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Posters

Caregiver stress and benefit: Brief scales for caregivers of children with epilepsy

Dagmar Amtmann
University of Washington, USA

Rationale: Caregivers of a child with health care needs often experience both challenges and benefits related to this caregiving. It is important to identify caregivers who are overwhelmed by caregiving and may need additional support. It is also important to study the benefits in caregiving as they are associated with better coping and lower levels of depression. The University of Washington Caregiver Stress Scale (UWCSS) and Benefit Scale (UWCBS) were developed using patient-centered and modern psychometric methodology including item response theory (IRT). Short forms (SF) were developed to provide scores sufficiently reliable to be used in clinical trials.

Methods: The items for the SFs were selected by a panel of experts from a larger pool of IRT calibrated items. Scores are on the T-score metric (M=50, SD=10) and the mean of 50 represents stress and benefits reported by the community sample of caregivers. Higher score indicates more stress and more benefit, respectively. The pool of items was developed with feedback by pediatric neurologists and caregivers of children with epileptic encephalopathy in the US and EU. Items were administered to caregivers of children (N=722) (age <18) with Epileptic Encephalopathies, Down syndrome, Muscular Dystrophy and a community sample through an online survey. Test-retest data were collected 40 to 80 hours after the initial administration (n=133) and test-retest reliability was evaluated using the Intraclass correlation (ICC).

Results: The panel of experts selected 8 and 10 items for the SFs assessing caregiving benefit and stress, respectively, which both maximize reliability and ensure inclusion of topics most important to caregivers. Both SFs evidenced good reliability (>.80) across a wide range of scores (i.e., 2SD below to 1.5SD above the mean for UWCSS and 3SD below to 1SD above the mean for UWCBS. Test-retest reliability was high for both SFs (ICC(2,1)>.95). SFs can be scored by summing items and converting to T-scores using conversion tables, and recommendations for scoring with missing data are available.

Conclusions: The UWCSS and UWCBS SFs are brief and reliable measures of caregiver stress and benefits suitable for use in clinical trials, research and clinical practice. SFs can be administered by a computer or on paper. Scores based on the SFs are directly comparable to the scores based on the full item bank that can also be administered by Computerized Adaptive Testing.

Biography

Dagmar Amtmann is a psychologist and UW research associate professor with the Department of Rehabilitation Medicine. Dr. Amtmann's research interests include improving measures of patient reported outcomes such as pain, fatigue, and participation using modern measurement theories; statistical analytic approaches using multilevel and latent variable modeling; and instructional, information, and assistive technology for individuals with cognitive disabilities (with a particular focus on reading and writing technology for both children and adults).

Notes:

Vagus Nerve Stimulation (VNS) is an adjunctive treatment in Iraqi patients with drug resistant epilepsy

Anmar Hatem
Medical City, Iraq

Background: Despite the introduction of new antiepileptic drugs (AEDs) and advances in the surgical treatment of epilepsy, an important group of patients still remains uncontrolled by any of these methods. Vagus nerve stimulation (VNS) is an adjunctive treatment for those with drug resistant epilepsy. In addition to the reduction in seizure frequency, there is other variables need to be assessed for better determination of VNS efficacy like quality of life (QOL) improvement.

Aims of the Study: Evaluate the effectiveness of VNS, for Iraqi patients with drug resistant epilepsy, in reducing seizure frequency and improving QOL of these patients.

Method and Patients: Forty-six patients of drug resistant epilepsy were retrospectively examined. They underwent implantation of a stimulator in Baghdad medical city during 2015, and with a follow-up of one year. They were 25 male and 21 females, and their ages at VNS implantation was ≥18 year old for 28 patients and between11-17 year old for 18 patients. Analysis of seizure reduction (using McHugh classification) with the effect of demographic and clinical variables on it, and assessment of QOL (using QOLIE-35 and QOLIE-AD 48 scales) were done in this study. SSPS v.22 was used for the statistical analysis.

Results: The total well response rate (including class I and II and equal to reduction in seizure frequency ≥ 50%) was 58.7 % (27/46 patients), 6 cases became seizure free, and 6 cases reported no improvement, we also found that the factors of gender, age and predominant seizure type had clinical outcome effects. The mean seizure frequency and number of AEDs that used by the patients reduced. The mean of all domains and overall score of QOL scales improved and some domains had statistically significant improvement.

Conclusion: VNS is a safe, well-tolerated and effective treatment in reducing seizure frequency and improving QOL for patients with drug resistant epilepsy.

Biography

Anmar Hatem is a board-certified and experienced consultant neurologist providing patients at Neurology sector of Baghdad Teaching Hospital care for a wide range of conditions. He joined Neurological Specialties in 2005 with a special expertise in the field of Epilepsy, Multiple Sclerosis, and botulinum toxin therapy. He graduated from Medical College at the University of Basra and completed his internship and neurology residency at Baghdad Teaching Hospital .He continued his training and got The Board degree at the Iraqi Board of medical specialization in neurology. Now Dr Anmar is Secretory general for Iraqi neurology society since 2017 and a trainer in both Iraqi board of neurology and Arabian board of medicine.

