی صرع

ILAE IRAN

1-3 March 2023
Shahid Beheshti University
Tehran,Iran

تاریخ برگزاری: ۱۰ تا ۱۲ اسفند ماه ۱۴۰۱

مکان برگزاری: ولنجک، میدان شهید شهریاری، مرکز همایش های بین المللی دانشگاه شهید بهشتی، سالن ابوریحان

www.congress.iranepilepsy.org

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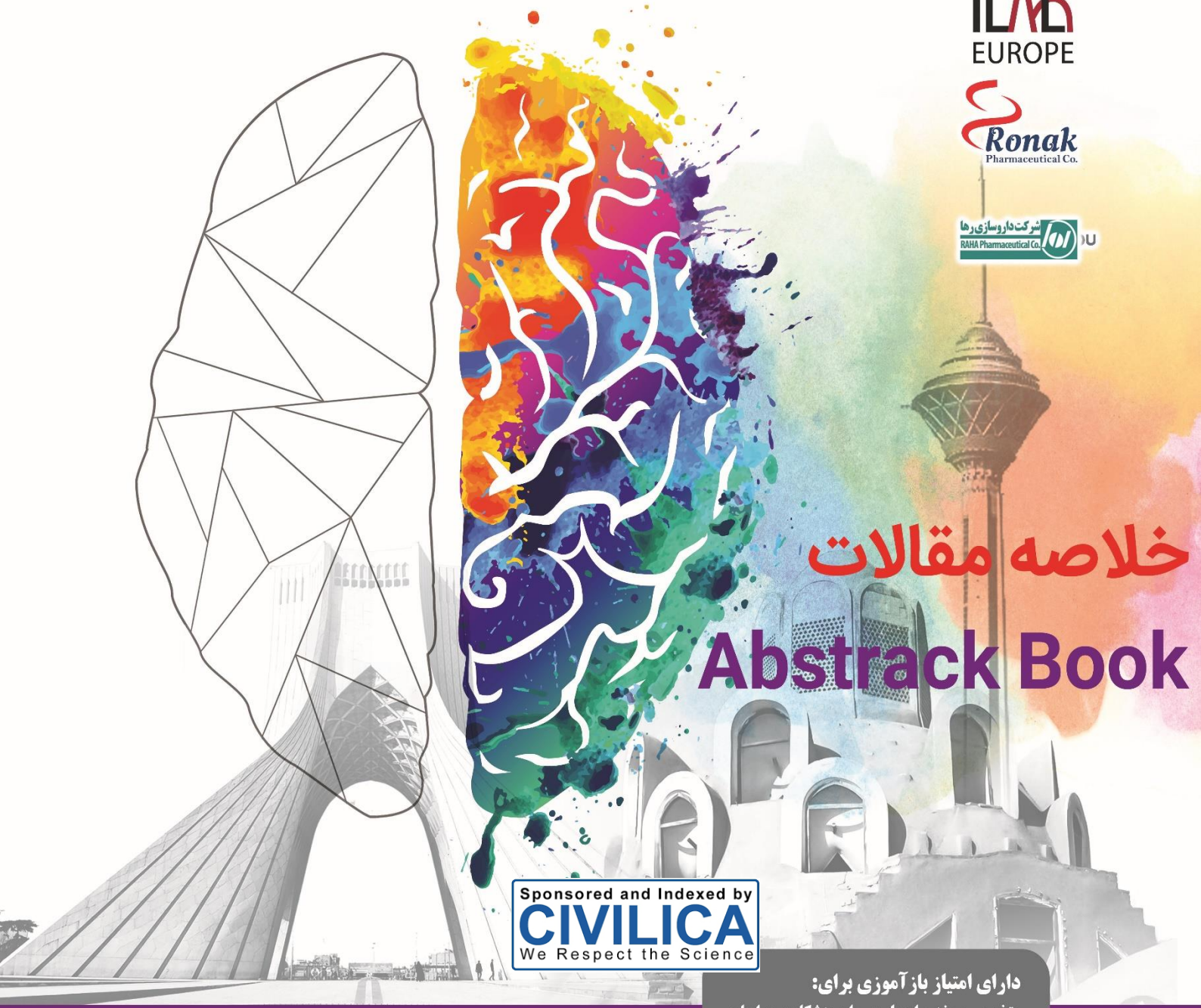

خلاصه مقالات

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دارای امتیاز باز آموزی برای:
متخصصین مغز و اعصاب، روان پزشکان، جراحان مغز و اعصاب، متخصصین اعصاب اطفال و ...

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In the name of God

Dr. Hossein Pakdaman

Congress president
Professor of Neurology
Shahid Beheshti University of Medical Sciences

In the Name of God Thanks God once again granted the success of holding the "International Epilepsy Congress" with the help of colleagues of "Neurology and Neurology Association, Epilepsy Association of Iran and Epilepsy Branch of ILAE in Iran". In the past two years, despite the restrictions created in relation to the covid-19 pandemic, efforts were still made to use the knowledge and experience of many professors and expert colleagues inside and outside the country, and this will continue to achieve better results in the future. The 19th International Epilepsy Congress will be held on the 10th to the 12th of March 2023 with the presence of top neurology professors from all over the world and the sincere support of Mr. Dr. Mahyar Noorbakhsh (as the scientific secretary of the program). In the above congress, "various aspects of epileptology knowledge, advances and different methods of diagnosis and treatment in children and adults, current challenges and conditions of epilepsy in society will be discussed. We hope that with the cooperation and help of respected professors and experts interested in these topics, we can have a high quality congress. I would like to thank and appreciate the continuous efforts of the colleagues of this program to make it better and more magnificent.

Mahyar Noorbakhsh

Congress chairperson
Assistant professor of neurology, fellowship in epilepsy
Kashan university of medical sciences

On behalf of the Iranian epilepsy association and Iranian chapter of ILAE, it is my pleasure to welcome you to 19th Iranian epilepsy congress (IEC). This is the first epilepsy congress that is held in-person after COVID-19 pandemic. The scientific program of 19th IEC has covered many aspects of epileptology with the most focus on recent advances in diagnosis and management of epilepsy which are certainly necessary to address for daily practice.

The sessions will be held on three parallel halls and we have speakers from all over the world. due to economic problems, invited speakers from other countries have virtual lecture in our congress. Main topics of our congress is about epilepsy treatment, genetics, epilepsy surgery, epilepsy neuropsychiatry and neuroimaging and multiple case based discussion meetings will be held in the congress.

I hope this congress brings you beneficial learnings and enjoyable time with good experiences.

Scientific committee

Dr. Sanaz Ahmadi Karvigh
Dr.Ali Akbar Asadi-Pooya
Dr. Marjan Asadollahi
Dr. Reza Azizi Malamiri
Dr. Reza Shervin Badv
Dr. Parviz Bahrami
Dr. Majid Ghaffarpour
Dr. Kurosh Gharagozli
Dr. Seyyed Sohrab Hashemi Fesharaki
Dr. Jafar Mehvari
Dr. Mahmoud Mohammadi
Dr. Mahmoud Motamedi
Dr. Seyyed Navid Naghibi
Dr. Daruosh Nasabi Tehrani
Dr.Mahyar Noorbakhsh
Dr. Hossein Pakdaman
Dr. Behnam Safarpour lima
Dr.Vahid Salehifar
Dr. Farzad Sina
Dr. Nasim Tabrizi

Iranian Epilepsy Association

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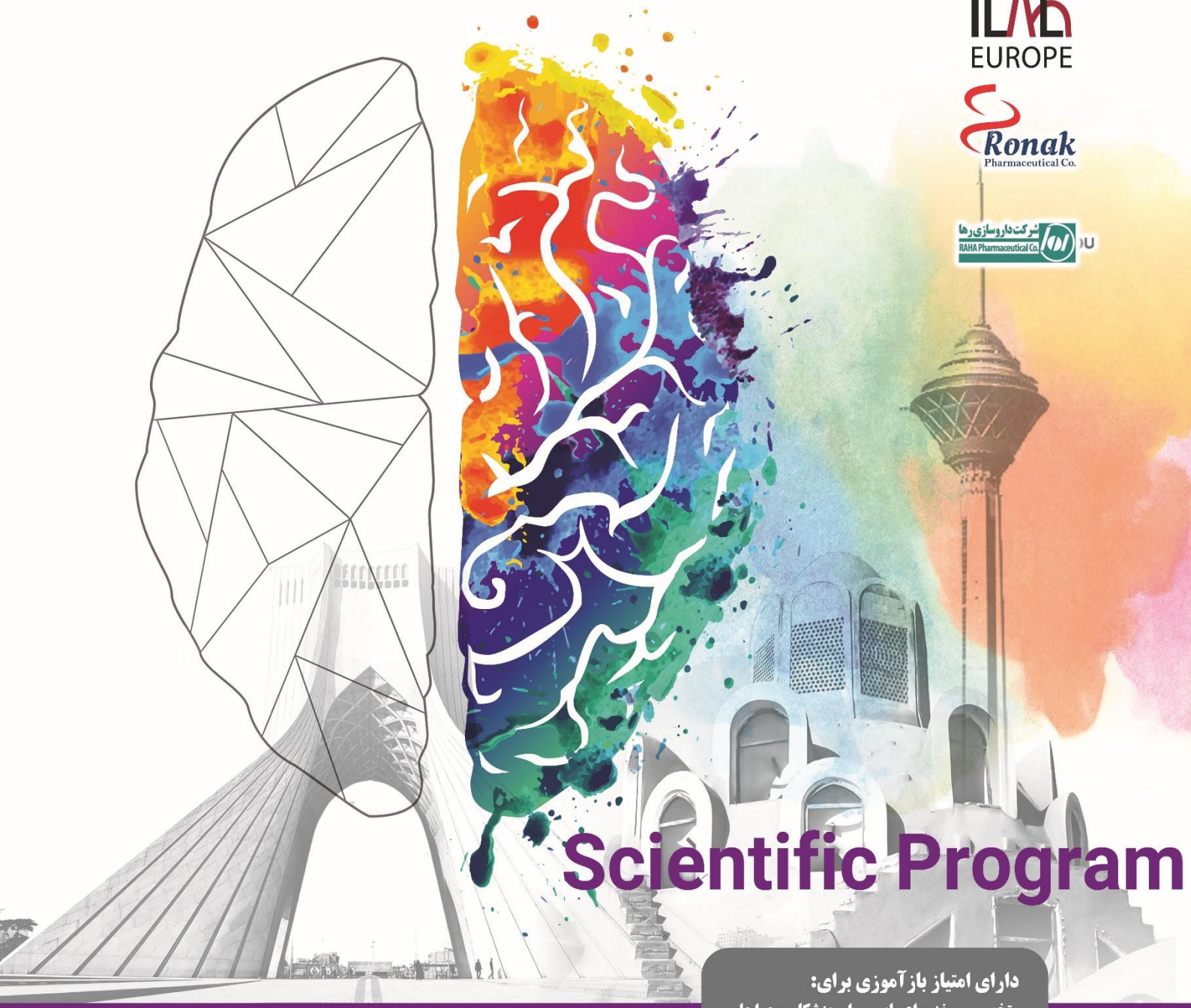

Scientific Program

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Congress Program

Wednesday 1 March 2023

8:00-8:30	**Welcome-Opening ceremony (Aburayhan Hall)**
	Dr. Hossein Pakdaman (President of Congress)
	Dr. Mahyar Noorbakhsh (Congress Secretary)

Epilepsy in different situation (Aburayhan Hall)
Co-chairs: Dr. Hossein Pakdaman, Dr. Majid Ghaffarpour, Dr. Mahmoud Reza Ashrafi

Time	Title	Speaker
8:30 – 8:55	Epidemiology of epilepsy in Iran	Dr. Hossein Pakdaman
8:55 – 9:20	Management of seizures caused by internal diseases	Dr. Majid Ghaffarpour
9:20 – 9:45	Advances in the treatment of mitochondrial epilepsy	Dr. Mahmoud Reza Ashrafi
9:45 – 10:10	Treatment of patients with epilepsy and neurodegenerative disorders	Dr. Nasim Tabrizi
10:10 – 10:35	Stroke and epilepsy: New insights	Dr. Sanaz Ahmadi Karvigh
10:35 – 11:00	Q & A	

Clinical Researches (Allameh Tabatabaei Hall)

Co-chairs: Dr. Melika Akbarimehr, Dr. Ehsan Sharifipour

Time	Title	Speaker
8:30 – 8:45	Ketogenic diet and epilepsy	Mohammad javad Modarresi
8:45 – 9:00	Complications of Antiepileptic Drugs in Hospitalized Patients in Shahid Motahari Hospital of Urmia from 2010 till the end of 2016	Dr. Ezzatollah Abbasi
9:00 – 9:15	A novel combination of seizures in a 3.5 years old girl with myoclonic absences and epileptic spasms	Dr. Mehran Beiraghi Toosi
9:15 – 9:30	Atypical postictal syndrome (PIS); a rare case report	Dr. Shadi Zamanian
9:30 – 9:45	Practical Approach in Differential diagnosis Between Psychological Sleep events and Sleep Related Epilepsy	Dr. Ahmad Chitsaz

Scientific Researches (Allameh Tabatabaei Hall)

Co-chairs: Dr. Ehsan Sharifipour, Dr Sepideh Paybast

Time	Title	Speaker
10:00 – 10:20	New dimension of epilepsy damage on optic and retinal nerves: a systematic review	Dr. Ahmad Negahi
10:20 – 10:40	Predicting seizure attacks using wearable devices based on artificial intelligence	Dr. Vahid Rostami
10:40 – 11:00	The effectiveness of acceptance and commitment therapy on anxiety, alpha and beta waves in generalized epilepsy	Dr. Hoseinali Ebrahimi

Teaching Course (Sheikh Bahaei Hall)

Time	Title	Speaker
10:00 – 10:30	Seizure Semiology- Part 1	Dr. Vahid Salehifar
10:30 – 11:00	Seizure Semiology – Part 2	Dr. Mahyar Noorbakhsh

11:00- 11:30	Coffee Break

Autoimmune Encephalitis (Aburayhan Hall)

Co-chairs: Dr. Mahmoud Motamedi, Dr.Vahid Salehifar, Dr. Afshin Samaei

Time	Title	Speaker
11:30 – 11:55	Autoimmune encephalitis diagnosis (Updates and challenging issues)	Dr. Vahid Salehifar
11:55 – 12:20	Autoimmune encephalitis treatment (Updates and challenging issues)	Dr. Mahmoud Motamedi
12:20 – 12:45	Seizure and seizure like movement disorders in autoimmune encephalitis	Dr. Masoud Etemadifar
12:45 – 13:10	Neuroimaging in autoimmune epilepsy	Dr. Aidin Taghiloo
13:10 – 13:30	Q & A	

Terminology and classification (Allameh Tabatabaei Hall)

Co-chairs: Dr. Mohammad Barzegar, Dr. Ahmad Negahi, Dr. Soheila Rezakhani

Dr. Daruosh Savadi Osguei

Time	Title	Speaker
11:30 – 11:55	Classification of epilepsy syndromes in pediatric age onset	Dr. Mohammad Barzegar
11:55 – 12:20	Definition and classification of GGE	Dr. Nayyereh Akbari
12:20 – 12:45	Classification of focal cortical dysplasia	Dr. Soheila Rezakhani
12:45 – 13:10	Definition and Classification of status epilepticus	Dr. Mehrnaz Tavakolian
13:10 – 13:30	Q & A	

Teaching Course (Sheikh Bahaei Hall)

Time	Title	Speaker
11:30 –13:30	**EEG** **Moderator:** Dr. Seyyed Sohrab Hashemi Fesharaki Panel Members: Dr. Nasim Tabrizi, Dr. Hossein Kahnoji	

13:30- 14:30	Lunch & Praying

Epilepsy treatment: General Topics (Aburayhan Hall)

Co-chairs: Dr. Parviz Bahrami, Dr. Behnam Safarpour lima, Dr. Farzad Sina

Time	Title	Speaker
14:30 –14:55	Acute symptomatic seizures: is it always straightforward?!	Dr. Mohsen Aghaei Hakak
14:55 –15:20	Making waves in epilepsy. Are two ASMs better than one? Why wait to find out?	Dr. Farzad Sina
15:20 –15:45	How to optimize drug treatment in epilepsy	Dr. Parviz Bahrami
15:45 –16:10	Updates in new antiepileptic drugs	Dr. Naser Zangi Abadi
16:10 – 16:30	Q & A	

Time	Title	Speaker
17:00 – 17:25	Updates in cluster and frequent seizures treatment	Dr. Hossein kahnoji
17:25 – 17:50	How to approach to NORSE and FIRES	Dr. Behnam Safarpour lima
17:50 – 18:15	Refractory and super refractory status epilepticus treatment	Dr. Farnaz Sinaei
18:15 – 18:40	Non convulsive status epilepticus treatment	Dr. Eugen Trinka

18:40 – 19:00	Q & A

Epilepsy different topics (Allameh Tabatabaei Hall)

Co-chairs: Dr. Fatemeh Seddigh Marvasti, Dr. Mohammad Sayyad Nasiri

Dr. Mojgan Tabatabaei

Time	Title	Speaker
14:30 – 14:55	How to understand and address the cultural aspects of epilepsy diagnosis?	Dr. Daruosh Nasabi Tehrani
14:55 – 15: 20	Updates in post traumatic epilepsy	Dr. Mohammad Rezvani
15:20 – 15:45	Sleep disorders versus epilepsy	Dr. Hamed Amirifard
15:45 – 16:10	A practical guide for seizure approach in EMU	Dr. Babak Jalalian
16:10 – 16:30	Q & A	

Transitional clinic (Sheikh Bahaei Hall)

Time	Title	Speaker
14:30 – 16:30	**Moderator:** Dr. Mahmoud Mohammadi **Panel Members:** Dr. Jafar Mehvari, Dr. Reza Shervin Badv Dr. Seyyed Navid Naghibi	

16:30 - 17:00	Coffee Break

Status epilepticus (Aburayhan Hall)

Co-chairs: Dr. Farzad Sina, Dr. Hossein kahnoji, Dr. Behnam Safarpour lima

Epilepsy Genetics (Allameh Tabatabaei Hall)

Co-chairs: Dr. Reza Shervin Badv, Dr. Reza Azizi Malamiri

Dr. Seyyed Navid Naghibi, Dr. Hamideh Arvan

Time	Title	Speaker
17:00 – 17: 25	Genomics in the presurgical epilepsy evaluation	Dr. Reza Azizi Malamiri
17:25 – 17:50	Pharmacogenomics and the treatment of epilepsy; what do we know?	Dr. Hamideh Arvan
17:50 – 18: 15	fever associated seizure or epilepsy (FASE)	Dr. Reza Shervin Badv
18:15 – 18: 40	Can Genetic testing inform about epilepsy treatment?!	Dr. Iscia lopes-Cendes
18:40 – 19:00	Q & A	

Hot Topics in Epilepsy **(Sheikh Bahaei Hall)**
Co-chairs: Mohsen Farazdaghi, Dr. Babak Jalalian, Dr Nasim Tabrizi

Time	Title	Speaker
17:00-17:30	**Why antiseizure medications fail?**	**Dr. Boulenouar Mesraoua**
17:30 – 18:00	Movement disorders in genetic epilepsies	Dr. Mehri Salari
18:00 – 18:30	Definition of drug resistant epilepsy: a reappraisal based on epilepsy syndromes	Dr..Mohsen Farazdaghi
18:30 – 19:00	Q & A	