Notes:

Catechin regulates intracellular calcium concentration and parvalbumin expression in ischemic brain injury

Phil-Ok Koh, Dong-Ju Park and **Ju-Bin Kang**
Gyeongsang National University, South Korea

Calcium is an essential factor that involved in modulation of cellular functions, such as cell differentiation, survival, and apoptosis. Parvalbumin is a calcium buffering protein that modulates intracellular calcium concentration. Catechin has an excellent antioxidant property and exerts a neuroprotective effect. This study investigated whether catechin can regulate parvalbumin expression and intracellular calcium concentration in middle cerebral artery occlusion (MCAO)-induced cell damage and glutamate toxicity-induced neuronal cell death. Male Sprague-Dawley rats were treated with vehicle or catechin (50 mg/kg) immediately before MCAO and cerebral cortical tissues were collected 24 h after MCAO. Catechin alleviated MCAO-induced infarction and neuronal movement deficit. MCAO induced a decrease of parvalbumin expression in cerebral cortex. However, catechin administration prevented MCAO-induced a decrease of parvalbumin. Glutamate excitotoxicity dramatically increased the intracellular calcium concentration in cultured hippocampal cells, whereas catechin attenuated an increase of intracellular calcium concentration. We observed a reduction of parvalbumin expression in glutamate-exposed cells. Catechin prevented glutamate-induced this decrease. These findings suggest that catechin exerts a neuroprotective effect through regulation of intracellular calcium concentration and parvalbumin expression in ischemic brain injury.

Biography

Phil-Ok Koh has completed her PhD at Gyeongsang National University and Postdoctoral studies from University of Maryland at Baltimore, USA. She is the Professor of College of Veterinary Medicine at Gyeongsang National University. She has published more than 180 papers in reputed journals and has been serving as an Editorial Board Member of reputed journals.

Notes:

Coexistence of MSA and PSP: A diagnostic challenge

Taha Assadnejad, Behrad Nassehi, Dursun Aygün and **Mustafa Onur Yildiz**
Ondokuz Mayıs University, Turkey

Introduction: Multiple system atrophy (MSA) is a rare neurodegenerative disease characterized by progressive autonomic failure and Parkinsonian/cerebellar features. Motor features are characterized by rigidity, slowness of movement and tendency to fall in Parkinsonian subtype but ataxia, wide based gait and uncoordinated limb movements predominate in cerebellar subtype. Progressive supranuclear palsy (PSP) is another neurodegenerative disease which is characterized by Parkinsonism, vertical gaze palsy, backward falls and cognitive dysfunction.

Case: Our case is of a 59 year old man who first presented with the chief complaints of dizziness and vertigo after standing up five years ago. Postural instability, imbalance and backward falls began unexpectedly and gradually progressed over three years. The patient cannot walk without assistance since 2017. He also suffers from erectile dysfunction, urinary incontinence, speech impairment cognitive dysfunction and decreased verbal fluency. He usually talks or shouts during sleep and cannot maintain sleep. Drugs such as Leva-dopa, Rasagiline and Amantadine were prescribed for treatment but none of them were effective. Neurological examination revealed vertical gaze palsy, backward falls, wide based gait, postural instability, spastic dysarthria, bradykinesia, rigidity and mild cognitive dysfunction. A MRI scan of the brain revealed "Hot cross bun sign" in Pons and "Hummingbird sign" in Midbrain which are compatible with MSA and PSP respectively.

Conclusion: As both MSA and PSP diseases are rare diseases, so we speculate that coexistence of these disorders in a patient should be extremely rare, as only two cases of MSA and PSP coexistence have been reported. Although postmortem autopsy is required for definitive diagnosis of MSA and PSP, the symptoms and signs of our case are compatible with probable MSA and probable PSP according to their diagnostic criteria and we speculate that MSA has progressed before PSP in this case.

Biography

Taha Assadnejad is pursuing his Medicine at Ondokuz Mayis University. He is interested in Neurologic and movement disorders and already he has started research in these topics. He is the President of Neuroscience Society of Medical Faculty.

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e-Poster

CYP2C19 gene polymorphism in children with drugs-resistant epilepsy in Ukraine

Tantsura Y[2], Tantsura L[1], Pylypets O[1] and **Tretyakov D[1]**
[1]NAMS of Ukraine, Ukraine
[2]Karazin Kharkiv National University, Ukraine

Objective: The frequency with which drugs-resistant epilepsies occur is unchanged and reaches 30%. It is believed that isoenzymes of cytochrome P450 can significantly affect the metabolism, efficacy and safety of AEDs. The purpose of our study was to find out in children with drug-resistant epilepsy the frequency with which polymorphism of isoenzymes of cytochrome P450 - CYP2C19 occurs taking part in biotransformation of most AEDs.

Material and Methods: We analyzed the results of an examination of 83 patients (children and adolescents), 49 (61.54%) boys and 34 (38.46%) girls, aged 11 months to 18 years. Children suffer from severe, refractory to the treatment forms of epilepsy. Duration of the disease from 7month to 17 years. All children were given genetic research using the allelic method of a specific PCR with the subsequent visualization of the products of amplification in agarose gel.

Research Results: Among the examined patients, 33 (39.76%) appeared to be carriers of the CYP2C19* 2 (rs4244285) allele, associated with a slowdown in AED metabolism due to the synthesis of enzyme with reduced activity. In the examined group was not found CYP2C19* 3 (rs4986893) allele, that corresponds to the literature data on the absence of this type of polymorphism in the European population (Lewis DF, 2004). In 5 children (15.15%), the carriage of the CYP2C19* 2 allele was combined with other polymorphisms - CYP2C9 * 2, CYP2C * 3, CYP3A4 * 1B. Carrier of the allelic variant CYP2C19*2 among children with refractory to epilepsy treatment is very common, significantly higher than its frequency in the general Ukrainian ($p < 0.01$) and other European ($p < 0.05$) populations. According to our data, the heterozygous genotype CYP2C9 *1/*2 was found to be significantly more frequent than in the data of Russian and Turkish specialists. The presence of significant differences in the genotypes of children with epilepsy in Ukraine, Russia and Turkey can be explained by the characteristics of the patients who were included in the study.

Conclusions: The carrier of allele variant CYP2C19*2 among children with refractory to the treatment epilepsy is very common, reaches 39,76%, which is more than twice its frequency in the total Ukrainian ($p<0.01$), in other European ($p<0.05$) populations. The presence of "slow" alleles, in particular of CYP2C19*2, in children with epilepsy affects the effectiveness and safety of therapy, contributing to the formation of resistant forms of the disease.

Biography

Yevhen Tantsura is working in the Department of General practice-Family medicine at the V.N. Karazin National University, Kharkiv, Ukraine. Has his expertise in study of pharmacology and pharmacogenetics.

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Accepted Abstracts

Metabolic dysfunction underlying response of ketogenic diet in children with refractory epilepsy and potential diagnostic and treatment approaches

Ahmed Mohamed Abdelhalim Mohamed Elsakka
Envision Foundation for Metabolic Research, Egypt

Refractory epilepsy or drug-resistant epilepsy is defined as a failure of adequate trials of 2 tolerated and appropriately chosen and used AED schedules. "Neuroscience Center, King Fahad Medical City 2011". The most effective line of treatment for refractory epilepsy is the ketogenic diet, however, about 20 to 30 % of the patient doesn't respond to KD and continue to have seizures, despite adherent to ketosis.The aim of this study to define serum biomarkers that determined the efficacy of the ketogenic diet and to determine other metabolic cause contributing to epilepsy & should be managed first before KD implantation.

Research Hypothesis: Many metabolic dysfunctions can contribute to seizure activity and had an impact on KD response, homeostasis, stress, defect in neuronal homeostasis, hyper ammonia, oxidative stress, cellular hypoxia, homocysteinemia and epigenetics, and DNA methylation defect all are contributing to epilepsy and must be excluded and managed before implantation of KD.

Parkinson's disease: Allogeneic cell replacement therapeutic approach with a novel neural cell line

Ashok Chakraborty and Anil Diwan
AllExcel, Inc., USA

Background: Parkinson's disease is caused by the progressive impairment or deterioration of neurons (nerve cells) in an area of the brain known as Substantia Nigra.

Objective: Curative therapy for Parkinson's disease; Current therapies are based on dopamine supplementation in the brain. They are only palliative, and require adjunct therapies to minimize side effects. Yet long term side effects such as motor neuron defect and Bradykinesia, Dyskinesia etc occur; Cell Replacement Therapy is the only approach that promises functional reversal of Parkinson's disease.

Methods: AllExcel, Inc. has developed a platform technology for developing designed, functionally improved cell lines without the use of viral vectors or DNA manipulation. Technology is based on concepts derived from naturally observed Human Cell-Cell Interactions (CCITM).

Results: Fast growing potent Dopaminergic cell lines have been produced with long survival in cell culture. In animal studies (6-OHDA treated Rat model for PD), four different clones showed very effective reversal of the disease.

Conclusion: Highly potent modified neural cells have been produced in our lab to treat PD patients.

Dyke-davidoff-masson syndrome: A case report in a Filipino male adolescent

Lalaine B. Villaflor-Oida
University of Santo Tomas Hospital, Philippines

A 17-year-old male who presented with recurrent left focal seizure with secondary generalization. He was born of a non-consanguineous marriage, home-delivered vaginally, full term with no perinatal complications. He had normal growth and developmental milestones until at 7-months-old when he had febrile status epilepticus. Since then he was left with residual left hemiplegia, dysarthria, cognitive delay and recurrent seizure occurring twice daily. He was able to go to school with minimal supervision from his family for hygiene and safety. Refractory seizures, hemiparesis, facial asymmetry, and intellectual disabilities along with brain imaging evidence of cerebral hemiatrophy with compensatory calvarial thickening and subsequent hyperpneumatization is consistent with Dyke-Davidoff-Masson Syndrome (DDMS). A rare clinico-neuroradiologic condition occurring in fetal or early childhood period as a consequence of chronic brain insult. Diagnosis is established clinically with characteristic brain imaging findings. Multidisciplinary intervention is essential, primarily to optimize seizure control as well as provide quality of life.

Antiepileptic activity of Nelumbo nucifera fruit

Muhammad Ali Rajput
Liaquat National Hospital Medical College Karachi, Pakistan

Epilepsy is the most commonly encountered neurological disorder affecting around 70 million people worldwide, out of which approximately 80% belongs to developing countries. Several shortcomings appeared with the use of conventional antiepileptic agents like, inadequate seizure control, side effects and cost which limit their use. Thus extensive studies are necessary to investigate the pharmacological effects of plants, which would facilitate discovery of novel drugs from herbal source permitting their use to benefit mankind. Hence current study was focused to evaluate the antiepileptic potential of Nelumbo nucifera fruit (NNF) in order to ascertain its therapeutic potential. Anti-epileptic activity was assessed using strychnine induced seizure model in 35 male Wister rats divided in five groups i.e. control, reference and 3 test groups. Each group was composed of 7 animals and was given 2% gum tragacanth (control), diazepam 1 mg/kg PO (reference) and NNF 50, 100 and 200 mg/kg PO (test) OD for 15 days. NNF extract at 200 mg/kg exhibited extremely noteworthy delay in the inception of convulsions as compared to control however duration of convulsions was increased significantly but intensity of convulsions was reduced resulting in better survival rate i.e. 42.85% which was comparable to diazepam. Therefore it can be concluded that NNF may be valuable in managing epilepsy but further preclinical and clinical trials are required to confirm these findings.