Thursday 2 March 2023

Epilepsy in targeted groups (Aburayhan Hall)
Co-chairs: Dr. Saeid charsoui, Dr. Nayyereh Akbari, Dr. Nahid Ashjazadeh

Time	Title	Speaker
8:00 – 8:25	Sexual hormones and epilepsy	Dr. Babak Bakhshayesh
8:25 – 8:50	What do we know about catamenial epilepsy	Dr. Mostafa Asadollahi

8:50 – 9:15	Epilepsy management in pregnancy and breast feeding	Dr. Seyyed Navid Naghibi
9:15 – 9:40	Epilepsy management in elderly	Dr. Saeid Charsoui
9:40 – 10:05	Management of epilepsy comorbidities	Dr. Nahid Ashjazadeh
10:05 – 10:30	Updates in developmental and epileptic encephalopathy	Dr. Bahram Yarali
10:30 – 11:00	Q & A	

Clinical Researches (Allameh Tabatabaei Hall)

Co-chairs: Dr. Reza Daneshvar, Dr. Leila Poursaadat. Dr. Mehdi Kheiran

Time	Title	Speaker
8:00 – 8:15	Cerebrovascular malformation presented with seizure	Dr. Mojtaba Khazaei
8:15 – 8:30	Prevalence, clinical, imaging, electroencephalography and laboratory characteristics of seizures in COVID-19	Dr. Mohammad Reza Najafi
8:30 – 8:45	Hyperglycemia induced global aphasia followed by focal motor seizures as first manifestation of diabetes mellitus	Dr. Ebrahim Pour Akbar

Scientific Communication (Allameh Tabatabaei Hall)

Co-chairs: Dr. Mehdi Kheiran, Dr. Sepideh Paybast, Dr. Reza Daneshvar

Dr. Leila Poursaadat

Time	Title	Speaker
9:00 – 9:20	MS & Epilepsy	Dr. Ebrahim Kouchaki
9:20 – 9:40	Seizure and demyelinating lesions on MRI: pitfalls on diagnosis and treatment	Dr. Mehran Ghaffari
9:40 – 10:00	Challenging issues in Epilepsy and driving	Dr. Mohsen Poorkakrodi

10:00 – 10:20	Lacosamide, What is in future?	Dr. Amir Hejazi
10:20 – 10:40	Seizure in COVID-19	Dr. Mehran Homam
10:40 – 11:00	Reperfusion Therapies and seizures	Dr. Abdoreza Ghoreishi

PNES management panel (Seikh Bahayi Hall)

8:00 – 9:30	**Moderator: Dr. Ali Akbar Asadi – pooya** **Co-chairs:** Dr. Niloofar Mahdavifar Hezaveh, Dr. Mohsen Javadzadeh Dr. Behnam Safarpour lima

Pharmaceutical company workshop (Cobel Darou)

The on going challenges in epilepsy (Seikh Bahayi Hall)

Time	Title	Speaker
10:00 – 10:30	Monotherapy or poly therapy? Why and how? (Practical Cases)	Dr.Jafar Mehvari
10:30 – 11:00	Treatment patterns in women with epilepsy	Dr. Nasim Tabrizi

11:00 – 11:30	Coffee Break

Epilepsy Neuroimaging (Aburayhan Hall)

Co-chairs: Dr. Reza Basiratnia, Dr. Aidin Taghiloo, Dr. Elham Rahimian

Time	Title	Speaker
11:30 – 11:55	MRI essentials in epilepsy	Dr. Reza Basiratnia
11:55 – 12:20	Epilepsy postprocessing imaging (methods, findings, future) in iran	Dr. Elham Rahimian
12:20 – 12:45	Neuroimaging biomarkers in epilepsy	Dr. Abtin Droudinia
12:45 – 13:10	New imaging tools for epilepsy diagnosis	Dr. Bernhard Schuknecht

13:10 – 13:30	Q & A

Neuropsychiaty (Allameh Tabatabaei Hall)

Co-chairs: Dr. Mohammad Arbabi, Dr. Hamid Nemati, Dr. Ali Akbar Asadi-Pooya

Time	Title	Speaker
11:30 – 11:55	Treatment of depression and anxiety in epilepsy	Dr. Mohammad Arbabi
11:55 – 12:20	Treatment of behavioral problems in children with epilepsy	Dr. Hamid Nemati
12:20 – 12:45	Functional seizure (Etiology and diagnosis)	Dr. Ali Akbar Asadi- pooya
12:45 – 13:10	Functional seizure (Treatment and follow up)	Dr. Benjamin Tolchin
13:10 – 13:30	Q & A	

Pharmaceutical company workshop (Ronak Darou)
Challenging in Epilepsy Treatment (Seikh Bahayi Hall)

Time	Title	Speaker
11:30 – 13:00	**Moderator: Dr Mahmoud Motamedi** Challenging Case presentation and discussion	Dr. Mahyar Noorbakhsh
		Dr. Farzad Sina

13:30 – 14:30	Lunch & Praying

Epilepsy different topics (Aburayhan Hall)

Co-chairs: Dr. Mohammad Reza Najafi, Dr. Kurosh Gharagozli, Dr. Seyyed Ali Masoud

Time	Title	Speaker
14:30 – 14:55	SUDEP updates	Dr. Asieh Mehramiri
14:55 – 15:20	Antiepileptic drugs initiation (when, how and which)	Dr. Mohammad Reza Najafi
15:20 – 15:45	Antiepileptic drugs withdrawal	Dr. Ghasem Fattahzadeh
15:45 – 16:10	How to have normal life in epilepsy	Dr. Kurosh Gharagozli
16:10 – 16:30	Q & A	

Epilepsy surgery case based discussion (Allame Tabatabayi Hall)

Moderator: Dr Jafar Mehvari

Co-chairs: Dr. Give Sharifi, Dr. Mohammad Samadian, Dr. Elham Rahimian

14:30 – 16:30	**Case Presentation** Dr. Seyyed Sohrab Hashemi Fesharaki, Dr. Jafar Mehvari, Dr. Behnam Safarpour lima, Dr. Mohsen Aghaei Hakak, Dr. Mohammad Rezvani

Ketogenic diet in epilepsy

(Sheikh Bahaei Hall)

14:30 – 15:30	Panel Members: Dr Maryam Mahmoudi , Dr Zahra Rezaei	

16:30 – 17:00	Coffee Break

Epilepsy Surgery (Aburayhan Hall)

Co-chairs: Dr. Mohammad Ghodsi, Dr. Jafar Mehvari, Dr. Give Sharifi

Dr. Mohammad Samadian

Time	Title	Speaker
17:00 – 17:25	Hemispherotomy updates and challenges	Dr. Mohammad Ghodsi

17:25 – 17:50	How to deal with multiple failed surgery?	Dr. Jafar Mehvari
17:50 – 18:15	VNS - second chance after failed epilepsy surgery	Dr Igor Trifonov
18:15 – 18:40	A novel technique for temporal lobectomy for epilepsy, introduction of stepwise technique with anatomic quantative consideration	Dr. Give Sharifi
18:40 – 19:05	Mesial temporal structural lesion causing refractory epilepsy, challenging surgeries	Dr. Ali Jafari
19:05 – 19:30	Non lesional temporal lobe epilepsy surgery	Dr. Mohammad Samadian
19:30 – 20:00	Q & A	

Drug resistant epilepsy (Allameh Tabatabaei Hall)

Co-chairs: Dr. Fatemeh Yourd khani, Dr. Ebrahim Pour Akbar, Dr. Abbas Tafakhori

Time	Title	Speaker
17:00 – 17:25	How to approach drug resistant epilepsy	Dr. Fatemeh Yourd khani
17:25 – 17:50	Rational polytherapy in drug resistant epilepsy	Dr. Sakineh Ranji
17:50 – 18:15	Neurostimulation, which one is better and how to select patients?	Dr. Abbas Tafakhori
18:15 – 18:40	MRI negative DRE, what is the next step?	Dr. Fernando Cendes
18:40 – 19:05	New treatments for DRE	Dr. Marco Mula
19:05 – 19:30	Q & A	

Advanced EEG workshop (Seikh Bahayi Hall)
Moderator : Dr Mahmoud Mohamadi
Co-chairs Dr. Seyyed Sohrab Hashemi Fesharaki, Dr. Reza Azizi Malamiri

Time	Title	Speaker
17:00 – 17:30	Developmental EEG	Dr. Mahmoud Mohammadi
17:30 – 18:00	EEG in ICU	Dr. Reza Azizi Malamiri
18:00 – 18:30	Continuous EEG tools	Dr. Seyyed Sohrab Hashemi Fesharaki

Friday 3 March 2023

Presurgical evaluation topics (Aburayhan Hall)

Co-chair: Dr. Samaneh Haghighi, Dr. Seyyedeh Faezeh Mousavinia

Time	Title	Speaker
8:30 – 8:55	Epileptogenic zone (principles and challenges)	Dr. Seyyedeh Faezeh Mousavinia
8:55 – 9:20	Stereo EEG (When, where and how)	Dr. Samaneh Haghighi
9:20 – 9:45	Practicing Clinical MEG in epilepsy	Dr. Stephan Rampp
9:45 – 10:10	Source localization	Dr. Soheil Ahmadzadeh
10:10 – 10:35	High frequency oscillation	Dr. Julia Jacob
10:35 – 11:00	Q & A	

Epilepsy surgery (Allameh Tabatabaei Hall)

Co-chairs: Dr. Sajjad Shafiee, Dr. Jafar Mehvari

Time	Title	Speaker
8:30 – 8:55	Awake craniotomy for epilepsy surgery	Dr. Sohrab Salimi
8:55 – 9:20	Epilepsy surgery in pediatric groups	Dr. Keivan Tayyebi Meibudi
9:20 – 9:45	What is new in epilepsy surgery	Dr. Sajjad Shafiee
9:45 – 10:05	Early epilepsy surgery in structural epilepsies	Dr. Nicola Specchio

10:05 – 10:30	Q & A

CBD symposium (Sheikh Bahaei Hall)

10:00 – 11:00

The role of cannabinoids in the management of epilepsy	Dr. Farzad Sina
Role of CBD in drug resistant epilepsy as symptomatic therapy	Dr. Bahram Yarali
CBD in refractory epilepsy	Dr. Abbas Tafakhori

11:00 – 11:30	Coffee Break

(Allameh Tabatabaei Hall)

Co-chairs : Dr. Behnam Safarpour lima, Dr. Mahyar Noorbakhsh, Dr. Vahid Salehifar

11:00 – 12:30	**Epilepsy case based discussion** **Panel Members:, Dr. Roshanak Tirdad, Dr Behnam Safarpour lima** **Dr. Seyyed Ali Masoud, Dr Babak Jalalian**

13:00 – 14:00	Closing Ceremony

Oral Presentations

A novel combination of seizures in a 3.5 years old girl with myoclonic absences and epileptic spasms.

Mehran Beiraghi Toosi [1] © ℗, Mahmoud Mohammadi [2], Reza Shervin Badv [3]

[1] Pediatric Neurologist, Clinical neurophysiology and Epilepsy, pediatric ward, Faculty of medicine, Mashhad University of Medical Sciences, Mashhad, Iran.
[2] Professor, pediatric neurologist, Clinical Neurophysiology and Epilepsy, Children's Medical Center, Tehran University of Medical Sciences, Tehran, Iran
[3] Pediatric neurologist, Clinical Neurophysiology and Epilepsy, Children's Medical Center, Tehran University of Medical Sciences, Tehran, Iran

Background: We want to present a novel combination of seizures in a 3.5 years old girl with attacks of head drops from 3 years old age. She is a right handed girl with normal development that has multiple attacks of head drop from 3 years old age. She also had 3 times of seizures as tonic (two times at wakefulness and one time at sleep).

Methods: We performed 48 hours long term monitoring of EEG (LTME) with provocative tests (intermittent photic stimulation (IPS) and hyperventilation (HV)) according to ACNS guidelines.

Findings: At inter-ictal EEG, there were multiple spike and waves at sleep and wakefulness. There were also runs of bilateral poly spikes and also spike and waves. The posterior dominant rhythm (PDR) was about 7-8 Hz. There was HIHARS while HV. There was no photic drive and sleep components had loss of complexity. There were multiple attacks of staring with myoclonic jerks accompanied by 2-2.5 Hz spike and waves as atypical absence and also typical epileptic spasms.

Conclusion: There were many reported cases with combination of myoclonic-atonic seizures (Doose syndrome). There are also reports of combination of seizures, like Lennox-Gastaut syndrome; but this combination of myoclonic absence and epileptic spasms was not reported yet.

Keywords: myoclonic absence, epileptic spasm, seizure, child.

A practical guide for seizure approach in EMU

Dr. Babak Jalalian [1] © ℗

[1] EMU, Bahman hospital, Tehran, Iran

Thirty to forty percent of patient with epilepsy will not respond to ASMs. Surgery has to be shown to be effective and safe for select patients with medically intractable focal epilepsy. Video-EEG monitoring plays a crucial role in epileptogenic zone estimation and in the selection of surgical candidate. Video-EEG monitoring may provide the only localizing information in some Patient, particularly in those without an underlying neuroimaging abnormality. It also helps in confirming the epileptogenic significance of structural lesions and may clarify the most relevant lesion in patients with more than one lesion. There is some risk to Video-EEG monitoring, such as trauma, vertebral compression, shoulder dislocation and status epilepticus after drugs withdrawal. The usual practice of most units is to reduce ASMs by 50 % on day 1 and 75 % on day 2, and to tailor further reduction. Analyzing of ictal semiology and lateralizing signs can provide valuable information complementary to the ictal EEG. Interictal EEG has localization and prognostic value in epilepsy surgery patients. It is worth mentioning; video-EEG may be helpful in every epileptic patient who do not response properly to ASMs. It can play role to define epileptic syndromes and medical adjustment and to detect patients who are good candidate for epilepsy surgery.

Key words: video-EEG, localization, epilepsy surgery

Acute symptomatic seizure, is it always straightforward?

Dr. Mohsen Aghaee Hakak [1] © Ⓟ

[1] Epilepsy Monitoring Unit, Razavi Hospital, Mashhad, Iran

Seizures that occur in close proximity to a systemic or a documented brain insult should be considered as acute symptomatic seizures (or situational or provoked seizures). About 40% of all first Seizures (50% to 70% of Status Epilepticus) are acute symptomatic seizures. These seizures are different from unprovoked seizures both in prognosis and management. In this review we will discuss about diagnostic and therapeutic approach and risk of recurrence of acute symptomatic seizures. In acute phase of brain insult, patients who experience acute symptomatic seizures have higher rate of morbidity and mortality. In certain conditions due to higher risk of seizure recurrence, short-term (a few weeks) anti-seizure medications are recommended in acute phase (such as penetrating traumatic brain injuries, subdural hematoma, venous sinus thrombosis, viral encephalitis and cortical strokes). In patients with persistent epileptic activity on EEG and structural lesions on imaging longer treatment is recommended (a few months). In patients who have an unprovoked seizure subsequently (more than a few weeks after an event), long-term medication with antiepileptic drugs should be considered. Multiple studies have confirmed that anti-seizure medications may reduce risk of seizure recurrence in the short-term but it does not appear to alter rate of developing epilepsy in long-term.

Keywords: Acute symptomatic seizures, Provoked seizures, Antiepileptic drugs

Alterations in Seizure Frequency in Patients with Epilepsy Following Coronavirus Disease 2019

Seyed Mehran Homam [1] © ℗, Nikoo Saeedi [2], Negin Seyyedhosseinzadeh [2]

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Background: During the Coronavirus Disease-19 (COVID-19) pandemic, patients faced with difficulties for accessing to the medical services and telemedicine-related issues. However, it is not clear whether COVID-19 affects the clinical course of epilepsy. Therefore, in the current study we aimed to assess the effects of COVID-19 infection on seizure frequency in patients with epilepsy (PWE).

Methods: We evaluated PWE who consecutively referred to the neurology clinics of 22 Bahman and Qaem hospitals, who had experienced a recent PCR-confirmed-COVID-19 infection. Data were collected through a pre-defined electronic questionnaire.

Findings: A total of 104 patients were included. Females represented 52% of the population. The mean age of the patients was 36.73±17.81. Thirty-six patients (34%) reported increased seizure frequency. The mean age of the patients who had exacerbated seizure frequency, was significantly lower than the non-exacerbated group (27.50 ± 9.8 vs 40.14± 18.39, P=0.005). The number of the male patients were significantly higher in the exacerbated group (52% VS 25%, P=0.014). The majority of exacerbated group had a history of drug resistance (44.4% vs 8.5%, P=0.022). The number of epileptic seizures before COVID-19 infection was higher in the exacerbated (P=0.04).

Conclusion: About 34% of PWE experienced exacerbated epileptic seizures after COVID-19 infection. Male patients, young patients, patients with the history of drug resistance, and the patients who had. higher seizure frequency were at increased risk for seizure exacerbation.

Keywords: Coronavirus disease 2019; Seizure; Epilepsy; Frequency

An update on classification Focal Cortical Dysplasia

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Focal cortical dysplasia (FCD) has been associated with medically intractable epilepsy that carries a less favorable prognosis for a seizure-free outcome following surgical resection than hippocampal sclerosis and developmental brain tumors. However, imaging techniques have enabled the presurgical detection and increased awareness of the incidence and importance of FCD as a common pathological cause of medically intractable epilepsy. The electro-clinical imaging phenotypes and surgical outcomes were better defined and validated for FCDII. Little new information was acquired on clinical, histopathological, or genetic characteristics of FCD type I (FCDI) and FCD type III (FCDIII). The survey identified mMCDs, FCDI, and genetic characterization as fields for improvement in an updated classification. Our iterative clinico-pathological and genetic agreement study confirmed the importance of immunohistochemical staining, neuroimaging, and genetic tests to improve the diagnostic yield. mMCDs, MOGHE, and “no definite FCD on histopathology” as new categories in the updated FCD classification. The histopathological classification can be further augmented by advanced neuroimaging and genetic studies to comprehensively diagnose FCD subtypes; these different levels should then be integrated into a multi-layered diagnostic scheme. This update may help to foster multidisciplinary efforts toward a better understanding of FCD and the development of novel targeted treatment options.

approach to intractable epilepsy

Dr. Fatemeh Yourdkhani [1] © ℗

[1] Epilepsy Fellowship

Epilepsy is one of the most common serious neurological conditions, and 30 to 40% of people with epilepsy have seizures that are not controlled by medication. Patients are considered to have refractory epilepsy if disabling seizures continue despite appropriate trials of two antiseizure drugs, either alone or in combination. At this point, patients should be referred to multidisciplinary epilepsy centers that perform specialized diagnostic testing to first determine whether they are, in fact, pharmacoresistant, and then, if so, offer alternative treatments. Apparent pharmacoresistance can result from a variety of situations, including noncompliance, seizures that are not epileptic, misdiagnosis of the seizure type or epilepsy syndrome, inappropriate use of medication, and lifestyle issues. For patients who are pharmacoresistant, surgical treatment offers the best opportunity for complete freedom from seizures. Surgically remediable epilepsy syndromes have been identified, but patients with more complicated epilepsy can also benefit from surgical treatment and require more specialized evaluation, including intracranial EEG monitoring. For patients who are not surgical candidates, or who are unwilling to consider surgery, a variety of other alternative treatments can be considered, including peripheral or central neurostimulation, ketogenic diet, and complementary and alternative approaches. When such alternative treatments are not appropriate or effective, quality of life can still be greatly improved by the psychological and social support services offered by multidisciplinary epilepsy centers. A major obstacle remains the fact that only a small proportion of patients with refractory epilepsy are referred for expert evaluation and treatment.

Atypical Postictal Syndrome (PIS): a rare case report

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

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Transient focal signs starting after the ending of an epileptic. ictal discharge that are not related to any underlying damage of the No are called postictal paresis. They tend to resolve spontaneously in a short period of time, usually less than 36 hours. Methods: We present a 42-year-old woman with personal history of well-controlled right temporal lobe epilepsy that is found unresponsive. No previous episodes of ictal paresis. Results: Initial neurological exam revealed somnolence global aphasia and right side moderate hemiparesis With conjugated gaze deviation to the left side (NIHSS 17 points). Stroke code was activated and brain CT ,CT-angiography were normal Thrombolysis and thrombectomy were not indicated due to the unknown time of onset and the absence of large vessel occlusion. Blood tests showed high serum creatine kinase levels (,7.36J0/ U/L; reference range 12-190) and leucocytosis (16.380/mm3).An urgent EEG ruled out status epilepticus). Brain MRI-MRA performed in the first 24 hours showed no evidence of acute ischemic lesions .Domiciliary AEDs treatment was kept and patient showed a progressive Recovery being asymptomatic at day 6. Conclusion: Postictal paresis diagnose can be complicated specially when the symptoms are severe or prolongued in Time. Differential diagnosis with non-convulsive status epileducus and neurovascuar events is essential to avoid inappropriate treatment and aggressive managem ,it is important to document background and relevant clinical signs in addition to keeping a carefully expectant atutude.

Autoimmune encephalitis in epilepsy

Dr.Aidin Taghiloo [1] © ℗

[1] Radiologist

Autoimmune encephalitis is a immune-mediated disease involving the central nervous system with variable spectrum of presentations, such as mental status change, psychiatric symptoms seizures and memory disturbance. Imaging findings are also variable and Autoimmune encephalitis is a diagnostic challenge to radiologist and neurologist. Abnormal findings in limbic system can be first step in diagnosis and In this article, we review multiple types of autoimmune encephalitis and its related neuroimaging findings

Awake Craniotomy in Epilepsy Surgery

Dr. sohrab salimi [1] © ℗

[1] Fellowship and Associate Professor of Neuroanesthsia, SBMU-IHGH

Epilepsy, a common chronic disorder, is initially treated medically; however, it is refractory in about 30% of patients with failure to obtain adequate seizure control or with unacceptable side effects associated with anti- epileptic drugs. Approximately 15– 20% of these patients are candidates for surgical treatment. Benefits of surgery include the possibility of being seizure free, experiencing a significant reduction in the frequency of seizures, and/ or cognitive improvement due to reduction or elimination of anticonvulsive drugs. Awake craniotomy is considered a preferable technique in epilepsy surgery especially if the epileptogenic or resection target has not been precisely demarcated via noninvasive techniques and the ECoG is needed intraoperatively for brain mapping and Epileptic Zone delineation. Its main advantages include the ability to perform accurate brain mapping with ECoG without interference from anesthetic agents; optimum language, memory, and speech testing; a shorter hospital stay; and a better safety profile regarding postoperative complications. An AC carries the benefit of greater extent of resection, better preservation of language function, decreased risk of permanent neurological worsening (less than 2% in recent series), avoidance of GA and its potential for complications including postoperative nausea and vomiting (PONV), overall shorter hospitalization with fewer intensive care admissions, and thereby reduced costs. Even though no difference has been observed in seizure-free outcomes between awake resections and those done under GA, many studies have determined it to be safe, well tolerated, and efficient. In 2013, a novel approach to AC, “awake-awake-awake-technique,” has been described.

cerebrovascular malformation presented with seizure

khazaei mojtaba [1] © Ⓟ

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Among the spectrum of intracranial vascular malformations (IVMs), arteriovenous malformations (AVMs), and cavernous malformations (CCMs) are of particular importance for epilepsy. Seizures are a common mode of presentation for both conditions. Seizures may occur de novo or secondary to intracerebral hemorrhage. Timely imaging is thus crucial for patients with seizures and AVMs or CCMs. Patients with a first-ever AVM- or CCM-related seizure can now be considered to have epilepsy according to the International League Against Epilepsy criteria. Observational studies and case series suggest that between 45 to 78% of patients with AVM-related epilepsy and 47 to 60% of patients with CCM-related epilepsy may achieve seizure freedom through antiepileptic drugs (AEDs) alone. Invasive procedures are available although current evidence suggests that epilepsy-specific preintervention evaluations are underused. Randomized controlled trials and population-based studies have demonstrated worse short-term functional outcomes after routine intervention on unruptured AVMs or CCMs when compared with conservative management.

Childhood Epilepsy: Cognitive and Behavioral Aspects

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• Steps in Evaluation and Treatment of LD: 1. Recognition 2. If learning problems found: a. Assess seizure control, b. Review ASM, c. Reassess diagnosis 3. If LD is present: a. Refer for psycho-educational assessment, b. Individualized educational plan, c. Refer for educational specialist • Steps in The Assessment and Treatment of ADHD: 1. Recognition 2. If symptoms present: a. Assess seizure control, b. Review ASMs, c. Review psychiatric DDX, d. Completed questionnaires or rating scales 3. If symptoms are due to ADHD: a. Individualized educational plan, b. Parenting and behavioral therapy c. Consider medication: start with Methylphenidate, if not effective consider Amphetamine, and if not effective again start Atomoxitine, d. Avoid bupropion and TCA 4. If medication started for ADHD: a. Monitor seizure control and ASM level, b. Monitor weight, height, BP and HR • Management of the individual with both epilepsy and autism: First, ensure that the autistic features are not the result of ESES or frequent epileptiform discharges the diagnosis of epilepsy may be more difficult in ASD with or without ID. In special cases, tuberous sclerosis, specific treatment sirolimus or everolimus may decrease the seizures. Some anti-seizure drugs can have negative effects on mood, behavior or cognition (LEV, TOP), whereas lamotrigine tends to be a mood-leveling. Consider Neuronal auto-Abs (seizures, behavioral changes and even psychosis) and immunomodulators

Classification and definition of Genetic Generalized Epilepsy

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The diagnosis of epileptic syndrome could result to better evaluation, determination of prognosis and treatment plan. Epileptic syndrome often has specific age of onset, prognosis, comorbidity, seizure type EEG pattern and specific well- known effective remedy. Genetic Generalized Epilepsy have presumed genetic etiology, generalized seizure type and generalized spike and wave discharges in electroencephalography (EEG). These syndromes include: ¬ Idiopathic generalized epilepsy (IGE): This syndrome is most common GGE, 15-20 % of person with epilepsy. These have polygenic inheritance, with or without environmental inheritance. They have good prognosis; and don't evolve to epileptic encephalopathy. Mood disorder, ADHD and learning disability are common among patients. Seizure type include one or combination of absence, myoclonic seizure and tonic clonic seizure. These have clinical overlap and similar EEG; normal background, generalized 2.5-6 Hz Spike/Polyspike and wave (S/PS & W) discharges which could be activated by hyperventilation and photic stimulation. • Childhood absence epilepsy (CAE) • Juvenile absence epilepsy (JAE) • Juvenile myoclonic epilepsy (JME) • Epilepsy with generalized tonic clonic seizure alone (GTCA) ¬ Syndromes with epileptic encephalopathy (EE): • Epilepsy with myoclonic-atonic seizure (EMAtS) ¬ Syndromes with developmental encephalopathy (DE): • Myoclonic epilepsy in infancy (MEI) ¬ Syndromes with combined developmental and epileptic encephalopathy (DEE):These have variable prognosis. Drug resistance seizure and cognitive comorbidity is common. • Epilepsy with eyelid myoclonia (EEM) • Epilepsy with Myoclonic Absence (EMA) There was significant overlap between IGE and non-IGE syndromes.

Classification of epilepsy syndromes in pediatric age onset

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The 2017 International League Against Epilepsy (ILAE) classification has defined a three-tier system with epilepsy syndrome at the third level. Epilepsy syndrome is defined as “a characteristic cluster of clinical and electroencephalographic (EEG) features supported by specific etiological findings (structural, genetic, metabolic, immune and infectious”. The goal of this presentation is to describe briefly epilepsy syndromes that begin in childhood (age 2-12 years). Each syndrome has mandatory seizure types, EEG features, age onset and findings from key investigations. The childhood onset syndromes can be divided into three main group: 1) self-limited focal epilepsies(SelFEs), including four syndromes : self-limited epilepsy with centrotemporal spikes , self-limited epilepsy with autonomic seizures , childhood occipital visual epilepsy and photosensitive occipital lobe epilepsy;2) generalized epilepsy syndromes which are thought to have a genetic basis , comprising : childhood absence epilepsy ,epilepsy with myoclonic absence and epilepsy with eyelid myoclonia; and 3) developmental and/or epileptic encephalopathies (DEEs) ,which often have both focal and generalized seizures , including Lennox-Gastaut syndrome (LGS) , developmental epileptic encephalopathy with spike and waves activation in sleep(DEE-SWAS) ,and epileptic encephalopathy with spike and waves activation in sleep (EE-SWAS) , or may have generalized seizure alone , such as epilepsy with myoclonic atonic seizures (EMAtS) or focal /multifocal seizures alone such as hemiconvulsion hemiplegia epilepsy syndrome (HHE) and febrile infection related epilepsy syndrome (FIRES).

Comorbidities of epilepsy

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Background: Any distinct additional clinical entity that existed during the clinical course of a patient's index disease means comorbidity. More than 50% of people with epilepsy (PWE) have one or several additional medical problems. Different mechanisms of association between epilepsy and comorbid conditions dividing into five categories: causative mechanisms, resultant mechanisms, bidirectional effects', shared risk factors and chance and artifactual. Stroke, brain tumors, infections, which leading to a structural brain damage and epilepsy are examples of causative, and osteopenia and pathological fractures, sexual dysfunction are those of resultant comorbidities . Shared risk factors mean a confounding factor is defined as a common cause for epilepsy and the comorbid condition that can be genetic, environmental, structural, or physiological. The tuberous sclerosis complex (TSC) gene mutation is a classic example. Bidirectional also known as reciprocal effects, arise when two conditions can each cause the other. Many psychiatric comorbidities including mood and anxiety disorders, psychoses and schizophrenia, attention deficit hyperactivity disorder (ADHD) and autism are examples of bidirectional comorbidities. The identification, treatment, and prevention of comorbidities should become an integral part of epilepsy care and epilepsy centers should lead on the development of guidelines of treatment, prevention policies, and structured referral pathways for the management of these conditions Conclusion: Screening programs are important for early identification and prompt management of epilepsy comorbidities, also classical general medicine observations like blood pressure and pulse as well as weight should go back to our epilepsy clinics as part of routine practice.

Complications of Antiepileptic Drugs in Hospitalized Patients in Shahid Motahari Hospital of Urmia from 2010 till the end of 2016

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Background & Aims: Seizure is a common neurological disease with many therapies, especially antiepileptic drugs being used to treat it. Any adverse effects caused by taking antiepileptic drugs are called antiepileptic side effects. The purpose of this study was to evaluate the side effects of antiepileptic drugs

Materials & Methods: In this study, 100 epileptic children with complications of antiepileptic drugs admitted to Motahari Hospital the checklist consisted of 3 sections. The first part included demographic information of patients including age and sex; the second Part included targeted information including the number of seizures, type of anticonvulsant drug used; and the third part included targeted information including drug side effects in these patients.

Results: Most of the adverse events observed in the studied patients were related to skin complications with the frequency of 52 patients (52%). The most common adverse events observed were within the age range of 9 to 10 years with a frequency of 16 patients (16%). Also, there was no significant relationship between the side effects of epileptic drugs and the age of the patients ($p = 0.844$).

Conclusion: The renal side effects of antiepileptic drugs in males were higher than females, and the skin and liver complications were higher in females, and the most common side effects were observed within the age range of 9 to 10 years. It also has a direct relationship with the duration of drug side effects. Compared to sodium valproate, Phenobarbital has more side effects in children.

Keywords: Seizure, Skin Complications,

Definition of drug-resistant epilepsy: A reappraisal based on epilepsy types

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Objective: To re-assess the definition of drug-resistant epilepsy based on the evidence from a large-scale, long-term study including both adults and children. We categorized the patients as idiopathic generalized epilepsies (IGEs), focal epilepsies, or structural-metabolic-genetic generalized epilepsies [symptomatic generalized epilepsies (SGEs)] and provided the definition of drug-resistance based on the epilepsy types of the patients.

Methods: This was a longitudinal study of a prospectively developed and maintained database. All patients with an electro-clinical diagnosis of IGE, focal epilepsy, or SGE, who received treatment from 2008 to 2021, were recruited at the outpatient epilepsy clinic at Shiraz University of Medical Sciences, Shiraz, Iran. All patients had to be followed at our center for at least 24 months. The receiver operating characteristic curve (ROC curve) was used for the statistical analysis.

Results: The included patients were as follows: 523 with focal epilepsy, 218 with IGE, and 211 with SGE. For all epilepsy types, the ROC curves of the number of appropriately prescribed antiseizure medications (ASMs) were acceptable indicators to anticipate drug-resistance. The best cutoff point for focal epilepsies was at 4 ASMs (sensitivity: 0.56, specificity: 0.81); for IGE, at 3 ASMs (sensitivity: 0.51, specificity: 0.80); and for SGEs, at 4 ASMs (sensitivity: 0.78, specificity: 0.58).

Conclusion: The definition of drug-resistant epilepsy should be different in various epilepsy types. It is the time for the scientific community to reappraise the definition of drug-resistant epilepsy in the light of the new evidence that has become available in the past 11 years since the previously

Driving issues in epilepsy

Dr.mohsen poorkakroodi [1] © ℗

[1] Dr.mohsen Poorkakroodi

Driving restrictions for people with seizure disorders are intended to ensure the publics safety but driving is of such great importance in the united states that the imposed restrictions also may unduly harm the welfare of these individuals. Driving is an important and complex practical concern for physicians who care for people with epilepsy or who may serve as consultants to regulatory authorities, requiring them to be well informed about the relevant issues to properly manage their patients and to protect themselves against lawsuits. One case report: Car accident due to seizure: An accident with a private car at approximately 9 am on the way from bostanabad to tehran with his companion. He did not take medicine since one and a half years ago,and he has not had a seizure since 5years ago.at 5 in the morning while driving tabriz he felt sleepy and forgetful and at the same time he passed out. According to the compainion of the person in the car i had body tremors locked teeth and bleeding on the tonque i felt very nauseous. Almost 10 years ago in the first year of high school a seizure occurred during football and then in happened again during the undergraduate course in the university campus seizures have happend 3 times in 13 years.

Epilepsy and MS

Dr. Ebrahim kouchaki [1] © Ⓟ

[1] Associate professor of Kashan University of medical sciences

The correlation between MS and seizures was first noticed over 30 years ago. The currently existing literature only summarizes specific aspects of which are insufficient to establish strong, internationally validated guideline. Available data regarding patients with MS, show an increased prevalence and incidence of seizures compared with the general population. The presence of lesions at the cortical or cortical juxtacortical level has been associated with an increased risk of seizures Patients who developed epilepsy during the course of the disease had a higher EDSS score at disease onset compared to matched control patients, progressed faster in each dimension, and consequently showed higher disability and lower employment status at final follow-up Epilepsy in MS is associated with increased mortality although death from epilepsy is rare. Most MS patients with epilepsy died of MS, and epilepsy was most lethal when developed in SPMS. During MS exacerbations, the recurrence risk of seizures is significantly higher .In multiple sclerosis, acute symptomatic seizures occur as the first presenting symptom or within 7 days of relapse If a patient with RRMS experiences a seizure that could not be explained by any cause other than MS, starting a long term AED regimen is not justified. If the seizure is considered to be a relapse of MS in a patient with RRMS, one may want to prescribe an AED; until the acute phase is over, often for 4–6 weeks Keywords: Epilepsy, Multiple sclerosis, Relapse

Epilepsy management in elderly

Saeid Charsouei,MD , Associate Professor of Neurology, Fellowship in Epilepsy [1] © ℗

[1] Tabriz University of Medical sciences

In the most patients ,a clear diagnosis of epilepsy can be not challengeable . However, making a clear diagnosis can be a challenge in some elderly patients , because the clinical manifestations of seizures , the differential diagnosis (stroke,metabolic disorders,syncope or nonepileptic confusional states, REM behavior disorders,Dementia,Parkinson disease, transient global amnesia and migraine) and etiology of epilepsy can be different in the elderly compared with younger individuals.Thus the true prevalence of epilepsy in older people remains difficult to determine with certainty too . • Seizures in older people are sometimes atypical. Auras are less commonly reported. Automatisms can be less frequent, and postictal confusion can be more prolonged, lasting up to days. Focal seizures in the elderly may be associated more frequently with Todd's paresis, and postictal confusion may last longer than 24 hours and be complicated by prolonged aphasia. Antiepileptic drugs (AED) monotherapy and the use of newer AEDs such as gabapentin (GBP), LTG, or levetiracetam (LEV) are preferable in the elderly. Adverse effects of AED treatment can be minimized by slow dose escalation up to average daily maintenance doses. The management of status epilepticus in elderly patients differ only slightly from younger patients. Status epilepticus has a higher mortality in the elderly. • Epilepsy surgery appears to be increasingly considered for some older adults with focal epilepsy, although there are problems. Seizure-free rates can be comparable to younger age groups, but the rate of surgery-related complications may be higher in the eldelly.

Epilepsy-sleep and parasomnia

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Non–rapid eye movement (NREM)- parasomnias are defined as unpredictable and sometimes abnormal motor or subjective phenomena that arise during arousals from NREM sleep (specially N3). The episodes may include abnormal movements, behaviors, emotions, and autonomic activity, most of which are frequent in childhood. Rapid eye movement (REM) parasomnias specially REM sleep behavior disorder comprises a complex combination of phasic and tonic phenomena, including desynchronized electroencephalographic activity, rapid eye movements, dreaming (vivid dream), and skeletal muscle atonia. Epilepsy and sleep disorders are considered a common bedfellow. Sleep problems can affect seizure occurrence, threshold, and spread, whereas epilepsy can have a profound effect on the sleep-wake cycle and sleep architecture. Many factors can contribute to sleep disruption in patients with epilepsy, including inadequate sleep hygiene, coexisting sleep disorders, circadian rhythm disturbances, epilepsy per se, seizure frequency, and the effects of antiepileptic medications. Patients with epilepsy have frequent sleep complaints, and sleep disorders may worsen epilepsy. Treatment of sleep disorders may improve control of epilepsy. Seizures occur in patterns that depend on sleep stage and circadian factors. Integrating the treatment of seizures with knowledge of the chronobiologic pattern may improve treatment. Distinguishing seizures from non–rapid eye movement parasomnias is sometimes difficult. Clustering (multiple events in the same night), stereotypic behaviors, and dystonic posture or versive movements suggest seizures, whereas longer duration and complex behaviors are more common with parasomnias.