Gastro-intestinal symptoms in early stage parkinson's disease

Nehal Yemula
University of East Anglia, UK

Background: In Parkinson's disease, here is growing evidence that the initial pathophysiological changes occur in the gastrointestinal tract before changes are seen within the brain. We aim to investigate the prevalence of GIT symptoms in early-stages PD and the association between GIT symptoms and the UPDRS.

Methods: 10 Early-Stage PD and 8 control patients were recruited from the Norfolk and Norwich University Hospital. UPDRS motor scores were completed at outpatient clinics with participants handed a PD-specific gastrointestinal questionnaire whereby both the severity and frequency was assessed. The symptoms assessed were abdominal pain, constipation, tenesmus, hard stools, reflux, dysphagia, early satiety and bloating.

Results: The frequency of symptoms within the PD group were tenesmus (80%), bloating (60%), reflux (60%), abdominal pain (50%), constipation (50%) and hard stools (50%), early satiety (20%) and dysphagia (10%). Tenesmus (p=0.02) was the only symptom to show a statistically significant difference between PD and control groups. The total median GIT symptoms score for PD and Control was 7.0 (IQR 2.0 to 9.0) and 1.0 (IQR 0.0 to 5.75), respectively with statistical signifcance (p=0.05). For total gastrointestinal and UPDRS motor scores, there was a positive correlation (r=0.239), although not significant (p=0.51).

Conclusions: Gastrointestinal symptoms were present in the majority of early-stage patients. Lower gastrointestinal symptoms were more prevalent that upper gastrointestinal symptoms which links in with Braak's hypothesis. Further research into the timing of the symptoms in relation to diagnosis is cruicial and may lead to earlier diagnosis of PD.

Use of early childhood epilepsy severity scale (E-Chess) in classification and prognostication of children with west syndrome: A study from tertiary care pediatric neurology centre

Shubhankar Mishra and Ashok Kumar Mallick
S.C.B Medical College, India

Background: West syndrome is a type of pediatric epilepsy syndrome often associated with a grave prognosis. The aim of this study was to evaluate clinico-radiologically cases of west syndrome, to use E-chess scoring and classify and use it for prognostication.

Materials & Methods: Prospective observational clinical study for 1 year in the pediatric neurology out patients department of S.C.B Medical College, Cuttack, Odisha. Patients were included as a case of west syndrome when they met all 3 criteria i) developmental plateau or regression, ii) epileptic spasm iii) hypsarrhythmia on electroencephalography (EEG) who came to our centre for first time (with/without previous treatments) after informed consent. They were classified into 3 groups by E-Chess scoring according to severity of disease.

Types	E-Chess score
I	6-9
II	10-12
III	13-15

Results: Total number of children included in the study was 13. Mean age of presentation was 9.4 months. Maximum patients were males. Mean duration of the disease was 3 months. Most of the patients were having Hypoxic ischemic sequel in MRI. 23% patients were categorized into Type-III, 31% into Type-II, 46% into Type-I. Types II, III were drug resistant epilepsy with poor response.

Conclusion: West syndrome is one of the infantile epilepsy syndromes with grave prognosis. E-chess scoring is a good and useful scoring system for classification and prognostication. This can be used in OPD basis for categorization of west syndrome. The Type-II,III are drug resistant varieties with poor response to drugs. They should be planned for surgical therapy.

The role of social media for the epilepsy treatment particularly the role of social media

Solomon Tsegaye
Woldia University, Ethiopia

Epilepsy is one of the most common neurological disorders, affecting over 60 million people of all ages worldwide and is characterized by recurrent, unprovoked seizure activity. Despite the availability of numerous anti-epileptic drugs, up to 35% of the patients have medically refractory epilepsy. Like many other chronic diseases, in addition to the biological manifestations, the cognitive and psychosocial burdens of epilepsy are significant. The societal impact of epilepsy has been well-studied and documented in both print and other traditional media. For example, Steer et al. found a strong correlation between the prevalence of epilepsy and socioeconomic deprivation. Despite these findings, patients' disease experiences in addition to their desired care from the healthcare system vary greatly. Furthermore, epilepsy similarly remains a condition not well understood and subject to stigmatization by the general public Social media has become an instrumental part of the increasing number of people's lives worldwide. In 2016, Twitter reported over 313 million active users. Because of the growing patient presence on these sites, healthcare professionals are also more interested and involved in the adoption of social media to gain access to patients and for the delivery of personalized medicine. The number of published, peer-reviewed articles containing both the keywords “social media” and “quality of care,” as documented by the National Center for Biotechnology Information, increased from 139 in 2005 to 780 in 2015. Social media can be utilized for healthcare in a number of different ways, including information dissemination, peer-to-peer communication, research data collection, public opinion assessment, and knowledge generation . On one hand, the advantages of social media as a tool for healthcare include widespread usage, efficiency, and ability to collect real world information from users. On the other hand, the disadvantages of obtaining data from social media are the inconsistent quality of information obtained in addition to sampling, reporting, and recall bias. Our manuscript aims to assess how social media is used by online users interested in epilepsy and epilepsy-related topics to identify gaps in physician–patient communication and public understanding of specific topics and treatment interventions.

The importance of genetic testing in pediatric epilepsy

Stephen Nelson
Tulane University School of Medicine, USA

Background and Objective: Epilepsy is a very common medical problem worldwide, affecting 0.5-1 percent of the population. Although there can be multiple etiologies for seizures, such as brain malformations or traumatic brain injury, it is increasingly recognized that genetics plays an important role in epilepsy. Testing options include chromosomal microarrays, epilepsy panels, and whole Exome sequencing. Genetic causes of epilepsy are many, but include mutations in ion transporters or channels, neurotransmitter receptors, metabolic disorders, and many others. The discovery of a genetic etiology can have profound impacts on treatment decisions, recurrence risk, and prognosis, and thus testing should be considered in all patients with an otherwise unexplained cause for their seizures.