Epileptogenic zone (principle and challenges)

Faezeh Mousavinia [1] © ℗

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One third of patients with epilepsy are resistant to drug treatment, in which cases surgery can be effective if the patient is well selected and the focus of seizures is carefully determined. The success rate of surgery in epilepsy depends on the precise localization and full resection or disconnection of epileptogenic zone both in lesion-associated and in non-lesional cases, underlining the need for better tools for presurgical evaluations. Increasing the accuracy of epileptogenic zone detection is not only dependent on the use of new modalities but the way of data analysis also plays a significant role. This study reviews the current techniques for the presurgical evaluation of drug-resistant patients.

Examine Multi Combinations of Low-Density Electrical Source Imaging Methods in Pre-surgical Evaluation of Children with Focal Drug Resistance Epilepsy: A Case Series Study

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Background: Previous studies have shown the role of electrical source imaging (ESI) in the pre-surgical evaluation of epilepsy patients. However, we have some uncertainty in steps of ESI.

Objective: This study wants to shed light on some parts of ESI for children with focal drug resistance epilepsy. Methods: We designed our study using co-registration of LTM data that was recorded using the standard 19 scalp electrodes (EEG-1200, Nihon Kohden) and 1.5 Tesla T1 images. At first, ictal onsets and interictals were detected by neurophysiologists. Then, for patient heads, two approaches were recruited: an individual and an age-based template model. In both, six methods including regional dipole, single dipole, LORETA, cortical LORETA, CLARA, and cortical CLARA, have been used. Data gathered from 4 cases (3-8 years) have been processed and all were candidates for epilepsy surgery and had a lesion on their MRI.

Results: For quantitative comparison, we defined a scoring method (zero to one). We analyzed the SOZ's location based on: the anterior (posterior), the right (left) hemisphere, and the lobe. If the predicted SOZ region completely adapts to the desired SOZ, the score is 1. If there is no overlap between them, the score is 0. In every case, the ESI with the individual model outperforms the age-base template (13.5% higher). The single dipole fitting and cortical LORETA methods achieved the best score in the individual head-model approach.

Conclusions: The results show that using an individual head-model with single dipole or cortical LORETA was more effective for LD ESI.

Functional Seizures

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Functional seizures (FS) or psychogenic nonepileptic seizures (PNES) are commonly diagnosed at epilepsy centers. However, their neurobiology is still poorly understood. Diagnosis of FS relies on a multidisciplinary evaluation and is usually based on different combinations of data. They are diagnosed most reliably by recording a typical seizure while under video-EEG monitoring. Treatment includes multiple phases. At this meeting, I will present a concise review of the current literature about the definition, diagnosis, epidemiology, clinical characteristics, treatment, and prognosis of FS.

Genomics in the presurgical epilepsy evaluation

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Abstract Not so long ago, epilepsy surgery and epilepsy genetics were two different worlds. Epileptologists who worked in the field of epilepsy surgery did their work without thinking about such a strange thing as genetics in epilepsy, and many of these epileptologists did not even want to think about genetics. It was nothing for them. But now things have changed, and genetic evaluation of epilepsy should be considered in almost every presurgical workup. However, some points should be considered regarding genetic evaluation in the presurgical workup: (1) genetic evaluations in surgical series are limited, but many showed microdeletions in patients; (2) MTORopathies can improve seizure outcome after surgery; (3) channelopathies are not a contraindication for preoperative evaluation; (4) SCN1A-related disorders require special attention in workup before surgery; (5) and somatic mosaicism correlates lesional epilepsies with known genetic causes. With these things in mind, we can see many points of connection between epilepsy genetics and epilepsy surgery. Therefore, considering epilepsy genetics in presurgical evaluation can lead to more accurate treatment options. Keywords; Epilepsy, Genetics, Presurgical evaluation

How to approach to NORSE and FIRES

Dr. Behnam Safarpour Lima [1] © ℗

[1] Assistant Professor of Shahid Beheshti University of Medical Sciences / Neurologist/Epileptologist

Status epilepticus is a serious life-threatening neurological condition that has a substantial impact on the world population. New onset refractory status epilepticus (NORSE) is a rare clinical presentation characterized by de novo onset of refractory status epilepticus (RSE) without a clear acute or active structural, toxic or metabolic cause despite initial evaluation. Febrile infection-related epilepsy syndrome (FIRES) is defined as a sever disorder that the refractory status epilepticus with or without fever typically start 24 hours to 2 weeks after the prior febrile infection and has an unknown pathogenesis. The relationship between NORSE and FIRES remains unclear. This makes the problem of evaluation, diagnosis and the clinical management of the disorder important. Clinicians initiate treatment based on their judgment of initial clinical assessments. FIRES is considered a homogeneous subcategory of auto inflammatory cause, whereas identified etiologies behind NORSE are heterogeneous. Diagnostic tests (blood and serum analysis, MR brain imaging, CSF analysis and electroencephalography (EEG)) can exclude certain clinical diagnostic features. Clinical management of NORSE/FIRES has a significant impact on the life of patients. Therefore, in the current congress, we aim at developing a new approach for early clinical symptoms and findings to identification of the effective treatments.

How to understand and address the cultural aspects of epilepsy diagnosis?

Dr. Nasbi Tehrani [1] © ℗

[1] Neurologist, Founder of Iranian Epilepsy Association

There have been many discussions about the effects of culture in all manifestations of diseases, especially diseases of Neurology and Neuropsychology disease that show themselves with behavioral and nervous symptoms and in many articles, the role of culture has been seriously seen, both in the field of diagnosis and in the field of treatment management. This issue has become so serious that it has been addressed in dsm4 and dsm5 as domains of assessment and medical interview. Culture stands out both in the field of language and in the field of beliefs and customs, the life cycle stage, family and ethnic structure. What is certain is that culture is an open and dynamic system that undergo continues change over time. In the issue of epilepsy, the role of culture is very colorful, both in clinical manifestations and obtaining history from the patient and family, as well as in treatment management and the issue of stigma. After that, not taking the issue of culture and customs seriously in our country, Iran, creates many challenges in diagnosis and treatment. Issues such as the level of patient knowledge of the disease, the level of patient involvement and participation in the treatment, socioeconomic issues, the effects of beliefs and traditional medicine, all of these have a important role in medical decision-making and physician intervention to the extent and sometimes they create serious paradox which makes separation in decision making so it is a challenge for Path of treatment and diagnosis. Therefore, knowing the

How to understand and address the cultural aspects of epilepsy diagnosis?

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There have been many discussions about the effects of culture in all manifestations of diseases, especially diseases of Neurology and Neuropsychology disease that show themselves with behavioral and nervous symptoms and in many articles, the role of culture has been seriously seen, both in the field of diagnosis and in the field of treatment management. This issue has become so serious that it has been addressed in dsm4 and dsm5 as domains of assessment and medical interview. Culture stands out both in the field of language and in the field of beliefs and customs, the life cycle stage, family and ethnic structure. What is certain is that culture is an open and dynamic system that undergo continues change over time. In the issue of epilepsy, the role of culture is very colorful, both in clinical manifestations and obtaining history from the patient and family, as well as in treatment management and the issue of stigma. After that, not taking the issue of culture and customs seriously in our country, Iran, creates many challenges in diagnosis and treatment. Issues such as the level of patient knowledge of the disease, the level of patient involvement and participation in the treatment, socioeconomic issues, the effects of beliefs and traditional medicine, all of these have a important role in medical decision-making and physician intervention to the extent and sometimes they create serious paradox which makes separation in decision making of doctor, patient, family, society and even false beliefs so it is a challenge for Path of treatment and diagnosis. Therefore, knowing the diagnosis criteria and treatment protocols is not only a guarantee of success in diagnosis. practice and skill training are mandatory for a successful clinical examination, especially in the issue of epilepsy in Iran.

Hyperglycemia induced global aphasia followed by focal motor seizures as first manifestation of diabetes mellitus

Shadi zamanian [1] © Ⓟ, Ebrahim Pourakbar [1]

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Hyperosmolar hyperglycemic state (HHT), a life-threatening complication of diabetes mellitus,may initially present with various neurological symptoms.Focal motor seizures are among the most common manifestations whilst aphasia has rarely been described so far. Methods: We herein report a case of a patient with nonketotic hyperglycemia-induced global aphasia, followed by focal motor seizures. Results: Brain computerized tomography (CT) scans on presentation and 48 hours later were normal, thus excluding any structural or vascular abnormality, whilst electroencephalography (EEG) did not show epileptiform discharges. Focal seizures subsided with blood glucose management, fluid replacement and antiepileptic treatment. Aphasia resolved gradually, within seven days after admission. Conclusion: In conclusion, physicians (both neurologists and internists) should be aware of the association between HHT and aphasia, as well as focal motor seizures. Language disturbance, as the initial symptom of hyperglycemia, has rarely been described so far and could lead to poor patients prognosis if not evaluated early. Prompt diagnosis and immediate management of hyperglycemia and hyperosmolarity, as well as proper anticonvulsant treatment may improve the outcome of HT patients and avoid unnecessary investigation and inappropriate treatment.

Internal diseases-induced seizures

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Apart from unprovoked seizures, physicians frequently encounter with provoked seizures, also known as reactive, situation-related or acute symptomatic seizures (ASSs), defined as seizures occurring at the time of a systemic (extra-cranial) insult or in close temporal relationship with a documented brain (intracranial) insult. There are few epidemiological studies about ASSs, however, a relatively old study reported that these seizures account for 34% of all afebrile seizures and this percentage reaches to 55% when febrile seizures are also included. Provoked seizures are usually not expected to recur when the underlying cause is removed or resolved, but can increase risk of late epilepsy. Clinical features of ASSs, accompanying symptoms, necessity of AED therapy, first-line medication and duration of treatment depend on the type of causative condition, severity of seizures and their frequencies. Single seizure may not need treatment. BZDs is first-line management. Repetitive or prolonged seizures may require AED for a few days. In some instances such as viral encephalitis short-term therapy (1 to 6 months) is practically advised. Different systemic disorders including renal, hepatic and hypoxic encephalopathies, infectious and endocrine diseases, medications, drug or alcohol abuse, intoxications, cerebrovascular events, tumors, autoimmune disorders, electrolyte imbalances, head trauma and infections may induce ASSs. Herein, in order not to run out lecture time, we address only to renal and hepatic encephalitis and glance briefly to infection and endocrine-induced seizures. Key words: Acute symptomatic seizures, systemic disorders, encephalopathies, drug-induced seizure.

Investigating clinical profile and side effects of lacosamide in generalized seizure in comparison with sodium valproate within 6 month

Dr. Seyed Amir Hejazi [1] © ℗

[1] Correspondence and Presenter

Background: Epilepsy is one of the most common brain disorders, affecting more than 50 million people worldwide. For various reasons including high efficacy, positive safety profile and absence of drug-drug interactions, new generation medications have become increasingly popular drugs chosen for new onset seizure disorders. First developed for focal epilepsies, LCM was successful in controlling primary generalized tonic clonic (PGTC) seizures in some case series and in a recently published safety open label study.

methods: This was a randomized control study on 120 patients (mean ages: 40.19 ± 11.24 years, M:F= 1.45:1) who had presented with GTC were randomized into the lacosamide or valproate treatment arms. All patients received oral lacosamide (200 mg q12h) or valproate (500 mg q12h).

Results: After 6 month follow-up, the results showed no significant difference of EEG findings in the patients of both arms. The efficacy of lacosamide was not inferior to valproate (reducing the average frequency of seizures from 4.20 to 1.2 by lacosamide versus 4.50 to 1 by valproate). In evaluation of adverse effects, we found 3 patient with blurred vision and diplopia, 1 patient with PR interval prolongation in ECG and 1 patient with gastrointestinal symptoms (in lacosamide arm) and gastrointestinal symptoms, tremor, elevation of liver enzymes, thrombocytopenia, alopecia and weight gain (in valproate arm).

Conclusion: The efficacy of lacosamide was not inferior to valproate. However, lacosamide had fewer adverse effects than valproate.

Ketogenic diet and epilepsy

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Background: Epilepsy is a neurological disease that affects about 1% of the world's population. Considering that 35% of cases are resistant to drug treatment, one of the alternative treatment solutions is to use a proper diet. In the present study, the effect of the ketogenic diet on patients with epilepsy has been investigated.

Methods: The current study is a short review study that was designed in 2021. By searching international and national databases, articles were collected from 2016 to 2022 about the use of the ketogenic diet in patients with epilepsy. After reviewing the search results, finally, 45 studies were used to write this study.

Results: Ketogenic diet is a high-fat and low-carbohydrate diet that can lead to a reduction in seizures, although this reduction mechanism is not yet known precisely, it can probably be that the use of this diet can lead to an increase in the concentration of ketones in the body. A substance that can lead to an increase in inhibitory neurotransmission, as a result, the frequency of seizures decreases. Ketones can also have anti-oxidative, anti-inflammatory, cellular, epigenetic, and gut microbiome changes. Conclusion: Ketogenic diet is effective in reducing the number of seizures in epilepsy, but the mechanism of this action is not yet clearly known, that's why it is suggested to do more studies in this field.

Keywords: Diet, Ketogenic, Epilepsy

Making waves in epilepsy.Are two ASMs better than one?Why wait to find out?

Dr. Farzad Sina [1] © ℗

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Abstract: Anti Seizure Medicine polytherapy may be indicated in patients experiencing drug-resistant epilepsy. To date, there are no evidence-based criteria on how to combine different Anti Seizure Medicines (ASMs) together, in order to obtain the best therapeutic response. Nowadays, there are no guidelines on polytherapy in patients with epilepsy; thus, the management of pharmacoresistant epilepsy is still uncertain, except for valproate/lamotrigine combination, which seems to be the only one recommended. Data regarding mechanism of action, pharmacokinetics, tolerability, and, more importantly, the analysis of the valuable clinical studies of new anti seizure drugs combinations can help physicians to choose the best and most effective ASM association for each patient.

Management of Epilepsy During Pregnancy and Breast Feeding

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Epilepsy is one of the most common neurological disorders around the world, and about a quarter of all epilepsy patients are women of reproductive age, so managing epilepsy in women of reproductive age is extremely important. Although the majority of women with epilepsy will have a normal and safe pregnancy, in order to have a safe pregnancy in women with epilepsy, pre-pregnancy care should include trying to fully control seizures with the minimum dose and number of antiseizure medications (ASMs) and choosing the medication with the least side effects on the mother and the fetus, choose the appropriate contraceptive method and use folic acid supplements. During pregnancy, the monitoring of the serum level of many antiseizure medications should be done regularly, and proper screening should be done in terms of teratogenic effects of antiseizure medications, in cooperation with a perinatologist. In the vast majority of pregnant women with epilepsy, the choice of delivery method is based on obstetric criteria. After birth ASM metabolism can return quickly back to precovception levels; in the case of LTG this can occur within 1–3 weeks. A common strategy to avoid toxicity is to taper gradually over 1–3 weeks to the near prepregnancy dosages. Several studies have demonstrated that breastfeeding is safe for children of mothers who are taking an ASM. Physician should encourage family and friends to help with nighttime feedings so that the mother can get an uninterrupted 6–8 h of sleep.

Movement disorders in genetic epilepsies

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An ever-increasing number of neurogenetic conditions presenting with both epilepsy and atypical movements are now recognized. These disorders within the 'genetic epilepsy-dyskinesia' spectrum are clinically and genetically heterogeneous. Increased clinical awareness is therefore necessary for a rational diagnostic approach. Furthermore, careful interpretation of genetic results is key to establishing the correct diagnosis and initiating disease-specific management strategies in a timely fashion. In this review we describe the spectrum of movement disorders associated with genetically determined epilepsies. We also propose diagnostic strategies and putative pathogenic mechanisms causing these complex syndromes associated with both seizures and atypical motor control.

MRI essentials in epilepsy

Dr. Reza Basiratnia [1] © Ⓟ

[1] Medical University of Isfahan

Magnetic resonance imaging (MRI) is a critical component of the basic clinical assessment of epilepsy.Detection of abnormalities on MRI is essential to establishing an initial diagnosis and determining options for treatment. MRI studies are especially critical in focal epilepsy, as resective surgery of an epileptogenic lesion has the potential to render many patients seizure-free. Improvements in high -resolution MRI and quantitative post-processing methods now permit detection of structural abnormalities in patients that are not otherwise visually apparent. This is especially important as a MRI-identified lesion is associated both with poorer response to medications and with a greater likelihood of seizure freedom following resective surgery .Therefore , imaging methods that increase sensitivity and accuracy in delineating the presence and extent of lesions are a valuable addition to preoperative evaluations. An MRI study is also important in determining the extent of healthy tissue, which can inform prediction of post surgical functional status.

Neuroimaging Biomarkers in Epilepsy (PET, SPECT)

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Non-lesional drug-resistant epilepsy patients are real challenge in neuroimaging. As these patients may benefit from epilepsy surgery and ablation of epileptogenic focus, localizing the seizure focus is extremely important in these patients. Magnetic resonance imaging (MRI) is incorporated in standardized epilepsy imaging protocol of epilepsy patients. Structural volumetric and T2-weighted imaging changes can assist in diagnosis in a majority of patients. The alterations reported in structural and T2 imaging is predominately thought to reflect early neuronal loss. MR spectroscopy for “myo-inositol” is a being used to identify glial alterations along with neuronal markers. Diffusion weighted imaging (DWI) is ideal for acute epileptiform events, but is not sensitive to either glial cells or neuronal long-term changes found in epilepsy. However, DWI variants such as diffusion tensor imaging may be helpful in evaluation of aberrant glial function in the future. The sensitivity and specificity of SPECT and PET radioligands are very helpful in evaluation of non-lesional patients with refractory epilepsy. Although brain SPECT in ictal phase is most sensitive and specific method of localizing the seizure focus, Brain FDG-PET in interictal phase is becoming more and more available to image epilepsy patients and localize the seizure focus.

New dimension of epilepsy damage on optic and retinal nerves: a systematic review

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Background: Epilepsy usually causes irreparable brain damage with its convulsive attacks, depending on whether it is localized or general, and damage to the brain nerves is not far away. In this systematic review, we examined the society of this issue.

Method: This article was written according to PRISMA criteria from January 2018 to January 2022. After examining the four stages of PRISMA criteria identification, screening, eligibility and inclusion, we selected clinical trial articles. These articles were selected from Pubmed, Scopus and Google scholar (for results follow-up) databases and 98 articles were studied and 14 of them were used in this article.

Keywords: • Epilepsy • Optic nerve damage • Epilepsy and Optic nerve The selection of articles was based on the PICO question criteria.

Results: Epilepsy attacks reduce the thickness of optic nerve ganglions and retinal nerve fibers. Epileptic seizures with damage to retinal nerves and more precisely optic nerve ganglia reduce retinal nerve fiber (RNLF), ganglion cell layer (GCL), inner plexiform layer (IPL). Some studies have stated that hypoplasia of the optic nerve, which is a symptom of septoptic dysplasia (SOD), has been associated with drug-resistant epilepsy. Finally, these propositions ended with the reduction of sensitivity to light in several articles, which showed that the photoproximal response (PPR) is reduced in patients with persistent epilepsy.