Study Design: More than 100 patients with epilepsy were tested by a combination of chromosomal microarrays, epilepsy panels, and whole Exome sequencing as part of their evaluation for recurrent seizures. Additionally, MRI imaging and EEGs were done, to correlate with seizures and genetic test results. Some patients underwent Vagus Nerve Stimulation (VNS) placement for refractory seizures with demonstrated benefit above medical therapy alone.

Study Participants and Settings: All patients were between the ages of newborn to 30 years old and seen as inpatients or outpatients through Tulane University School of Medicine.

Materials and Methods: Samples were collected from > 100 patients with a variety of epilepsy types, and sent for chromosomal microarray, epilepsy panels, or whole Exome sequencing, depending on the clinical indications. Some patients with negative microarrays and epilepsy panels were reflexed to whole Exome, to determine if that increased the yield of detecting abnormalities.

Results: A variety of pathogenic mutations were found, some of which had tremendous impact on treatment decisions. Chromosomal duplications and deletions detected by chromosomal microarray can be rapidly tested for at low cost, but had a lower yield than epilepsy panels, where genes suspected to be involved with epilepsy are fully sequenced. Whole Exome sequencing or mitochondrial DNA testing rarely added additional information regarding etiology in patients without other neurological signs and symptoms such as autism or developmental delay. Additionally, VNS implantation demonstrated benefit even in young children and those with generalized seizures, with both reductions in seizures and improvements in behavior and development.

Conclusion: Epilepsy panels were very high yield, followed by chromosomal microarrays and whole Exome sequencing. Important examples include avoiding sodium channel blocking antiepileptic medications in patients with sodium channel mutations, treatment by Ketogenic diet in patients with CSF glucose transporter mutations, etc. Furthermore, the fact that some patients with genetic mutations associated with severe epilepsy phenotypes that were refractory to multidrug therapy were responsive to VNS suggests this should be an early consideration in patients with genetic epilepsies. Early genetic testing can have significant impacts on treatment decisions, and thus should be strongly considered in patients with epilepsy, especially those that are refractory to medications or who have comorbid conditions such as autism or developmental delay.

Pattern of neurological diseases at the Jimma University Medical Center Neurology Clinic, Jimma, Ethiopia, 2015–17: A survey of newly enrolled patients

Alemu Adise Mldie
Jimma University and Addis Ababa University, Ethiopia

Background: The burden of neurological diseases is higher in low-income and middle-income countries than in high- income countries. However, there is a paucity of literature on neurological diseases in sub-Saharan Africa, including Ethiopia. This study aims to describe the pattern of neurological diseases in newly enrolled patients at the neurology clinic of Jimma University Medical Center, Ethiopia.

Methods: I collected data from records for newly enrolled neurological patients at Jimma University Medical Center neurology clinic between June 30, 2015, and June 30, 2017. I used a sampling technique to calculate the required sample size and I used SPSS version 24.0 for analysis.

Findings: I accessed data from 2347 medical patients, 639 (27•2%) of whom were diagnosed with a neurological disorder, and data from 226 of these were included in final analysis. Most patients were male (143 [63•3%]). Mean age was 38•17 years (SD 17•75, range 15–80 years); 131 patients (57•9%) were aged between 15 and 40 years. The most common reasons for attending were: convulsion (96, 42•5%); hemiparesis (62, 27•4%); and pain, paraesthesia, and tingling sensation (24, 10•6%). Most patients (92, 40•7%) reported that they had had symptoms for more than 1 month; however, 43 (19%) presented within 24 h of symptom onset and 17 (7•5%) within 3 h. The most common conditions in the study group were epilepsy (95 patients, 42%), cerebrovascular disease (67, 29•6%), peripheral neuropathy (26, 11•5%), and Parkinson's disease (10, 4•4%). ICD-10 classification episodic and paroxysmal disorders were observed in 165 patients (72•9%); polyneuropathies and other disorders of the peripheral nervous system, and extrapyramidal and movement disorders were noted in 36 patients (15•9%).

Interpretation: The causes of neurological morbidity in this low-resource setting are highly disabling but easily preventable and treatable. Hypertension was the most common comorbidity, especially in patients with stroke and peripheral neuropathy, so patients should be advised on lifestyle modification and be managed appropriately. Importantly, health-care policy makers should focus on planning for disease prevention and better management of common neurological disorders.

Passiflora incarnata mitigates the oxidative stress and neuroinflammation in case of pilocarpine-induced epilepsy model

Abdelaziz S. A. Abuelsaad
Beni-Suef University, Egypt

Background: Virulent epileptogenic insult is still one of the most life threatening during the clinical consequences and neurological emergencies of epilepsy. Furthermore, the use of anti-inflammatory drugs during this period is very controversial. Thus, the present study is designed to delineate the changes in the expression of neurotransmitters, imbalance in blood electrolytes; oxidative stress, levels pro-/anti-inflammatory cytokines, and after treatment with of pasipay (Passiflora incarnata).