Conclude: visual power decrease and serious retinal nerve damage can be expected from epileptic seizures, that change indicators same as nerve thickness and sensitivity to light.
Keywords: epilepsy; seizure; optic nerve

Normal life with epilepsy

Dr. Kurosh Gharagozli MD[1] © ℗

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Normal life, or routine life comprises the ways in which people typically act, think, and feel on a daily basis. Others may name it usual, regular, common, typical. Achieving the optimal quality of life is essential target for everyone. In normal life we can choose our ways to achieve our goals. But we should also know about our abilities and difficulties to overcome our challenges. Some of people's limitations are suffering diseases such as epilepsy. Epilepsy can be treated successfully with antiepileptic medications, but not all people with epilepsy respond favorably to these medications. About one third of people who have epilepsy are not controlled by anti-seizure medications. During childhood and adolescence a normal life for those people is very different from adulthood. How to Study and learning, appropriate sports, finding a jobs, find friends or marriage are very crucial and often challenging and may be difficult for decision to choose. Everyone is the leader in the daily care of their condition. Therefore, people who have epilepsy and the healthcare team will work together for targeting the best quality of life to improve any aspects of conditions.

Pharmacogenomics and the treatment of epilepsy: What do we know?

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Pharmacogenomics, i.e., the influence of genetic variants on drug response or adverse effects, bear the potential to support the choice of the most suitable ASMs. Genetic variation can influence response to ASMs through various mediating effector systems, including: pharmacokinetics and pharmacodynamics (e.g., polymorphism in gene encoding drug metabolizing enzymes or putative brain ASMs targets, such as receptors or ion channels), mutations in 'epilepsy genes' and by modifying the expression of enzymes and other molecules involved in the pathogenesis of pharmacoresistance or adverse drug reactions. Genetic influence on ASMs pharmacokinetics is primarily related to the polymorphism of enzymes involved in ASMs metabolism. CYP2C9/2C19 polymorphisms may be relevant in the metabolism/bioavailability of phenytoin, brivaracetam, CLB and partially valproate, as well as barbiturates, while UGT (UGT1A4 and UGT2B7) variants are associated with variable kinetics of lamotrigine and valproate. Knowing the genetic basis of the disease can help in avoiding ASMs that can aggravate the pathogenic defect, such as sodium channel-blocking drugs in Dravet syndrome caused by mutation in SCN1A. However, in the treatment of early-onset epileptic encephalopathy due to glutamate ionotropic receptor NMDA-type subunit 2A (GRIN2A) missense mutation (L812M), memantine administration resulted in decreased seizure frequency. No reliable gene marker of resistance to ASMs has been identified to date, although there are data suggesting the possible role of ABCB1 and ABCC2 gene variants. By analyzing several HLA alleles, we can identify high-risk individuals for development of SJS and TEN induced by CBZ, most important of which are HLAB* 15:02 and HLAA*31:01.

Pharmacological Treatment of Epilepsy in Patients with Mitochondrial Disease

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Inborn errors of metabolism are rare as individual entities, but their estimated combined incidence is 1 in 3000 live births. Seizures are common manifestations of many IEMs especially in neonates, infants, and children. Neurometabolic disorders are not a frequent cause of epilepsy, but epilepsy is a frequent comorbidity in many Neurometabolic disorders. The umbrella term 'mitochondrial disease' comprises a large group of inherited metabolic disorders caused by dysfunction of the pyruvate oxidation route. In the majority of metabolic epilepsies, the particular etiology of seizures cannot be predicted from its semiology, however the particular type of seizure can occasionally raise suspicion for a specific disorder. Interestingly mitochondrial disorders seem to be particularly likely to cause Epilepsia partialis continua. Treatment of mitochondrial disorders is a challenge for physicians and researchers. Most interventions and guidelines are related to symptomatic treatment, with supplementation of cofactors, vitamins, or antioxidants. There is also no established protocol of epilepsy treatment in MD; therefore, general principles of epilepsy treatment are applied. First-line therapy often includes levetiracetam, frequently combined with clonazepam, clobazam, or topiramate. Zonisamide (ZNS) is also safe. Lamotrigine may promote myoclonic seizures and has not always been effective in patients with MD. Some experts recommend phenobarbital or primidone . VPA, carbamazepine, and oxcarbazepine are toxic to mitochondria but they were still given if seizure control is acceptable and severe side effects are absent or tolerable.Levetiracetam and lamotrigine were found to potentially exhibit protective effects against mitochondrial dysfunction.

Key words : epilepsy, mitochondrial, epilepsy partialis continua

Posttraumatic Epilepsy

Dr. Mohamad Rezvani [1] © Ⓟ

[1] Neyrologist

Trauma can lead to various outcomes, ranging from mild symptoms to debilitating posttraumatic epilepsy (PTE). In this article, we will explore the pathogenesis of seizures following a head trauma. We will explain the various structural, metabolic, and inflammatory changes leading to seizures. Additionally, we will explore the association between severity and location of injury and PTE. PTE's pathophysiology is not completely clear, and we are still in the dark as to which antiepileptic drugs will be useful in preventing these attacks. The purpose of this review is to explain the post-traumatic brain changes in detail so that such attacks can be either prevented or treated more resourcefully in the future.

Practical Approach in Differential diagnosis Between Psychological Sleep events and Sleep Related Epilepsy

Dr. Ahmad Chisaz [1] © ℗

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Bacground: Rhythmic movements during sleep may occur in the context of physiological sleep-related motor activity or be part of sleep -related movement disorders (SRMDs) such as bruxism, periodic limb movement and restless leg syndrome. They may also characterize some frontal or temporal nocturnal seizures of sleep related hyper motor disorder, or be considered as a part of NREM parasomnias, especially sleep walking, sexomonia, sleep related eating disorder or REM-related behaviors such as REM behavior disorder(RBD) or complex movement associated with pediatric narcolepsy type1. Description: A differential diagnosis between physiological evens and pathological movement disorders (PMD) and PMD and sleep related epilepsy is critical to provide optimal treatment and accurate prognosis. The description of the different nosologically entities elucidate a possible common origin from arousal pathology and delinates relevant features that a allow differential diagnosis and to address consequent treatment. Recognition of an epileptic disorder warrants specific medications, where most disorders of arousal (DOA) don't require any treatment. On the other hand both REM-related parasomnias whether or not in the context of narcolepsy and SRMDs may respond to specialized treatment

Prevalence, clinical, imaging, electroencephalography and laboratory characteristics of seizures in COVID-19

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Background: COVID-19 is the cause of the recent pandemic. Viral infections could increase the risks of neurological impairments, including seizures. Here, we aimed to evaluate the prevalence, clinical, imaging, electroencephalography and laboratory characteristics of seizures in COVID-19.

Methods: This retrospective cross-sectional study was performed on cases of COVID-19 infection and seizure. The prevalence of seizures in patients with COVID-19 was calculated using the incidence of seizures in all patients. Those patients with their first seizure episodes were also divided into two groups of cases with COVID-19 associated seizures (N= 38) and non-COVID-19 associated seizures (N= 37) and the mentioned data were compared between the two groups.

Findings: We assessed data of 60 patients with COVID-19-associated seizures (group 1), 40 patients with seizures not related to COVID-19 (group 2) and 60 patients with COVID-19 infection and no seizures (group 3). The prevalence of hypertension and diabetes mellitus were significantly higher in group 3 compared to group 1 (P= 0.044). patients in group 1 had a higher prevalence of CVA compared to group 3 (P= 0.008). The prevalence of abnormal EEG was significantly higher in cases with COVID-19 infection compared to the other group (P< 0.001). Cases with their first seizure episode associated with COVID-19 had significantly Lab data. (P= 0.004)

Conclusion: Patients with COVID-19 infection and seizure have higher mortality rates and disturbed laboratory data.

Keywords: COVID-19, seizure, pandemic, epilepsy.

Rational polytherapy in patients with drug-resistant epilepsy

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Rational polytherapy in patients with drug-resistant epilepsy Background: Drug refractory epilepsy, defined as a failure of adequate trials of two (or more) tolerated, appropriately chosen, and appropriately used antiepileptic drug (AED) regimens to achieve freedom from seizures, affects approximately 30% of patients with new-onset epilepsy. Persistent epileptic seizures in these patients, in addition to having deleterious effects on health, are also associated with psychosocial, behavioral, cognitive, and financial consequences. Antiepileptic polytherapy may be indicated in patients experiencing drug-resistant epilepsy. To date, there are no evidence-based criteria on how to combine different antiepileptic drugs (AEDs) together, in order to obtain the best therapeutic response. Experts opinion: Most experts now agree to the concept of “rational polytherapy” consisting of mechanistic combinations of AEDs exerting synergistic interactions and to the importance of continuing trials of different rational polytherapy regimens to improve the outcome of the core population of epilepsy patients in the long term. whenever polytherapy is required, the rationale for choosing two antiepileptic drugs (AEDs) should be based on the avoidance of combined pharmacodynamic or pharmacokinetic side effects. Areas covered: we will review the available data about the various associations of AEDs in patients undergoing polytherapy, focusing on the most effective and well-tolerated polytherapies. Moreover, some controversial aspects of this topic would be addressed.

Review of definition and classification of status epilepticus

Dr. Mehrnaz tavakolian [1] © Ⓟ

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Definition and classification of Status epilepticus Status epilepticus (SE) is a life-threatening neurological and medical emergency that requires recognition and immediate treatment.In Europe status epilepticus shows an incidence rate between 9 and 40/ 100000 / year. SE appears to be more frequent in developing countries also literature data are scares. International League against epilepsy (ILAE) defines SE as a condition resulting either from the failure of the mechanisms responsible of seizure self-limitation or from the initiation of mechanisms which lead to atypically prolonged seizures.This is a conceptual definition of status epilepticus with two operational dimensions T1 and T2. Time point T1 indicates when treatment should be initiated and time point T2 indicates when long-term consequences maybe appear, including neuronal injury or death depending on the type and duration of seizure with severe disability. According to ILAE status epilepticus categorized base on 4 axes:1-Semiology 2-Etiology 3-Electroencephalogram 4- Age. Ideally, every patient should be categorized according to each of the four axes, however this will not be always possible because age and semiology are immediately assessible but etiology may take time to identify and EEG recording will not be available in many settings, particularly at the presentation.In adult, mortality of patient with status epilepticus is almost 30% and even higher (up to 40%) in refractory status epilepticus. Etiology, semiology, duration,presence of morbidity, level of consciousness and age are the main clinical predictors of status epilepticus of outcome.key word: status epilepticus, definition, classification

Seizure and demyelinating lesions on MRI: pitfalls on diagnosis and treatment

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Background: Although Multiple Sclerosis)MS) is the most common demyelinating disorder, the specific antibody and well-established criteria exist for Neuromyelitis Optica Spectrum Disorder (NMOSD) and cases of Myelin Oligodendrocyte Glycoprotein Antibody-associated Disease (MOGAD) are increasingly recognized and recently, new criteria is proposed for MOGAD. Epileptic seizures have been associated with all of these disease entities, but there is limited data about their true prevalence and imaging features.

Methods: Articles related to the occurrence of seizures and demyelinating diseases were reviewed. Findings: Multiple sclerosis (MS) patients are three to six times more likely to develop epileptic seizures than the overall population. Seizures in MS may signal disease onset or relapse in a subset of patients. Magnetic resonance imaging (MRI) of MS patients with seizure demonstrates abundant temporal leukocortical lesions, and hippocampal accumulation of demyelinating foci. Cerebral cortical encephalitis is a clinical phenotype of MOGAD, which usually begins with seizures, and may be misdiagnosed as viral encephalitis. Cerebral forms of NMOSD can also be associated with seizure.

Conclusion: In patients with seizure, and clinical and imaging features suggesting of demyelinating disorders, MS, NMOSD and MOGAD should be considered in the differential diagnosis, which help the treating physician the Choose the appropriate treatment. Keywords: Multiple sclerosis, Neuromyelitis optica spectrum disorder, Myelin oligodendrocyte glycoprotein antibody-associated disease, Seizure

Seizure Semiology

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Seizure semiology comprises objective signs and subjective symptoms reported by patients during epileptic seizures. Accurate definition and recognition of seizure semiology is crucial for properly diagnosing and classification of seizures and epilepsy syndromes. although valuable information can be obtained from patient and caregivers but the most important data is driven from video recording of the seizures. Every neurologist should familiar with this information because it can help for better epileptic patient's management. Interpretation semiological signs and symptoms allowing hypotheses on the localization of focal seizures and can guide epileptologists to seizure onset zone In this review, I produce a list of terms that are used to describe seizure semiology and focus on sensory, cognitive, affective (emotional), autonomic phenomena. in each section. Video cases have been shown for better understanding.

Key Words: Seizure, Epilepsy, Semiology

Seizures and seizure like disorders in autoimmune encephalitis

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Autoimmune seizures are caused by a heterogeneous group of autoantibodies.Seizure characteristics including frequency, timing, duration, and symptomatology can provide vital clues to help differentiate autoimmune-associated seizures from other causes of epilepsy. Diagnostic certainty also requires an understanding and integration of the spectrum of clinical and paraclinical presentations.Seizures due to autoimmune etiology are increasingly encountered in clinical practice. It is critical that clinicians recognize immune seizure etiologies early in their course given they are often responsive to immunotherapy but are usually resistant to antiseizure medications. Some AE may associate with characteristic features: faciobrachial dystonic seizures (anti-LGI1 encephalitis), EEG extreme delta brush (anti-NMDAR), or multifocal FLAIR-MRI abnormalities (anti-GABAAR). In anti-LGI1 encephalitis, cortical, limbic, and basal ganglia dysfunction results in different types of seizures. AE or myelin-antibody associated syndromes are often immunotherapy-responsive and appear to have a low risk for chronic epilepsy. In contrast patients with seizures related to GAD65-antibodies (an intracellular antigen) frequently develop epilepsy and have suboptimal response to treatment (including surgery). RE or FIRES may occur with autoantibodies of unclear significance and rarely respond to immunotherapy. A study of patients with NORSE showed that 30% developed chronic epilepsy.

SUDEP updates

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Sudden unexpected death in epilepsy (SUDEP) accounts for 2–18% of all epilepsy-related deaths and this is equivalent to one death in 1000 person-years of diagnosed epilepsy. Increased seizure frequency, particularly GTCS and nocturnal seizures are the most potent modifiable risk factors for SUDEP. Patients not receiving any antiepileptic drug therapy are at higher risk of SUDEP. Other non-modifiable risk factors include severe epilepsy and early age of onset of epilepsy and genetic factors, including pathogenic variants of potassium and sodium channels (such as KCNQ1, SCN1A, LQTS, KCNH2, and SCN5A). Identification of KCNH2 and SCNC5 variants, which have been implicated in cases of long QT syndrome, is vital due to the potential for ensuring appropriate medication intervention. The exact pathophysiology of SUDEP is currently unknown, although GTCS-induced cardiac, respiratory, and brainstem dysfunction appears likely. There is very low-certainty evidence that supervision at night prevents SUDEP. Further research is needed to identify if other treatments, such as seizure detection devices, safety pillows, and drug interventions working on serotonin, adenosine, and opiate levels in the brain are effective in preventing SUDEP in people with epilepsy. At present, aggressive control of epilepsy and enhanced education for individuals and the public are the most effective weapons for combating SUDEP. Improving the knowledge of SUDEP incidence, risk factors, and biomarkers can help design and implement effective prevention strategies.

The Effectiveness of Acceptance and Commitment Therapy (ACT) on Anxiety, Alpha and Beta Brain Waves in Generalized Epilepsy

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Introduction: Anxiety is a perfectly normal response to a stressful situation. Anxiety in epilepsy is highly prevalent, affecting more than 40 % of patients in some reports. Anxiety in epilepsy has recently become a focus of interest for a number of reasons. Anxiety exerts a significant negative impact on the quality of life of patients with epilepsy of any age. In people with anxiety, they have changes in the EEG. One of the treatment to reduce or eliminate anxiety is to use psychotherapy

Methods: Recently treatment based on commitment and acceptance in mental disorders has become popular. In this study, the effect of this treatment on patients with generalized (tonic-clonic) epilepsy with anxiety and EEG changes was investigated. Methods: Two groups of 8 patients using the easy method, it was chosen by lot, in the first (experimental) group treatment (8 psychotherapy sessions, each session lasting 60 minutes for each patient, were conducted by a psychologist who is a member of the faculty of the University), and EEG was done, and in the second (control) group, only EEG was done. Changes in quality of life and absolute alpha power were measured.

Results: The quality of life of patients (experimental group) increased significantly and the absolute alpha power increased, which indicates a state of relaxation.

Keywords: Acceptance and Commitment Therapy (ACT), Anxiety, Quality of Life, Alpha and Beta wave, Generalized Epilepsy.

The global burden and care of epilepsy in Iran

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Epilepsy has gained increased public health focus because patients who suffer from epilepsy experience pronounced and persistent health and socioeconomic disparities despite treatment and care advances. The epidemiology of epilepsy is diverse in different countries and regions. This nationwide population-based cross-sectional study was conducted to determine the lifetime prevalence and health-related factors of epilepsy for the first time in Iran through a two-phase door-to-door survey method. In phase, I, a screening for epilepsy was performed on 68,035 people. Then in phase II, after the neurological evaluation of participants and reviewing medical records, 1130 subjects with epilepsy were confirmed. The lifetime prevalence of epilepsy was achieved to be 16.6 per 1000 people (95% CI 15.4–17.8) with an average age onset of 19.1 ± 21.1 (active prevalence 9.5 per 1000 people). Focal seizure (59.3%), generalized epilepsy (38%), and unknown types of epilepsy (2.7%) were detected among participants. The overall lifetime prevalence of febrile convulsion was 4.1 per 1000 people. The frequency of attacks per year and month were 3.0 ± 1.6 and 0.5 ± 0.1, respectively. Age-specific lifetime prevalence was highest among the age group of 15–19 years old [32.7 per 1000 persons (95% CI 29.1–36.8)], and it was higher in male (53.8%) than female (46.2%) participants. Our results showed that the lifetime prevalence of epilepsy in Iran is higher than in other countries.

The Therapeutic Role of Ketogenic Diet in Drug-Resistant Epilepsy

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Background: The ketogenic diet (KD) is a high-fat, low-carbohydrate and moderate-protein diet that has been used for the treatment of patients with drug-resistant epilepsy since 1921. Despite the efficacy of the KD, optimization efforts started in different centers, including Children's Medical Center, to enhance the feasibility and accessibility of KD by introducing new protocols (e.g. outpatient protocol) or new types of the ketogenic diet (e.g. modified Atkins diet). Methods: In 2015, inpatient classical KD was established at Children's Medical Center, Tehran. After observing promising outcomes, we decided to establish outpatient classical KD to make the diet more accessible and feasible for patients. In October 2015, an outpatient protocol was established without fasting, calorie and fluid restriction. We also established modified Atkins diet (MAD) protocol in our center to enhance the compliance of the diet. In one of our studies (ClinicalTrials.gov, NCT03014752), we compared the efficacy of outpatient classical KD and MAD. Findings: Fourteen patients completed the study in each group. After three months, 58.4% of the patients who were under classical KD had at least 50% reduction in seizure frequency, compared to 38.5% which was observed in patients who were on MAD. However, there was no significant difference in mean seizure frequency between the two groups (p=0.059). Conclusions: Both classical KD and MAD are effective in the seizure reduction of patients with drug-resistant epilepsy, and both approaches can be implemented based on the condition of the patient and hospital resources. Ketogenic Diet; epilepsy; neurological diseases; drug-resistant epilepsy; Atkins diet

Treatment of Depression and Anxiety in Epilepsy

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Depression, anxiety, and epilepsy are all common conditions in psychiatry and neurology, and it is not uncommon for they are presenting in the same people as comorbidity. Few studies reported the lifetime prevalence of depression in association with epilepsy to be as high as 55% and anxiety as prevalent as 42%. In essence, clinicians in the field of epilepsy naturally focus on the s seizures and treatment, whereas mental health issues include depression. n and anxiety is a significant part of patients' suffering and quality of life. On the other hand, depression and anxiety can directly increase seizure frequency through sleep deprivation; failure to recognise depression or inadequate treatment can end in suicide. Depression and anxiety also often reduce concordance with antiepileptic medication. Doctors in epilepsy clinics often fail to diagnose depression or anxiety disorder in their patients, and even when they do, many remain inadequately treated. In this talk, I will review the epidemiology of depression and anxiety in patients with epilepsy and address these clinical presentations. Next, I will discuss the practical points to improve communication with patients who suffer from depression and anxiety as a therapeutic alliance. Finally, I elaborate on evidence-based treatment options for treating depression and anxiety in epilepsy. In the meantime, I will discuss some of the evidence we reviewed in Iran.

Treatment of patients with epilepsy and neurodegenerative disorders

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The incidence of epilepsy in patients older than 65 years is about 1% which is probably underestimated due to several factors such as atypical presentation of seizures and lack of close surveillance. In this population, the most common causes of epilepsy are stroke, trauma, tumor and neurodegenerative disorders. Alzheimer's disease as a common neurodegenerative disorder is a risk factor for epilepsy. Also, seizures often occur during the course of Creutzfeldt-Jakob disease. Among younger adults, seizures are a common part of neurodegenerative disorders with progressive myoclonic epilepsy such as ceroid lipofuscinosis type A, mitochondriopathies and Dentatorubral pallidolyusian atrophy. Moreover, they often occur with different semiology in Wilson's disease and some types of spinocerebellar atrophies. Treatment with antiseizure medications is generally initiated after exclusion of acute symptomatic seizures which are commonly happened due to toxic, metabolic and drug-related causes. Many pharmacodynamic considerations should be noticed based on physiologic condition of elderly, comorbidities and possibility of drug interactions. Neurocognitive adverse events of antiseizure medications are also more common in this age group. There is a general recommendation for monotherapy with broad-spectrum antiseizure medications with the least cognitive and medical side effects. However, the goal is often unobtainable in clinical practice. This review is aimed to discuss about the treatment of seizures in adults with neurodegenerative disorders, common challenges and the best recommended approach based on the recent findings.

Update on Antiseizure Medications

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Objective: To review recent evidence that can assist clinicians be updated on antiseizure medications therapy. Updated Knowledge of antiseizure medication pharmacokinetics, efficacy, and tolerability profiles facilitates the choice of appropriate antiseizure medication therapy for patients with epilepsy. Summary: Knowledge of the spectrum of efficacy, clinical pharmacology, and modes of use for individual antiseizure medications is essential for optimal treatment of epilepsy. Until 1993, the choice of antiseizure medication was limited to seven or eight major agents. However, more than 19 new antiseizure medications have been approved and marketed since then. The most notable developments are the FDA approval of two new antiseizure medications, cenobamate and fenfluramine, and expansion of the indications of some antiseizure medications, particularly the approval of lacosamide for primary generalized tonic-clonic seizures. There has also been increasing awareness of autoimmune pathophysiology underlying epilepsy in many patients, often requiring immunotherapy for optimal management. Improved understanding of the underlying pathophysiology of epilepsy in individual patients will allow more specific antiseizure medication therapy in the future. Treatment of epilepsy starts with antiseizure medication monotherapy. Several newer antiseizure medications have undergone comparative trials demonstrating efficacy equal to and tolerability at least equal to or better than older antiseizure medications as first-line therapy for focal epilepsy. The list includes lamotrigine, oxcarbazepine, levetiracetam, topiramate, zonisamide, and lacosamide. Lacosamide, pregabalin, and eslicarbazepine have undergone successful trials of conversion to monotherapy for focal epilepsy. Other newer antiseizure medications with a variety of mechanisms of action are suitable for adjunctive therapy

updates in cluster and frequent seizures treatment

Dr. Hosein Kahnouji [1] © ℗

[1] Neurologist

Many people with epilepsy report seizures which occur in close successions; these are termed seizure clusters. The definition of seizure clusters has been very actively debated for more than two decades. Therefore, it is difficult to accurately estimate the prevalence of seizure clusters; prevalence of seizure clusters depends on the definition used. Close to half of patients with active epilepsy experience seizure clusters, and the clinical, social, and financial burdens of seizure clusters are high. Seizure clusters can be very disruptive to the patient and the family, particularly when they are severe and have had a history of progression to prolonged seizures or status epilepticus. The treatment of seizure clusters must be individualized. It must depend on the type, frequency, severity, and duration of seizures in a cluster, and whether episodes have been known to progress to prolonged seizures or status epilepticus.

Updates in developmental and epileptic encephalopathy

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Multi-medication resistance epilepsy in childhood, particularly developmental and epileptic encephalopathy (DEE), is a grave problem because of intractable seizures and sever impacts on development and behaviors. "Developmental and epileptic encephalopathy" (DEE) refers to when neuro-cognitive functions are impacted by both seizure and inter-ictal epileptiform activity and the neurological pathogenesis behind the epilepsy. Causes of DEEs include both non-genetics and genetics. Many DEEs are associated with gene variants and the onset is during early childhood. The identification of an increasing number of gene variants and pathophysiological roles in cellular pathways drives toward novel precision therapies. Genetic DEEs have been associated with mutations in many genes involved in different functions including cell migration, proliferation, and organization, neuronal excitability, and synapse transmission and plasticity. There is no direct genotype – phenotype correlation in DEEs. The genetic context of DEE is more and more explored as exemplified in the recent publications. In circumstance with non-progressive diseases with cognitive impairment and co-existing epilepsy, the epileptiform activity does not impact or has trivial effect on function, the term "developmental encephalopathy" (DE) can be appropriated. (Old term as static encephalopathy) In comparison, for situation with primary impact on cognition and development as result of epileptiform discharges, the term "epileptic encephalopathy" (EE) is preferred, as most can improve cognitive state with appropriate medication. These children require to aggressive anti-seizure medication. Epileptic activity itself contributes to severe cognitive and behavioral impairment above and beyond that expected from the underlying pathology and that these can worsen over time.

VNS - second chance after failed epilepsy surgery

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Introduction: vagus nerve stimulation (VNS) can be used both with contraindicated resection surgery and after it. Purpose: to evaluate the effectiveness of VNS after failed resective epilepsy surgery. Method: 85 patients with drug-resistant epilepsy were implanted the vagus nerve stimulator in the period from January 2016 to December 2021 at 3 hospitals. Of these, 61 (24 men, 37 women) patients in the past underwent resective epilepsy surgery. The outcomes of VNS were assessed using the modified J. Engel classification (I: seizure-free/rare simple partial seizures; II: 90% seizure reduction (SR), III: 50-90% SR, IV: 50% SR; classes I to III (50% SR) = favorable outcome). Results: The patient's average year old was 31,89 years, the average age of onset of the disease - 11,32 years, the duration of the epilepsy-20,4 years. All patients in this group previously had resective surgery: 56 patients - anterior medial temporal lobectomy with amygdaloghippocampectomy (AMTLE), 4 – AMTLE + extratemporal resection, 1 - callosotomy. 41 patients (67,2%) were successfully interviewed, 20 (32,8%) - refusal to communicate. The effectiveness VNS therapy in patients who have failed resective epilepsy surgery in our series: 72,5% patients had favorable outcome after 12 months of observation, 80,5% - after 24 months, 81,25% - after 36 months, 90% - after 48 months. Side effects of VNS: hoarseness - 17 (41,5%) patients, cough – 14 (34,2%), pain in the throat - 7 (17,1%), pain in the chest - 2 (4,9%), severe attacks of asphyxia - 1 (2,4%), postoperative wound infection - 1 (2,4%).

What do we know about catamenial epilepsy

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Catamenial epilepsy is one of the most common seizure patterns affecting more than 40 % of women with epilepsy. The mechanism is essentially related to fluctuations of estrogens and progesterone metabolites which have proconvulsant and anticonvulsant properties respectively. Three subtypes of CE have been described: Perimenstrual subtype (C1), Periovulatory subtype (C2) and inadequate luteal phase subtype (C3). CE is often more resistant to traditional anti-seizure medication regimens. The plan of CE treatment should be individualized for each patient. Hormonal and non-hormonal therapies have been used in the treatment of CE. Hormonal add-on therapies include natural progesterone, synthetic forms of progesterone or therapy based on menstrual cycle suppression. Women with regular menstrual cycles, especially the C1 pattern, may benefit from non-hormonal therapy including acetazolamide, benzodiazepines or temporarily increasing the dose of existing anti-seizure medications. Therapeutic strategies must be made in agreement with the patient in terms of considering potential adverse effects of increasing existing therapy or short-term use of drugs. Finally consults for supportive care and reducing unplanned and often high-risk pregnancies for patients with this condition is mandatory.

Key words: Catamenial epilepsy, Menstrual cycle, Anti-seizure medications, Hormonal therapy

When to Start Antiseizure Medication Therapy?

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When to Start Antiseizure Medication Therapy? Introduction Where possible, the decision as to when to start antiepileptic drug treatment should be informed by the results of randomized controlled trials. The decision of whether or not to start antiseizure medication therapy at the time of a first unprovoked seizure in an adult should be individualized. Methods In this review, we have summarized the important aspects that determine the advantages and disadvantages of treating a first seizure. We have looked at evidence from randomized controlled trials and key observational studies. Findings Current evidence and consensus suggest that antiepileptic drug treatment should be started: 1- Following two or more seizures if seizures are of significant symptomatology such that the patient would wish treatment, and occurred over a period of less than 6–12 months. 2- Following a single seizure if the patient is in the medium- or high-recurrence risk group and the patient wishes to start treatment. 3- Following two or more seizures of minor symptomatology or following seizures separated by long time periods if the patient is in the medium- or high-recurrence risk group and the patient wishes to start treatment. Discussion and Conclusion The initiation of long-term use of antiseizure medication is a major decision that is made by the patient and the clinician. This decision requires reasonable certainty of an epilepsy diagnosis; the use of medication for a trial period in patients in whom the diagnosis is uncertain should be avoided. Key Words: Initial treatment, first seizure

Posters Presentation

A different look at epilepsy and its effect on the cranial nerve: a qualitative systematic review

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Background: Investigating the impact of epileptic seizures on eye health and vision will be the subject of our study in this systematic review. Method: For this review, we reviewed articles from the years 2019 to 2022 based on the following keywords in PubMed, Scopus and Google Scholar databases (result follow up). Epilepsy Epilepsy and brain lobe Epilepsy and cranial nerve damage We used Prisma as the basis of our systematic review. The focus of identifying articles in the identification stage was the research question based on the PICO criteria.

Result: General epilepsies and focal epilepsies are possible in different places and in different lobes of the brain. Articles show that one of the places where focal epilepsy occurs in each lobe that occur, which every lobe control center of facial nerves. If the epilepsy progresses from the acute stage to the persistent stage, whether it is general or focal, it affects the brain nerves such as the oculomotor, Olfactory, Trochlear, Vestibulocochlear and the optic nerve, that are important cranial nerves, and we will expect to have the weakness of these brain nerves over time. This situation is similar to that of neuromyelitis optic spectrum disorders (NMOSD), which Gelila damaged by persistent seizures.

Conclude: Weakness of various brain nerves that occurs after persistent epileptic attacks in the respective lobes can over time lead to damage to the centers related to the facial nerves, which is the result of the weakening of the nerves of that part. Keywords: Epilepsy; seizure; nerve damage

Anti-inflammatory and anti-oxidative effects of elderberry diet in the rat model of seizure: a behavioral and histological investigation

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Background: The present study aimed to evaluate whether elderberry (EB) effectively decreases the inflammation and oxidative stress in the brain cells to reduce seizure damage. Methode: A seizure was induced in rats using intraperitoneal injections of pentylenetetrazol (PTZ). In the Seizure+EB group, EB powder was added to rats' routine diet for eight consecutive weeks. Then, a number of behavioral factors, such as psychomotor activity, working memory, long-term memory, and anxiety level of rats, were measured using an open-field test, Y-maze test, passive avoidance test, and elevated plus-maze test, respectively. This investigation studied the immunohistopathology and distribution of hippocampal cells through light microscopy and Sholl analysis, respectively. Also, the Voronoi tessellation method was used to estimate the spatial distribution of the cells in the hippocampus.

Result: In addition to improving the behavioral aspects of rats with induced seizures, a reduction in astrogliosis and astrocytes process length and the number of branches and intersections distal to the soma was observed in their hippocampus compared to the control group. Further analysis indicated that the EB diet increased the NRF2 expression and decreased the caspase-3 expression in the hippocampus of rats with induced seizures. Also, EB protected hippocampal pyramidal neurons against PTZ toxicity and improved the spatial distribution of the hippocampus and dentate gyrus neurons. Conclusion: Findings of the present study suggest that EB can be considered a potent modifier of astrocytes' reactivation and inflammatory responses.

Keywords: Elderberry, Pentylenetetrazol, Hippocampus, Astrocyte, Inflammation

Assessing the risk of suicide in people with epilepsy: a review study

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background: Epilepsy is a chronic neurological disease that affects more than 70 million people worldwide and has no geographic, social or racial boundaries. Committing suicide is also a conscious act of self-destruction. In the present study, we have discussed the risk factors of suicide attempts in patients with epilepsy and preventive measures for this. Methods: The current study is a short review study that was designed in 2021. By searching international and national databases, articles were collected from 2016 to 2022 about Checking the action of suicide in patients with epilepsy. After reviewing the search results, finally, 48 studies were used to write this study.

Findings: The two-way relationship between epilepsy and suicide indicates a common underlying neural mechanism. The most important risk factors for suicide in patients with epilepsy: psychiatric comorbidity (depression, anxiety, obsessive-compulsive symptoms, and alcohol consumption), gender (the risk of suicide is higher in men than women), puberty (due to personality changes and psychological) and other factors such as physical health, social status, drug abuse, and unemployment.

Conclusion: due to the importance of suicide, patients should be screened and people who have harmful thoughts should be identified; The patient and his family should be taught to report to the doctor if there is a change in mood due to taking a drug; Also, the treatment should be done as a team. Since no mechanism fully defines the relationship between epilepsy and suicide, it is suggested that more studies be done in this regard.

Keywords: epilepsy, suicideattempt, neurologicaldisease

Beneficial effects of blueberry against bicuculline-induced seizures in experimental animals

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Epilepsy is known as one of the most common chronic neurological disorder which characterized by abnormal, spontaneous, and synchronized neuronal hyperactivity. Current therapeutic sterategies for mitigating epileptic seizures are associated with different serious side effects. Nowadays, much attention has been paid to natural products due to their potent neuroprotector effects. Blueberry is known as a rich sources of bioactive natural products with anti-inflammatory, antioxidant and neuroprotective effects. Present study aimed to evaluate the beneficial effects of blueberry on seizures in a model of status epilepticus induced by bicuculline in experimental animals. Animals received an intracerebroventricular injection of different doses of blueberry for one week. Thereafter, animal behaviours were firstly observed in open field test for 20 mins, afterwards in the elevated plus maze test for 5 mins. After 30 mins, animals were received an intracerebroventricular injection of bicuculline and were observed in open field test for seizure assessment. Finally, immunohistochemical analysis of c-Fos has been performed. Results showed that blueberry increased the total distance traveled in the open field test and also protected against seizures and death on the bicuculline-induced seizures in experimental animals. In addition, blueberry decrease neuronal activity on the dentate gyrus of the bicuculline group. In conclusion, our results showed that blueberry exerts an anticonvulsant activity which could be served as rich source of natural bioactive anticonvulsant agents.

Effects of an Algorithm-based Education Program on Nursing Care for Children with Epilepsy by Hospital Nurses

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Epilepsy is the most common neurological disorder in childhood. Hospital nurses, who are the first to recognize seizures in epilepsy patients in the ward environment, possess expertise related to epilepsy and play a central role in epilepsy management. The purpose of this study was to develop an algorithm-based education program and to improve nurses' knowledge and self-efficacy related to providing nursing care to children with epilepsy.

Methods: The education program consisted of lectures on the definition, cause, classification, diagnosis, treatment, and nursing of epilepsy based on a booklet, as well as practice using an algorithm for nursing interventions when a child experiences a seizure. Twenty-seven nurses working at pediatric neurological wards and a pediatric emergency room participated in the education program. The data were analyzed using descriptive statistics and the paired t-test. Results Nurses' knowledge and self-efficacy showed a statistically significant improvement after participation in the education program on nursing care for children with epilepsy. Conclusion The application of this education program for hospital setting is expected to improve nurses' capability to care for children with epilepsy, thereby contributing to a higher quality of nursing.

Keywords: Epilepsy, Seizure, Nursing education, Nurses

Effects of ketogenic diet on improvement of epilepsy in children

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Introduction: Epilepsy is a destructive disease for children and adults, but the highest incidence of epilepsy occurs in elementary and childhood years. One of the methods of controlling the disease in children is having a ketogenic diet.KD is a diet rich in fat and with limited carbohydrates which is very popular nowadays.

Methods: In order to investigate the effectiveness of ketogenic diet in controlling epilepsy in children, related studies from 2012 to 2022 have been studied and analyzed in major databases such as Pub-med, Google Scholar and, etc.

Results: The KD imitates the biochemical effects of fasting and induces a shift away from glycolic energy production toward energy generation through oxidative phosphorylation leading to fatty acid β-oxidation and ketone production. ketosis may protect against seizures by altering ion and neuronal activity and also decrease reactive oxygen species (ROS). Neuroprotective and anti-inflammatory effects of ketosis could also be due to sending a neuroprotective signal to the brain by BHB's ability to activate the hydroxycarboxylic acid. Ketosis may mediate the immune response seen in KDTs by altering the gut microbiota. regarding the side effects of long-term use of this diet the case of diets with essential calories and vitamins and minerals, no significant relationship was seen between the KD and bone and growth disorders in children. Conclusion: Based on the extensive review of the studies, it can be concluded that the KD can be effective in improving the symptoms of epilepsy in children through different pathways.

Key words: Children, ketogenic diet, Epilepsy

Epilepsy and its treatment methods

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epilepsy means the occurrence of two or more unprovoked seizures within a period of more than 24 hours. among the main causes of epilepsy, we can mention brain injuries (such as brain injury, tumors, etc.), mutations in the genome, increased sensitivity of nerve receptors, and disruption of the chemical charge balance on the side of the neuron membrane. during epileptic attacks, the body reduces the amount of cholesterol, hdl and ldl and glucose, increases the concentration of gaba receptors, decreases the amount of some enzymes and proteins and changes in the amount of brain electrolytes. Three major methods for treating this disease include drug therapy, surgery and nicket ketosis regimens, which are briefly expressed in this review article. keywords: antiepileptic drugs, types of epilepsy, epilepsy and heredity, epilepsy and pregnancy, metabolic changes in epilepsy

EVALUATION OF CLINICAL AND DEMOGRAPHIC FEATURES OF STATUS EPILEPTICUS AT URMIA MOTAHARI PEDIATRICS HOSPITAL DURING 2011-2019

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Background & Aims: Seizure is a chronic neurological disease and a disorder of the nervous system caused by severe and sudden electrical discharge of neural cells. Status epilepticus is defined as any generalized tonic-colonic seizures lasting more than 5 minutes, any focal seizures lasting more than 10 minutes, and recurrent seizures without returning to baseline between periods of seizures. This study was designed and conducted to investigate the demographic and clinical characteristics of children with status epilepticus admitted to Motahari Hospital in Urmia during 2011-2019

Materials & Methods: Included criteria: having a final diagnosis of status epilepticus, and having the age less than 18 years. History of epilepsy in the patient, and the patient's demographic information were recorded in the checklist.