Methods: The effect of oral administration of pasipay (P. incarnata) (200 mg/kg body weight) on pilocarpine-induced seizures was assessment. The correlation between seizure activity and levels of proinflammatory (IL-1<, IL-6, IL-17, TNF-< and TGF-<) and anti-inflammatory cytokines (IL-10 and IL-13), oxidative stress (lipid peroxidation, superoxide dismutase, catalase and glutathione reductase), enzymes, monoamines and neurotransmitters e.g Na+-K+-ATPase; creatinine kinase (CK), acetylcholinesterase, epinephrine and norepinephrine, L-DOPA, serotonin "(5-HT)", glutamate, aspartic acid, GABA and glycine; electrolytes e.g. Na+, K+, Ca+2 and Mg+2; and Th1 & Th2 lymophocyte activities (CD4+ and CD8+) were quantified. Whether P. incarnata supplementation modulated these impairment parameters or not, was also investigated.

Results: A very significant amelioration in amino acids, neurotransmitters, blood electrolytes, antioxidants and inflammatory cytokines in epileptic-treated rats with pasipay (P. incarnata). The multifunctional activities of P. incarnata as antioxidant, anti-inflammatory and antiepileptic modulator drug were discussed and correlated with other investigations.

Conclusion: In conclusion, natural products like pasipay (P. incarnata) could be combined with the highly repetitive drugs to minimize or prevent the side effects of antiepileptic drugs (AED). Moreover, present study supports further attempts to abrogate the neural dysfunction via antioxidant and anti-inflammatory cascade activities using P. incarnata.

Key Words: Epilepsy – Pilocarpine – Passiflora – inflammation – Cytokines – Neurotransmitters – oxidative stress.

Effects of omega-3 on cognitive impairment and chemically-induced seizures in wistar rats

Adamu Bello Yakubu
Bauchi State University Gadau, Nigeria

Background: Epileptic seizures are associated with cognitive dysfunctions and antiepileptic drugs (AEDs) have failed to achieve complete seizure control in most epilepsy cases especially in intractable epilepsies.

Aim: Omega-3 may have more efficacious anticonvulsant effects compared with AEDs in the control of seizures and improving cognitive function.

Methods: A total of 60 rats divided in to 12-groups of 5 rats each: groups 1 received omega-3 orally, 2 received 0.9% normal saline orally (1 and 2 for the neurobehavioral assessment), 3 received PTZ, 4 received PTZ + omega-3, 5 received PTZ + diazepam, 6 received PTZ + carbamazepine, 7 received PTZ + sodium-valproate (3, 4, 5, 6, 7 for PTZ-induced seizures). 8 received strychnine, 9 received strychnine + omega-3, 10 received diazepam + strychnine, 11 received carbamazepine + strychnine, and 12 received sodium-valproate + strychnine (8, 9,10, 11, 12 for the strychnine-induced seizures). Seizure was induced using 3mg/kg and 80mg/kg of strychnine and PTZ respectively.

Results: Seizures related activities and cognitive function were assessed using revised Racine's scaling and novel object recognition and discrimination task respectively. The results showed that, omega-3 is protective against PTZ-induced seizures, but not in strychnine-induced seizures. Efficacy of omega-3 is comparable with that of Sodium-valproate but significantly lower than that of diazepam and carbamazepine in PTZ-induced seizures, and sodium-valproate is more efficacious than omega-3 in strychnine-induced seizure. Omega-3 improved novel object recognition index, and there was increased pyramidal cells of the hippocampus of rats treated with omega-3 for 2-weeks. Conclusion, omega-3 can be used as an anti-epileptic agent, and for improving cognitive performance.

Key words: seizures, efficacy, cognitive, epilepsy, anti-epileptic, anticonvulsant.

National Audit of Seizure Management in Hospitals (NASH): The role of sodium valproate in women of a childbearing age

Haroon Hamid
University of Liverpool, UK

Introduction: NASH (National Audit of Seizure Management in Hospitals) is a comprehensive audit surveying those who had attended ED due to seizure. This could be patients with known Epilepsy, known Epilepsy with blackouts or no known Epilepsy. 4544 patients were audited, across over 150 national trusts. We analysed data relevant to the question being posed- are women of a childbearing age being treated appropriately and managed according to guidelines. These state Sodium Valproate (VPA) to be highly teratogenic, either as a monotherapy or polytherapy. The audit allowed us to see the proportions of women of a childbearing age currently on VPA.

Methods: Data was collected using a simple web based answering scheme. This allowed for multiple trusts to be involved in the audit and allowed a large population to be asked various key points about their management and treatment. We focused on results from questions relevant to the usage of VPA such as monotherapy, polytherapy, care plans, specialist referrals etc. From these analyses we have made observations and drawn conclusions for future work/amendments in clinical practice that need to be made.

Results: 4544 patients recruited, 43% female, 25% of these were of a childbearing age (1117/4544). Of these only 14% of women 15-49 were on VPA. Alarmingly, 60% were on VPA and polytherapy with only 20% not taking any AED prior to attending ED. There were lower figures for those on polytherapy as opposed to monotherapy for women of this age group (37% polytherapy and 42% monotherapy). In the ED senior reviews were common for all patients over 15- approximately 57% of patients had a senior review. Furthermore, Neurologists were the most sought after specialists for advice; however, only 20% of women on VPA were seen by the Neurologist during their admission, with on-ly approximately 1/3 of these patients having a care plan in place. Rates of GP referrals were significantly higher for those 15-49- 48% in comparison to 33% for those over 49. In regards to investigations whilst in ED, those over 49 were much more likely to have more investigations (Plantars, ECG, EEG, and CT) than those 15-49.

Conclusions: Good patient care for women 15-49 is evident. Guidelines are specific and thorough when it comes to how to treat women of a childbearing age with regards to their Epilepsy. Vital to know the patients plans for the future and to have pre-conception counselling. Seizure freedom and as lower AED usage as possible is desirable. Certain AED's and AED combinations need to be avoided- eg VPA throughout the pregnancy, and various combinations (VPA and Lamotrigine is highly teratogenic). The results found show clinicians have been treating women of a childbearing age according to the guidelines; however, more can be done to avoid polytherapy, more specialist input into their care in the ED whilst more should have a care plan in place. Importantly these results are not necessarily reflective of the overall general Epilepsy population as these are values of just those attending ED with seizures- i.e. those whose Epileptic control is not necessarily as stable as others.

Epilepsy spectrum associated to anti-glutamic acid decarboxylase antibody

Ines Bedoui
Military Hospital of Tunis, Tunisia

Introduction: Anti-glutamic acid decarboxylase antibodies (GAD), initially described in type 1 diabetics, have been recently identified in some patients with epilepsy. Glutamic acid decarboxylase (GAD) antibody-associated encephalitis causes both acute seizures and chronic epilepsy with predominantly temporal lobe onset. The incidence of GAD antibody related epilepsy could be much higher than commonly believed.

Objective: The purpose of our work was to review the physiology, pathology, clinical presentation and management of GAD associated epilepsy.

Results: We included in our study 15 patients, 11 women and 4 men. The mean age of the beginning of the epilepsy was 41, 3±6 years old. All of them had pharmaco-resistant epilepsy. Neuro-cognitive disorders were found in 13 cases and movement disorders in 11 cases. A moderated lymphocytic pleocytosis was found in cerebro-spinal fluid (CSF) examination in 10 patients. Anti GAD antibodies were positive in the blood in all patients, and in CSF in 8 cases. Poorly responsive to antiepileptic drugs and moderately responsive to immune therapy with steroids, intravenous immunoglobulin and plasma exchange are obtained in all patients.

Discussion and Conclusions: Imaging and CSF evidence of inflammation along with typical clinical presentations, such as adult onset temporal lobe epilepsy (TLE) with unexplained etiology, should prompt testing anti GAD antibodies. Anti-GAD65 mediated epilepsy is often poorly responsive to antiepileptic drugs and only moderately responsive to immune therapy with steroids, intravenous immunoglobulin, or plasma exchange. Long-term treatment with more aggressive immunosuppressant such as rituximab and/or cyclophosphamide is often necessary than current immunosuppressive approaches.

Drug and substance abuse in refractory epilepsy

Abdeldayem Raafat and **Hazem Maha**
Mansoura University, Egypt

Background: Seizures often occur in substance abusers. The present work aimed to study the etiology of non-response to antiepileptic drugs by estimating their serum levels and screening of drugs and substance abuse in patients with resistant epilepsy.

Methods: This study was conducted in epilepsy outpatient clinic, neurology department, Mansoura University Hospital. After exclusion those with organic brain lesion and who not compliant to antiepileptic treatment, 924 patients with intractable epilepsy were included. They subjected to: -Toxicology screen for detection of drug and substances abuse by analysis of urine and blood samples.-Measurements of the level of antiepileptic drugs in the blood (carbamazepine, valproic acid, phenytoin). All assays run on the system use of homogenous immunoassay technique EMIT (Enzyme Multiplied Immunoassay Test) and confirmed by GC/MS (gas Chromatography/Mass Spectrum).

Results: Confirmed Positive results for drugs and substances abuse were detected in 246 of 924 patients (26.62%) by GC/MS. Cannabis was the first abused drug (29.27%), opiates was the second drug abused by patients (21.95%) followed by alcohol (17.88%), benzodiazepine (16.26%) tricyclic antidepressants (8.54%) and finally barbiturate constituted (6.1%). Only 17 patients show serum level of antiepileptic drugs (carbamazepine, valproate and phenytoin) within therapeutic range, but 169 patients' levels were below it and 60 patients with levels above it.

Conclusions: Substances abuse may be the cause of resistant epilepsy as they are epileptogenic by themselves or due to drug-drug interaction with the antiepileptic.

Recommendations: A screening test for drug and substances abuse performed if drug abuse or withdrawal suspected in patients with resistant epilepsy even if patients deny the use of them. To confirm the results of EMIT, further study is needed by using GCMS (gas chromatography mass spectrum) as it is more sensitive and more specific than EMIT system.

Analysing the common clinical features in chronic refractory epileptic patients with proven autoimmunity – Perisylvian semiology as a diagnostic clue

Grace Zylstra
Mater Adults Hospital, Australia

Objective: We report a case series of 9 patients with chronic medically refractory autoimmune epilepsy and assess their common clinical features. Immune mediated seizures are most commonly reported in the context of encephalitis or encephalopathy, with few reports focussing on lone epilepsy in the outpatient setting. Our aim is to define the diagnostic clues that might be present in these cases.

Methods: We performed a retrospective review of all patients presenting to the outpatient department of the Advances Epilepsy unit who underwent autoimmune screening. All patients with a positive result for an antibody known to be associated with epilepsy were included.

Results: 63 patients underwent testing. 13 returned a positive result, however only 9 of these were patients which chronic epilepsy that did not present with an acute illness. Common features in these cases included: Perisylvian semiology, EEG abnormalities in the mid temporal region, normal or non-specific MRI findings, depression and head injury.

Significance: In cases of medically refractory, lesion negative epilepsy, with predominantly perisylvian semiology, clinicians should have a high level of suspicion for the diagnosis of autoimmune aetiologies, and a low threshold to perform autoantibody screening. This is especially true if there is a previous history of head injury or co-morbid depression.