Results: The results of this study showed that the mean age and birth weight of patients with status epilepticus was 37.49 months and 3046.30 grams, About 47% of patients had a previous history of epilepsy, 28.3% of parents were relative, 18.3% had a family history of epilepsy, 51.1% had a positive history of neurological disorder, and 8.7% had a positive history of non-neurological disorder. Boys were affected more than girls. EEG abnormality was the most common abnormal paraclinical finding (32.9%). Most of the patients had fever (74.9%) and the majority of seizures were manifested as generalized ones (82.6%). The mortality rate among these patients was12.3% Conclusion: According to the results of this study, the deceased patients were significantly younger than the discharged individuals. Males outnumbered females in our study

Evaluation of the effects of maternal administration of subconvulsive doses of hydroalcoholic extract of Haplophyllum robustum on learning, anxiety and motor balance behaviors of adult male Wistar rats

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Background: Epilepsy is a chronic multifactorial disease with recurrent seizures due to abnormal simultaneous neuronal discharges. Mild convulsions during pregnancy cause effects on the children of such mothers. Extracts of Haplophyllum Robustum were investigated as an experimental convulsive model. In this study, administration of subconvulsive doses of hydroalcoholic extract of the whole plant in pregnant mothers on offspring's behaviors of male Wistar rats were examined.

Methods: In this research, 8 Pregnant Wistar rats (200-300 g) were used. The animals were divided into two groups (n = 4 for each group). In the experimental group, plant hydroalcoholic extract was injected to animals (250 mg/kg) from 15 to 21 days of pregnancy. The control group were injected with sodium chloride. Convulsive behaviors were recorded. Then the behaviors of male adult offspring were evaluated using Elevated plus maze, Y maze and rotarod devices.

Findings: Seizure evaluation in pregnant rats showed just stage 2 of convulsion about 6 minutes after the injection of the extract. The adult male offspring showed significant differences in the elevated plus maze (anxiety behavior), y- maze (learning) and rotarod (motor balance) tests.

Conclusion: The results of behavioral assessment indicate that even subconvulsive maternal seizures have lasting effects on the developing neuronal systems in the fetus for various reasons and in adulthood as well. The possibility that the occurrence of convulsions may somehow act through glutamate pathways and lead to the activation of neurotoxic systems and damage to the neurochemical development processes of the fetal brain.

Keywords: Epilepsy, Convulsions, Haplophyllum robustum, Behaviors

Evaluation of the effects of maternal administration of supraconvulsive doses of hydroalcoholic extract of Haplophyllum robustum On Learning, anxiety and motor balance behaviors of adult male Wistar rats

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Background: Epilepsy occurs because of severe and abnormal discharge of brain neurons. In this research, the behavioral investigation of the convulsive effects of supraconvulsive doses of Haplophyllum Robustum hydroalcoholic extract was tested in pregnant rats to evaluate the effects of acute convulsions on behavioral consequences (emotional, learning and motor balance) in male adult offspring. Methods: We used two groups of rats (experimental and control). The experimental group of pregnant mothers were injected a convulsive dose (400 mg/kg) of the hydroalcoholic extract of the plant, and the control group was injected with NaCl serum. After reaching to the adulthood, the behavior of male rats in each group (n=10) was measured in terms of learning (y maze), anxiety (elevated plus maze), and movement balance (rota rod test).

Findings: The results of this research show that the administration of 400 mg/kg of the plant extract causes generalized convulsions in all pregnant mothers. Learning, movement balance and anxiety behaviors were significantly different in the comparison between adults male of two groups. Conclusion: Hydroalcoholic extract of Haplophyllum Robustum causes acute seizures. The effects of maternal convulsions on the offspring behaviors indicate the possibility of changes in neuronal plasticity in the brains of fetuses.. Convulsions may also interfere with mechanisms related to the hypothalamus-adrenal-hippocampal axis. One of the possible mechanisms can be the result of hypoxia of the fetal brain in the mother with convulsive attacks.

Key words: Epilepsy, Sodabi, Haplophyllum Robustum, learning, anxiety, movement balance

Exercise improved anti-epileptic effect of carbamazepine through GABA enhancement in the epileptic rats

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Background: The benefits of exercise have been indicated in the several neurological disorders. This study assessed how exercise improved the anti-epileptic effect of carbamazepine in the epileptic rats.

Method: Seizure was induced by injection of 35 mg/kg pentylentetrazole (PTZ) every other day for 4weeks. Animals were randomly divided into: • Sham, Seizure group: pentylenetetrazol (PTZ) was injected with the same protocol of sham group. • CBZ (25), CBZ (50) and CBZ (70): CBZ (Sigma Aldrich, Germany) was solved in the DMSO. CBZ (25, 50 and 70 mg/kg) were injected half an hour before seizure induction in three experimental groups separately. • Exercise (EX): animals were forced to run on a motorized treadmill consisted of 30 minutes running in 5 days per week for four weeks. • EX+CBZ (25), EX+CBZ 50 and EX+CBZ (75): Rats did exercise with the same protocol of EX group. Five hour after doing exercise, CBZ (25, 50 and 70 mg/kg) were injected half an hour before seizure induction in three experimental groups separately. Seizure properties (latency and severity) were assessed by scoring of convulsive behaviors. The gene expressions as well as distribution of glutamic acid decarboxylase 65 (GAD65) and GABAA receptor α1 in the hippocampus and cortex were evaluated. Results: The mean score of convulsive behaviors of EX+CBZ (50) group significantly reduced compared to the CBZ (25) and CBZ (50) in the days 5, 12, 15, 17, 19, 22, 24 and 24.Keywords: Epilepsy, Exercise, Seizure

Factors increasing and decreasing the risk of sudden unexpected death in epilepsy (SUDEP)

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Abstract: Background: Sudden Unexpected Death in Epilepsy (SUDEP) refers to epileptic fatalities that are not the result of trauma, drowning, or other well-known causes. In the present study, we investigated factors increasing and decreasing the risk (SUDEP). Methods: The present study is a summary review designed in 2022. The keywords risk factor, Risk mitigation, Epilepsy, and Sudden Unexpected Death in Epilepsy were searched in Cochrane Library, Scholar, Scopus, UpToDate, and PubMed databases, and their Persian equivalent in Magiran and SID databases for the period 2019 to 2022. A total of 156 articles were found, and after review, 86 articles were used for writing. Findings: Risk factors (SUDEP) include three or more generalized tonic-clonic seizures per year; nocturnal seizures; not adding or changing medication when prescribed medication is resistant; male gender; the age of first seizure (before the age of 16); and arbitrary drug discontinuation. Factors that reduce the risk of SUDEP include: the absence of seizures for a period of 1 to 5 years; educating patients' families about SUDEP; using other treatment methods such as surgery and diet therapy in case of resistance to drug treatment; avoiding stimulants Seizures: lack of sleep, voluntary withdrawal of drugs and alcohol. Conclusion: Risk factors (SUDEP) are less known, especially in children, that's why it is suggested that more studies be done in this field due to the importance of this issue. Keywords: Risk Evaluation and Mitigation, Risk Factors, Epilepsy, Sudden Unexpected Death in Epilepsy

Frequency of attention-deficit hyperactivity disorder (ADHD) in children with epilepsy

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Abstract: Background: ADHD is one of the main reasons for children to visit neuropsychiatric clinics, and It is more common in epileptic children. This research is to determine the frequency of ADHD in children with Epilepsy in Tabriz medical centers in 2021. Methods: In this cross-sectional study, 48 children with epilepsy in the age range of 3 to 12 years were examined, all patients were given two questionnaires, one containing ADHD diagnostic questions according to DSMIV standard criteria and the other containing demographic characteristics, including: Age, gender, type of seizure, history of febrile seizure, intelligence status based on Wechsler test, presence of ADHD symptoms before or after the use of anticonvulsant drugs. Then the data was analyzed. Findings: 21 people (8.54% of females and 48.4% of males) had ADHD. The frequency of ADHD in the age group of 3-7 years was 69.2% and above that was 32.4%. ADHD was more common in the first children of the family. A history of febrile seizures was more common in epileptic children with ADHD than in children without ADHD. ADHD symptoms were present in 48.8% before the onset of seizures and in 51.2% after the onset of seizures. In 33% of cases, ADHD symptoms worsened after starting anticonvulsant medication. Conclusion: It is recommended that psychiatric counseling should be performed in all children with the onset of seizures in terms of the presence of ADHD symptoms, and sufficient care should be used in the selection of anticonvulsant drugs. Keywords: Epilepsy, children, attention-deficit hyperactivity disorder, ADHD

Horizontal gaze palsy with progressive scoliosis

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Abstract: Horizontal gaze palsy with progressive scoliosis (HGPPS) is a rare autosomal recessive syndrome characterized by the congenital absence of conjugate horizontal eye movements and childhood-onset progressive scoliosis. Here we present a case 30-year-old female with refractory focal seizures. LTM findings were compatible with the right TLE. Whole exome sequencing results also revealed a homozygote variant defined as c.1090GA (p. Val364Met) in the ROBO3 gene. The presence of an auditory aura at the beginning of seizures, which is more characteristic of lateral temporal lobe epilepsy, is challenging for our patient.

Investigating the Role of Complementary and Alternative Medicine in Patients with Epilepsy

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Abstract: Background: A review of studies shows diverse and sometimes contradictory results in the willingness to use complementary and alternative medicine (CAM) in patients with epilepsy (PWE). The purpose of this study was to summarize the factors influencing the willingness to use CAM in these patients and also determine the overall effect of this approach. Methods: In this meta-synthesis, articles were searched with keywords Epilepsy, Alternative Medicine, Complementary Medicine and their Persian equivalents in PubMed, SID, Google Scholar databases. Eleven studies were selected based on inclusion criteria (Persian and English language, publication in the last 5 years and available full text). After removing the duplicates, irrelevant articles, and evaluating with STROBE and CONSORT criticism tools, finally 8 articles were selected for this study. Data was analyzed with thematic analysis. Findings: Regardless of ethnic and cultural differences, most patients had a high desire to use CAM, some of them as monotherapy and some as Concomitant treatment. But in an overview, the tendency to use CAM in PWE was more in young people, women, married, educated and employed people. In addition, most of the studies indicated the effective role of this therapeutic approach in reducing the frequency or duration of seizures and increasing the quality of life. Conclusion: Considering the high willingness among PWE about CAM and challenges of cultural difference, as well as the risk of interference with pharmaceutical treatments, training and empowerment of health professionals and patients about precautions related to this therapeutic approach seems necessary.

Long-term results of surgical treatment of patients with structural drug-resistant form of epilepsy.

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Objective: To evaluate the outcomes of neurosurgical treatment of patients with drug-resistant epilepsy. Materials and methods: 423 patients with drug-resistant structural epilepsy were operated on. Preoperative examination and surgical treatment were carried out from 01.01.2014 to 12.31.2021. All patients underwent a neurological and neuropsychological examination as a preoperative examination, the semiology of seizures was assessed, neuroimaging and neurophysiological studies were performed. The outcomes of surgical interventions after surgery were assessed according to the scale of outcomes of surgical treatment by J. Engel (1993) 12, 24, 48 and 60 months after the intervention. A search was made for factors influencing the outcome of surgical treatment: favorable (Engel I-II) and unfavorable (Engel III-IV). Results: 423 patients underwent 447 surgeries. The results of surgical treatment 12 months after surgery were evaluated in 254 (78%) of 326 patients; in 72 patients, it was not possible to evaluate the outcomes after surgery because of various reasons. The outcomes of Engel I after 12 months were in 51%, after 24 months-49.5%, after 48 months-49%, after 60 months-49.5%. After 12 months after surgery, favorable outcomes (Engel I + II) were detected in 70% of patients, after 24 months - in 67.5%, after 48 months - 79%, after 60 in 78%. Conclusions: The presented results confirm the effectiveness of surgical treatment of drug-resistant forms of epilepsy. Outcomes Engel I-II after surgical treatment after 12 months were achieved in 70%, after 24 months in 67.5%, after 48 months in 79%, after 60 months in 78% of patients.

Neuroimaging Modalities in Idiopathic generalized epilepsy (IGE) and Psychogenic non-epileptic seizures (PNES)

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Psychogenic non-epileptic seizure (PNES) is a complex entity that does not have electrical discharges in the brain cortex and is different from idiopathic generalized epilepsy (IGE) in symptoms, signs in EEG, and, especially, neuroimaging modalities. Thus, it has recently drawn attention to itself to enhance the therapeutic and management approaches. This narrative review provided and compared various neuroimaging modalities and their outcomes in PNES and IGE patients. In addition, a brief need-to-know background for epidemiology and psychiatric/medical comorbidity, brain network circuits related to emotion-executive-motor dysregulation may cause differences between PNES and IGE patients, and recent and future studies aimed to reveal the connections in these patients are discussed. Finally, it has been proposed that the pathophysiology of PNES and IGE is distinct, based on different imaging and functional characteristics, although they possess a few common characteristics. Consequently, specific treatment and management approaches are recommended for each. Furthermore, given the imaging abnormalities observed in PNES patients, it is assumed that the condition is more organic and should be addressed accordingly. Further research is necessary to elucidate the pathophysiology of PNES and propose a practical and straightforward treatment.

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

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

Opsoclonus myoclonus syndrome as a key to diagnosis of Anti–N-methyl-D-aspartate receptor encephalitis

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Abstract: Background: Opsoclonus myoclonus syndrome (OMS) is an inflammatory neurological disorder, which may have an autoimmune etiology. Methods and findings: In the present study, we reported one patient with ovarian teratoma related Anti–N-methyl-D-aspartate receptor (Anti-NMDAR) encephalitis who was misdiagnosed as the Neuroleptic Malignant Syndrome in the setting of antipsychotic drug therapy. Late onset OMS raised suspicion of autoimmune encephalitis, which was confirmed by cerebrospinal fluid (CSF) analysis. Ultrasonography of pelvic organs detected an ovarian cyst. The patient had a favorable outcome following glucocorticoid therapy and ovarian cyst resection. Conclusion: Anti-NMDAR encephalitis is a form of autoimmune encephalitis. OMS sometimes occurs in association with this disease. Variability of the initial symptoms, not only leads to underdiagnosis but also misdiagnosis as viral encephalitis or other pathologies. Anti- NMDAR encephalitis should be suspected if a previous healthy young patient presents with new onset psychotic symptoms. The sooner the treatment is started, the better will be the prognosis. Keywords: opsoclonus myoclonus seizure, anti-NMDA receptor encephalitis, autoimmune encephalitis, neuroleptic malignant syndrome.

Pharmacokinetic study of valproic acid in epileptic patients

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Abstract: Background: Valproic acid (VPA) has saturable protein binding, nonlinear pharmacokinetics, concentration-dependent adverse effects, and multiple drug-drug interactions. This study aimed to develop a population pharmacokinetic model for VPA in Iranian epileptic patients and determine the factors influencing pharmacokinetic parameters. Methods: In this study, two serum concentrations from 51 adult epileptic patients who were on VPA (monotherapy) or in combination with other AEDs were collected. To characterize the pharmacokinetic parameters, a one compartment model with first order absorption and linear elimination was used to fit the concentration-time of VPA data using non-linear mixed effect modeling approach. The absorption rate constant (Ka) was fixed on 0.46 hr-1 for extended release (ER) and 1.9 hr-1 for delay release (DR) formulations based on literature values. Results: The oral Clearance (Cl/F) of VPA was estimated to be 0.35 L/h with an inter-individual variability (IIV) of 16.1%. The covariates that affect Cl/F were the total daily dose that was centered on its weighted mean, sex, and co-administration of carbamazepine (increased Cl/F by 15%), phenobarbital (increased Cl/F by 28.14%), and topiramate (increased Cl/F by 25.12%). The apparent volume of distribution of VPA was 12.48 L with IIV of 43%. The proportional error model best described the residual variability and the value of (b) was equal to 0.064. Conclusion: Based on this population pharmacokinetic model for VPA in Iranian epileptic patients, different factors affect Cl/F and they could be used for dose optimization and individualizing dose regimens in them.

Prevalence of small vessel Ischemia in Magnetic Resonance Imaging of seizure patient of mousavi and valiasr hospital year 2016-2017

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The patients who suffering from seizure, did not investigate the presence of small ischemic vessels .only limited studies have investigated the incidence of seizure in ischemic patients. In this case, many seizure patients who are suffering from ischemia or small ischemia appear to be lost. In a retrospective descriptive study, we examined the incidence of small vessel ischemia in patients with epilepsy in Valiasr And Mousavi in Zanjan city. Materials and Methods: : In this retrospective descriptive study, patients referred to Valiasr Hospital and Ayatollah Mousavi Hospital in Zanjan during the years 2017-2018 and their seizure were evaluated by a neurologist. The type of epilepsy was based on clinical symptoms It was determined by the use of the clinical symptom and electroencephalogram on the basis of international classification. Patient brain imaging that will be MRI scan will be extracted from patients' files and will be recorded in case of Small vessele schemia. Results: In our study, 17 patients (16.19%) were examined by Lrge vessle infarct, and 42 cases (40%) of patients in the MRI performed a small ischemi vessel. Conclusion: Overall, our study showed that the incidence of SVD in patients with epilepsy referred to Valiasr and Mousavi hospitals in Zanjan is high and it is likely that SVD in patients without CVD and cortical lesions, probably due to the discontinuation of the subCortical and cortical signs or markers of other pathologies that may not be visible in MRI lead to seizure in patients. Keywords: Epilepsy, small vessel ischemia, MRI

Quality of life in children with epilepsy in Tabriz

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Background: The physical, mental and social consequences of epilepsy affect the quality of life of patients. The present study was conducted with the aim of investigating factors predicting the quality of life of patients with epilepsy and identifying factors with the greatest effect.

Methods: This cross-sectional-comparative study was conducted on 100 children with epilepsy and 100 healthy people referred to Tabriz Children's Hospital. The research tool was the World Health Organization standard quality of life questionnaire. Multiple linear regression model was used to determine the factors predicting the quality of life of people with epilepsy.

Findings: The average overall quality of life score of patients and healthy people did not differ and statistically significant differences were observed only in the physical, social (p-values less than 0.001) and environment (p-value is equal to 0.002) domains. The results of multiple linear regression showed that the variables of age, sex, education level, type of epilepsy and the number of epileptic attacks per month were independent predictors of overall quality of life in people with epilepsy. In all aspects of quality of life, the increase in the number of epileptic attacks decreases the quality of life score, and women had a higher quality of life score than men. Conclusion: Based on the findings of the study, the only factor that can be intervened on is the control of the number of epileptic attacks, which seems to have an effective role in improving the quality of life of epilepsy patients. Key words: Epilepsy, children, quality

Relationship between Musculoskeletal Disorder and School Bag Characteristics among Students with epilepsy

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Background and Objectives: Musculoskeletal disorders (MSD) are one of the most common problems of school-aged children which if not prevented and treated can lead to physical and psychosocial disorders. This study aimed at investigating the prevalence of musculoskeletal pain among Students with epilepsy and identifying the risk factors for musculoskeletal disorders.