Amygdalohypocampectomy as a treatment for amygdala lesions: Complications and outcome

Guive Sharifi
Shahid Beheshti University of Medical Sciences, Iran

Selective amygdalohypocampectomy is one of the main approaches for treating mesial temporal lobe epilepsy. We herewith describe nine cases of amygdala lesions which were treated by selective amygdalectomy with hippocampus saving procedure. Also, we explain trans-middle temporal gyrus trans-ventricular approach for selective amygdalectomy. We performed selective amygdalectomy with hippocampal saving procedure. we prefered trans middle temporal gyrus transventricular approach. We adopted pterional craniotomy with extensive exposure of base and posterior of the temporal lobe. Posterior margin of resection in intraventricular part of amygdala was considered inferior choroidal point. medially anterior part of the uncus was resected until reaching to ambient cistern . Transcortical transventricular approach was applied for selective amygdalectomy in all patients.nine pure amygdala lesions was surgically treated from March 2012 to July 2018. Seven of the patients had neoplastic lesions and in two of them gliosis was detected. Total resection of lesion was achieved in all cases based on the post-operative MRI. No remarkable complication and surgically-related new neurological deficite occurred.We consider that resection of only this part during selective amygdalohyppocampectomy may be enough for disconnection of amygdala circuits and control the seizure and accordingly reduce time of surgery and complications.

Neurobiology of epilepsy and epilepsy case report

Chencho Dorji
Khesar Gyalpo University of Medical Sciences, Bhutan

Background: Wide treatment gap in epilepsy prevails in developing countries like Bhutan due to lack of awareness, stigma, shame, discrimination among patients and lack of adequate treatment services. It is estimated that less than 20 % (n=1000) of epilepsy patients (n=5000) in Bhutan are receibing treatment at prsent. Not much information on epilepsy are avaialble.

Policy and Strategy: Bhutan has opted a policy of community-based epilepsy management through a strategy of using the existing primary health care infrastructure by training primary health care workers on epilepsy management and providing basic essential anti-epileptic drugs free of charge to patients.

Program Activity: Primary Health workers are trained to diagnose and treat epilepsy cases with limited anti-epileptic drugs. Difficult and complicated cases are referred to specialists at referral hospitals for confirmation of diagnosis and initiation of treatment. Majority of the patients are sent back to the primary health care for follow up and long term contimuation of treatment.

Findings: Almost all the cases are screened by the only MRI Brain Scan Machine and two CT Scan Machines available at the two Referral Hospitals in Bhutan. Out of 1000 patients scanned, we found 170 (17 %) showed NCC in their brain. We are going to highlight this presentation by discussing the management of repeated re-infection of case of NCC with Epilepsy inspite of treatment.

Discussion: It is well known that NCC causes epilepsy and that NCC responds to anti-parasitic drugs like Albendazole. However, in one case that we observed, there was repeated re-infection or reemergence of NCC associated with recurrence of seizure in spite of repeated administration of Albendazole.

Conclusion: NCC is a significant contributor to epilepsy in the developing world and needs to be screened and treated.

Superparamagnetic iron oxideeloaded lipid nanocarriers incorporated in thermosensitive in situ gel for magnetic brain targeting of clonazepam

Nesrine S El Sayed
Cairo University, Egypt

The objective of the study was to target clonazepam to the brain through the intranasal olfactory mucosa using nanolipid carriers loaded with superparamagnetic iron oxide nanoparticles (SPIONs) to allow nanocarrier guidance and retention with an external magnetic field. For improved delivery, the nanolipid carriers were incorporated in a thermosensitive mucoadhesive in situ gel. Different nanolipid carriers including solid lipid nanoparticles and nanostructured lipid carriers (NLC) were prepared and characterized with respect to particle size, zeta potential, entrapment efficiency, and in vitro release. The NLC composed of 3 solid lipids (Compritol® 888, stearic acid, and glyceryl monostearate) and 2 liquid oils (oleic acid and glyceryl monooleate) showed the most satisfactory characteristics and was loaded with SPION (NLC/SPION). Both formulae (NLC and NLC/SPION) were incorporated in an optimized thermosensitive mucoadhesive in situ system composed of 15% pluronic 127 and 0.75% sodium alginate and evaluated for the anticonvulsant action in chemically induced convulsive Swiss Albino mice. The treatment of animals with NLC/SPION significantly prolonged the onset times for convulsion and considerably protected the animals from death. One can thus hope for the emergence of a new intranasal treatment of epilepsy with consequent decrease in peripheral side effects of clonazepam.

The effects of CLCN2 knockout on epileptic absence seizures

Navin Naik
University of Virginia, USA

Epilepsy is a neurological disorder affecting about 1 percent of Americans. Epileptic seizures are caused by nerve cell activity in the brain and can vary from being nearly undetectable to long periods of shaking. Idiopathic generalized epilepsy includes a group of epileptic disorders that are believed to have a strong genetic basis. The seizures of interest here are petit mal seizures, or absence seizures. Absence epilepsy is one of the most common forms of childhood epilepsy. It is characterized by brief, frequent seizures and affects children from the ages of 4 to early adolescence. Absence seizures are also characterized by generalized spike-and-slow wave electrical discharges (SWD), which can be detected using electroencephalography (EEG). Due to the prevalence and comorbidities associated with absence epilepsy, it is important to study it further. Based on research published in a 2003 paper by Haug et al, we decided to examine the effects of a chloride channel gene CLCN2 in a mouse model. Data was collected via EEG recordings of mice over a 5-day period. Two mouse models were used: wild-type mice and CLCN2 knockout mice. EEG recordings were scored for spike-and-wave discharges to determine seizure occurrence. Due to time constraints, only limited data was obtained. This data confirmed the hypothesis that CLCN2 KO mice would have increased seizures. However, the insufficient data prevented us from creating a significant conclusion. Nevertheless, important procedural information was found to aid in future experiments.