Materials and Methods: The present research is a descriptive cross-sectional study. Thirty-three students with mental retardation,10-15 years, in the academic year of 2019-2020 in Hamadan were selected for this study. Demographic questionnaires and Nordic musculoskeletal disorders were used to collect data. SPSS software version 16 and two-sample independent t-test, and chi-square test were used for analysis.

Results: The results showed the prevalence of musculoskeletal disorders is 54% in Students with epilepsy. The most common site of pain, in 36% of them, is shoulder pain. In fifty-five percent of Students with epilepsy, the weight of the bag is more than 10% of body weight.A significant relationship is between bag weight and Students with epilepsy 'gender (P = 0.006) and mothers' education (P=0.01). There was no significant relationship between bag type and musculoskeletal pain (P> 0/05). Conclusion: More than half of Students with epilepsy have musculoskeletal disorders, especially in the shoulder and lower back. The bag weight of half of the students is higher than t acceptable bag weight. The need for educational strategies in the field of ergonomics and the consequences of inappropriate daily conditions on the health of Students with epilepsy should be considered.

Keywords: Musculoskeletal

Risk factors for suicidal tendency in people with epilepsy

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Background: About 65 million people worldwide suffer from epilepsy, a chronic neurological condition. Suicide rates among these patients are higher than those of the general public. In the present study, the risk factors of suicide in people with epilepsy have been investigated.

Methods: The present study is a short review study that was designed in 2022. By searching international and national databases, including Scientific Information Databases (SID) and PubMed, articles were collected from 2016 to 2022 about risk factors for suicidality in people with epilepsy. After reviewing the search results, finally, 46 articles were used to write the present study. Findings: Female gender, alcohol use, unemployment, social stigma, aggression, sleep issues, restlessness, epilepsy-related factors (more frequent seizures, temporal lobe epilepsy, and drug-resistant epilepsy), some AEDs, depression, and anxiety, and antidepressant medications are all risk factors for suicide in epilepsy patients. Compared to other risk factors, AEDs and psychiatric disorders have a stronger impact on suicide. When compared to not using an AED, the risk of engaging in suicidal behavior increases with the use of new AEDs like levetiracetam, topiramate, and vigabatrin. The risk of suicide is also elevated when three or more drugs are combined.

Conclusion: According to these risk factors, more targeted screenings can be performed for patients with epilepsy, and prevention programs can be developed for people who have suicide risk factors. Of course, due to the importance of this topic, it is suggested that more studies be done in this field.

Keywords: Risk Factors, Epilepsy, Suicide

Study of Anxiety and depression in Adults Suffering from Epilepsy

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Background and Target: Epilepsy is one of the most important diseases of the nervous system caused by sudden electrical discharge,alternative and extreme of brain neurons and because this disease is chronic and life-long often causes mental illnesses such as anxiety disorders and depression, influences the life quality of these patients. Therefore, considering the importance of this matter this study review was done on the spread of anxiety disorders and depression.

Methods: This article has been done in a systematic review in order to examine the spread of anxiety disorders and adult epilepsy. To track down the source articles used go to PubMed, Scholar, Medline, SID, CINAHL, Scopus,Elsevier, Iran Doc and Magrian. From 2010 to 20122 with emphasis on the last 4 recent years. Searching articles for sources with keywords such as: Anxiety, depression, epilepsy, adults, also combinations and independent words were extracted using boolean operators.

Findings: According to results of the study research, the spread of anxiety and depression among epileptic patients is high. However search results impose higher rates of outbreak of depression in such patients.

Conclusion: Considering the fact that this disease is strongly chronic and high spread of mental disorders like anxiety and depression and physical-psychological consequences in such patients; prevention and early detection is of high importance.

Keywords: Anxiety; depression; epilepsy; adult

Study of Spreading Various Mental Disorders in Children and Teenagers Suffering from Epilepsy

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INTRODUCTION AND TARGET: Epilepsy is one of the most important diseases of the nervous system caused by sudden electrical discharge,alternative and extreme of brain neurons.Epilepsy is more common in children and people under 20 years old, children suffering from Epilepsy due to attention deficit disorder and hyperactivity and learning disability are more in danger of anxiety and depression disorder. Therefore, considering the importance of this matter this study review was done on the spread of anxiety disorders.

METHODS: This article has been done in a systematic review in order to study and examine the relationship between anxiety disorders and children's epilepsy. To track down the source articles used go to PubMed, Scholar, Medline, SID, CINAHL, Scopus,Elsevier, Iran Doc and Magrian. From 2015 to 2022 with emphasis on the last 5 recent years. Searching articles for sources with keywords such as: Epilepsy, Children and Teenagers, Mental Disorders, Anxiety, Depression,, also combinations and independent words were extracted using boolean operators.

FINDINGS: According to the results of study research, the high spread of mental disorders in this group of patients. Results indicate In order from more to less are: Anxiety, depression, attention deficit, hyperactivity, then other disorders such as phobia and obsession,..

CONCLUSION: Considering Epilepsy to overtake all the aspects of children's lives including their psychological and social functions and decrease their efficiency and productivity in life and their future; prevention and early detection is of high importance in this case

Keywords: Epilepsy; Children;Teenagers; Mental Disorders; Anxiety depression.

Surgical outcomes in patients with drug-resistant bilateral temporal lobe epilepsy confirmed via magnetic resonance imaging.

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Introduction: In patients with drug-resistant temporal lobe epilepsy (TLE), surgical treatment is aimed to resect an epileptogenic zone (EZ) followed by seizure control. Despite complicated EZ location, surgical resection should be considered as a treatment of choice in bilateral TLE.

Objective: to evaluate surgical outcomes and factors contributing to outcomes in patients with drug-resistant bilateral TLE confirmed via magnetic resonance imaging. Materials and methods. The study included patients with unilateral (n = 50) and bilateral (n = 50) temporal lobe involvement. The results of surgical treatment were evaluated according to the classification of J. Engel (1993).

Results: Favorable outcomes of surgical treatment (Engel I and Engel II) in the group with unilateral temporal lobe involvement were found in 98% of patients after 12 months, in 88% after 24 months, and in 100% after 48 and 60 months after surgery. In the group with bilateral temporal lobe involvement outcomes of surgical treatment were favorable in 41% of patients after 12 months, in 50% after 24 months, in 39% after 48 months, and in 50% of patients after 60 months post-surgery.

Conclusion: Early onset, burdened perinatal history, and MRI-confirmed left temporal lobe involvement contribute to the poor outcome (Engel III and Engel IV) in the bilateral TLE group. Engel I outcomes were more common in the patients with unilateral TLE while Engel II–IV outcomes were more common in the patients with bilateral TLE.

temporal lobe epilepsy and amygdalohippocampal interaction in amnesia: A systematic review

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Background: Temporal lobe epilepsy (TLE), which is one of the most common types of focal epilepsy, causes changes in brain neurons and decreases the function of the temporal lobe, especially the amygdalohippocampal, and forms the subject of this systematic review.

Method: This systematic article has been written based on the Prisma criteria by searching Pub Med, Elsevier and Google Scholars databases during the period from 2017 to 2022 by following keywords. This systematic review answering PICO question criteria. • Epilepsy • temporal lobe epilepsy • epileptic amnesia and amygdalohippocampal

finding: Laser treatment of TLE was the main topic of 14 articles, all of which were titled, A high percentage of the amygdalohippocampal is involved, so that the rate of volume loss (PVL) and metabolic loss (PML) were diagnostic signs. Available treatments are It has reduced the overall level of epileptic secretions and increased the volume of the amygdalohippocampal, its metabolic rate, and the rate of seizure freedom. Studies have shown that seizure control (SC) improved after amygdalohippocampal laser treatment in the temporal lobe and was associated with improved verbal memory. Conclusion: Epilepsy affects amygdalohippocampal volume and metabolism in subjects with temporal lobe epilepsy. Considering the role of this center in memory, especially verbal memory, it is possible to add amnesia to the complications of persistent temporal lobe epilepsy and include it in the treatment of disease management.

Keywords: epilepsy; seizure; temporal lobe epilepsy

The effect of epilepsy on fetal outcomes (systematic review)

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Introduction:The second neurological problem in pregnancy after epilepsy is migraine,the pregnancy of women with epilepsy can be worrying.Considering the importance of pregnancy in women with epilepsy, the aim of this review is the effect of epilepsy on fetal outcomes. Materials and methods: In this review study,a search was made using the keywords of epilepsy, pregnancy and fetal outcomes in international databases such as Pubmed, Science Direct, SID and Google Scholar, 54 articles were extracted, and then based on the inclusion and exclusion criteria and based on the prisma checklist,12articles were removed and finally 42 articles. It was listed from2008 to2022 and data was extracted from it. Findings: Epilepsy is one of the most important disorders of the central nervous system, between0.3% and 0.7% of all pregnancies in women with epilepsy,most babies born to mothers with epilepsy are healthy, but according to research on fetal outcomes, Epileptic babies, especially those who take anti-epileptic drugs, are more likely to have major abnormalities as well as mild facial abnormalities compared to other women. Prescribing epilepsy drugs during pregnancy can lead to fetal abnormalities such as neural tube defects, cognitive impairment, congenital heart defects,back drooping, microcephaly and cleft face and mouth. Conclusion:Women with epilepsy should be monitored in terms of the health of the fetus, treating women with epilepsy before and during pregnancy is a challenge. Neurologists must strike a balance between maintaining an effective therapeutic regimen for the mother and avoiding the teratogenic risk of medications. Keywords: epilepsy, pregnancy, fetal outcomes

The effect of ketogenic diet on epileptic children

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Introduction: Epilepsy is the most common, chronic, and critical neurological disease. It is a brain disorder defined by unprovoked seizures. The assaults may result in altered awareness, mood, produce abnormal sensory, motor, and visceral symptoms. In the treatment of epilepsy, antiepileptic drugs are used, but some studies show that ketogenic diet (KD) can be useful for one-third of patients who are resistant to drug. The KD is a treatment for intractable epilepsy. KD contains a high-fat, low-carbohydrate, and low-protein diet. Increasing the fat percentage of the diet while decreasing the carbohydrate amount would result in a decrease in seizure frequency. In this article, we want to investigate the effect of the KD on the frequency and intensity of seizures in epileptic children. Methods: Online databases including Web of Science, PubMed, and Google Scholar were searched. 1013 articles out of a total of 1042 were eliminated because they didn't meet the study entry criteria. Finally, 29 articles that looked at clinical effects of this diet on kids with epilepsy were included. Result: Participants in both the intervention and control groups were on one to four drugs at the same time as receiving diet therapy, and their average age was 20 months. Patients experienced 5 seizures on average per day.

Conclusion: The majority of the research revealed that the KD had a good impact on the behavior and cognitive function, also for kids with drug-resistant epilepsy, the KD might be a secure and useful choice.

Keywords: ketogenic diet, keto diet, epilepsy, seizures.

The prevalence of autism in children with epilepsy in Tabriz Children's Hospital in 2021

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Background: Autism spectrum disorder (ASD) is used to describe a group of communication and social disorders. Epilepsy is also one of the common neurological diseases in children. The purpose of this research is to determine autism in children with epilepsy.

Methods: In this case control study for 230 children with epilepsy over the age of 4 who had referred to the neurology department of Tabriz Children's Hospital, a questionnaire related to the characteristics of seizures and autism and for 230 children without epilepsy as a group Control, the autism screening questionnaire was completed, which was designed based on the diagnostic criteria of autism according to DSM IV-TR.

Findings: Out of 230 children with epilepsy, 48 were diagnosed with autism, while no cases of autism were reported in the control group, and this difference was statistically significant. Also, there was a significant correlation between the prevalence of autism in children with epilepsy with the age of onset of seizures, MRI-CT findings and the cause of seizures, but no significant correlation was found with other characteristics of seizures.

Conclusion: The prevalence of autism in children with epilepsy is higher than children without epilepsy. Therefore, it is necessary to provide a program to adapt these children to the disease and strengthen social skills.

Key words: Autism spectrum disorder, epilepsy, children

The prevalence of epilepsy in children hospitalized in Tabriz Children's Hospital in 2021

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Background: Epilepsy is one of the common neurological diseases in children. In order to obtain the cross-sectional prevalence and characteristics of a disease in a geographical region, it is necessary to conduct repeated epidemiological studies. The aim of this study was to investigate the prevalence of epilepsy in children hospitalized in Tabriz Children's Hospital.

Methods: In this descriptive research, the records of all patients who were admitted to the neurology department of Tabriz Children's Hospital from March to December 2021 with the diagnosis of seizures were examined. The data collection form consisted of 3 questions related to demographic characteristics and 6 questions related to disease characteristics. The data was analyzed by SPSS 18 software.

Findings: The diagnosis of 62 children with epilepsy was recorded, which was 0.32% of all hospitalized patients, 4.8% of all hospitalized patients in the neurology department, and 8.5% of hospitalized patients diagnosed with seizures. Their average age was 25 ± 3 months, 66% were male, 32% had a positive family history of epilepsy, 78% had generalized tonic-clonic seizures, and 35% had parochial seizures. In 51% of cases, the age of onset of the first seizure was under 24 months. 27% of these children had cerebral palsy or mental retardation.

Conclusion: The results obtained are similar to the results of some researches and different from others. The reason for these differences can be partially due to the influence of the location factor, including the level of health facilities and the study method.

Key words: epilepsy, epileptic seizures

The role of 5-HT 1A receptor in the efficacy of sodium valproate on spatial memory in pentylenetetrazol kindled rats

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Objectives: Sodium valproate (VPA) have been conflicting reports about its effects on memory. The 5-HT1A serotonin receptor, shares a signaling pathway with VPA. Therefore, the aim of this study was to investigate the role of 5-HT1A receptor in the efficacy of VPA on the memory of epileptic rats.

Material and methods: Six groups of male rats (n=10) were used. Sham group received only solvent drugs. Animals in the pentylenetetrazole (PTZ) group and VPA group were injected PTZ (37 mg/kg; I.P.) and VPA (300 mg/kg; I.P.) respectively every 48 hours for one month. VPA + PTZ group were injected with VPA half an hour before the PTZ injection. PTZ + VPA + NAD-299 and PTZ + NAD-299 groups after one month of injections, NAD-299 (5µg/0.5µl) was injected intraventricularly 30 minutes before the start of the spatial memory tests.

Results: Administration of VPA has a significant effect on reducing the seizure stages, the number of seizures and increasing of stage 2 and stage 5 latency in the kindled group. 5-HT1A receptor blockage in the presence of VPA significantly increased swimming time, distance traveled and swimming speed to reach the platform on different learning days.

Conclusion: The results of this study showed that strengthening the serotonergic system or activating the 5-HT1A receptor can enhance the effect of VPA on spatial memory.

Key words: Epilepsy; Spatial memory; Sodium valproate; 5-HT1A receptor

The role of sleep electroencephalography in patients with epileptic attacks

مهردادبرون [1] © Ⓟ

نویسنده اصلی [1]

Abstract: هدف: افزایش مقدار حملات صریح معمولا با مراحل مختلف سیکل خواب و بیداری رابطه دارد. در مطالعه حاضر، ما بیماران مبتلا به حملات صرح را مورد تحلیل قرار داده و همبستگی بالینی نتایج حاصل از گزارشات بیداری نرمال مورد بررسی قرار داده ایم. شیوه‌ها : کلیه بیماران با توجه به حملات EEG الکتروانسفالوگرافی بیماران را با صرع در واحد اپیلپسی مورد پذیرش قرار گرفتند که هنوز که با داروهای ضد صرع درمان نشده ولی در طی ۳ سال متداول برخوردار بوده و از کسانی که EEG از (WEEG) گذشته درگیر بوده‌اند. افراد مذکور در حالت بیداری کامل ویدیویی تهیه شد. نتایج : ما در کل ۲٤۱ بیمار را مورد EEG فعالیت شبه صرع نداشته نیز در طی خواب گزارشات در حالت خواب و بیداری برخوردار بودند. بیمارانی که EEG بررسی قرار داده ایم: ۱۲۹ بیمار (٪ ٥۳/٥) از گزارشات غیرنرمال در WEEG (P=0/005) نرمال داشتند پیرتر بودند WEEG غیر نرمال داشتند در مقایسه با افرادی که WEEG % ۳۱/۲ از بیمارانی که حمله مرکزی داشتند شناسایی شد ولی در % ۷۷/۳ از بیماران مبتلا به حمله عمومی بودند تایید گردید (P

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

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

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

Findings: Forty-seven patients with an average ESS score 17 (moderate to severe sleepiness) were eligible to enter the study. 19 patients on methylphenidate, 20 patients on modafinil, and 8 patients as control group. Patients who received high dose stimulants for 8 weeks compared to the control group, the average ESS score dropped from about 19 to 8 (P

Treatment of epilepsy with medicinal plants

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Introduction: Epilepsy is one of the most common diseases of the nervous system, especially in developing countries, where traditional medicine is a common method of treatment. In this research, the treatment of epilepsy with medicinal plants has been investigated. Methods: The present study is a summary review designed in 2022. The terms Rosa damascene, Nigella sativa, turmeric, Medicinal Plants, Traditional Medicine, Epilepsy, Seizures were searched in Google Scholar, Ovid, Cochrane Library, and PubMed databases for the period from 2013 to 2022. A total of 213 articles were found, and after review, 103 articles were used for writing.

Results: Nigella sativa, Rosa damascene, and turmeric are useful for treating epilepsy. Nigella sativa can play a role in reducing seizures, which is attributed to thymoquinone. The main benefits of Rosa damascene include anti-HIV effects, antioxidant properties, antibacterial, sleep-inducing, anti-cough, anti-diabetic, and relaxing effects on tracheal chains and reducing the number of seizures. Turmeric contains curcumin, which has a low molecular weight and polar structure, can easily penetrate the blood-brain barrier, has a neuroprotective role, and can eliminate oxidative stress and cytokine release.

Conclusion: considering the benefits of traditional medicine in the treatment of epilepsy and the side effects of chemical drugs, the tendency toward traditional medicine has increased, so it is suggested to conduct more studies in this regard.

Keywords: Epilepsy, medicinal plants, Traditional Medicine, Therapeutics

Vagus nerve stimulation (VNS) for the treatment of Depression in patients with Epilepsy

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Background: Depression is the most common mood disorder in patients with epilepsy, which affects the lives of patients. In this research, we have examined the therapeutic strategy of Vagus Nerve Stimulation (VNS) for the treatment of depression in patients with epilepsy.

Methods: The present study is a summary review designed in 2022. The keywords Vagus Nerve Stimulation, Depression, and Epilepsy were searched in Google Scholar, Cochrane library, and PubMed databases, and their Persian equivalents in Magiran and SID databases for the period from 2013 to 2022. A total of 106 articles were found, and after review, 73 articles were used for writing.

Findings: Under the influence of (VNS), areas related to depression (dorsolateral prefrontal cortex, insula, orbitofrontal cortex, cingulate gyrus) change blood flow and metabolism. The mechanism of this treatment method is not exactly known, but the proposed mechanism of (VNS) is a change in the release of epinephrine by single duct projections to the locus coeruleus in the medulla and an increase in the level of gamma-aminobutyric acid (GABA) in the brainstem. This treatment may also reduce the number of seizures or shorten the duration of seizures in patients with epilepsy. The most common side effects of this treatment method were hoarseness, paresthesia, shortness of breath, and cough.

Conclusion: Of course, it is still not possible to speak with certainty about the effects of vagus nerve stimulation, and confirmation of these effects requires that more studies be conducted in this field of treatment.

Keywords: Vagus Nerve Stimulation, Depression, Epilepsy