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Abstract of Presentations

Presidential Lecture. Pharmacogenetics in Epilepsy

Emilio Perucca, University of Pavia, Pavia, Italy

In recent years, there have been impressive advances in the elucidation of the genetics of epilepsy syndromes. Most of these studies have focused on the identification of genetic defects which may cause epilepsy, and correlations between the identified genetic defects and the phenotypic expression of the disorder. Significant efforts, however, have also been placed into investigation of genetic factors which may influence response to antiepileptic drugs (AEDs). Available evidence suggests that genetic factors can affect AED response in at least four ways (i) through modulation of individual susceptibility to certain adverse effects, including immune-mediated idiosyncratic AED reactions; (ii) through genetically controlled variation in drug metabolism, particularly with respect to polymorphically expressed cytochrome P450 enzymes such as CYP2C9 and CYP2C19; (iii) through regulation of the expression of drug transporters, such as p-glycoprotein, which influence the access of AEDs to their site of action in the brain, and may play an role in the resistance to a variety of AEDs; (iv) through genetically determined alterations of AED targets, which can result in altered sensitivity to the therapeutic action of specific AEDs. Elucidation of these factors is likely to have increasingly important practical implications for the management of epilepsy in the future, for example to minimize the risk of serious adverse effects; to identify individuals at high risk of developing epilepsy, thereby permitting individually targeted preventive therapies; to predict the type of treatment most appropriate for the individual's epilepsy; to allow early identification of drug resistance; and to discover new targets for the development of innovative and more effective AEDs. Pharmacogenetic information is already usefully applied in the routine clinical management of epilepsy in some situations, the best example being HLA-B*1502 genotyping to minimize the risk of serious cutaneous reactions induced by carbamazepine and some other AEDs in patients from certain Asian ethnic groups

Plenary Lectures

PL1.1. The Role of EEG in the World of Epilepsy

Ateeq Haseeb, Mercy St. Vincent Medical Center, Ohio, United States of America

Electroencephalography (EEG) is the recording of cerebral electrical activity by placing multiple electrodes on the scalp. The source of the electrical activity is the neurons where there is a constant exchange of ions resulting in excitatory and inhibitory action potentials. EEG activity is summation of these action potentials produced from the thousands and millions of neurons in the cerebral cortex.

EEG is very helpful in diagnosing and treating several neurological conditions. This includes diagnosing patients with new seizure disorders, non convulsive status epilepticus, structural lesions, differentiating epileptic from non epileptic spells, and assessment of cerebral activity during brain death evaluation. EEG also aids a Neurologist to make the right choice of a antiepileptic medication for particular epileptic

syndromes, as well aids Neurologist to make decisions to discontinue antepileptic medications.

EEG also has surgical applications. When used as a prolonged or continuous video EEG over a period of 3 to 5 days combined with other neuroimaging techniques, it helps in getting information on seizure semiology and localization of the epileptogenic focus. This will lead to a higher chance of successful focal resection of the epileptogenic cortex and a greater chance of seizure free outcome. EEG is also used intraoperatively during carotid endarterectomies when making decisions for shunt placement during these surgeries.

This objectives of the presentation will be as follows:

a) Educate participants on the details of EEG,
b) Outline clinical and surgical applications of this procedure
c) Elucidate the role of EEG in the world of Epilepsy

PL1.2. First Seizure: What a Neurologist Should Know

Khaled Zamel, Mafraq Hospital, Abu Dhabi, United Arab Emirates

Unprovoked seizures are a common occurrence, affecting approximately 4% of the population by age 80. The treatment of a first unprovoked epileptic seizure has been and continues to be one of the most often debated issues in epilepsy.

In this presentation, treatment issues following a first unprovoked seizure are discussed, using an approach that emphasizes weighing the relative risks and benefits of the therapeutic decisions. Well-designed prospective studies of the recurrence risk after a first unprovoked seizure in children and adults show recurrence risks in the 40 to 50% range leading to a diagnosis of epilepsy. Risk factors for seizure recurrence include a history of remote neurologic insult, epileptiform abnormalities on electroencephalogram, focal structural lesion on neuroimaging, and family history of epilepsy.

Treatment trails clearly demonstrated that antiepileptic drugs reduces recurrence risk but does not alter long-term prognosis. The therapies available carry some risk, and optimal patient care requires careful balancing of these risks and potential benefits.

Assessment of risk requires not only establishing the statistical risk of a seizure recurrence or of an adverse event, but also the consequences of such an event. In most patients, treatment should be deferred until a second seizure has occurred. However in some patients the decision could be different. The choice at the end should be made jointly by the medical providers as well as the patient and family after careful assessment of risk and impact of seizure recurrence.

PL1.3. Epilepsy Mimickers

Sonia Khan, Prince Sultan Military Medical City, Riyadh, Saudi Arabia

Paroxysmal events in children & adults can mimic epileptic seizures, and many of them have only been recently described, or are only now being increasingly recognized. An awareness of the different mimickers of epilepsy and the art of history-taking will help pediatricians ,physicians and neurologists differentiate epileptic from nonepileptic events. Nonepileptic paroxysms can present with drop attacks, limb or eye jerks, and abnormal postures..One of the most common reasons for a misdiagnosis of epilepsy is a psychogenic nonepileptic seizure (PNES), also termed pseudoseizure. Psychogenic nonepileptic seizures (PNES), are defined as paroxysmal changes in behavior that resemble epileptic seizures but are without organic cause and are not accompanied by the ictal, peri-ictal, and interictal changes that characterize epilepsy. PNES is often suspected in patients with a history of somatization, abuse, psychiatric comorbidity, and when spells are characterized by unusual features, such as emotional triggers, prolonged duration, stop/start quality, or pelvic thrusting. However, the diagnosis of PNES can be difficult to make based on clinical criteria alone. The standard of care for diagnosing PNES remains the recording of a patient's typical event with video-EEG to confirm the absence of electrographic changes on the ictal EEG recording during the spell, while simultaneously evaluating semiology for either PNES behaviors or a lack of ictal characteristics.The incidence of PNES is reported to be 1.5 per 100,000 per year that is approximately 4% of the incidence of

all epilepsy. Yet, PNES accounts for between 25% and 45% of all video-EEG admissions to epilepsy monitoring units Another common cause of misdiagnosis is syncope. When people black out, they frequently have a few jerking movements that may seem like a seizure. However, these jerking episodes do not last as long as an actual seizure, and the patient usually recovers more quickly. While syncope can be caused by benign etiologies such as dehydration, it may also be caused by serious cardiac disorders, so it is crucial to determine the etiology of syncope with confidence. Migraines are usually associated with headache, but can also cause unusual symptoms that mimic seizure activity. For example, migraine with aura is preceded by visual symptoms .Complicated migraine can be followed with numbness and hemiplegia even without the headache. Other seizure mimickers include transient ischemic attacks or hypoglycemia. In short, not every seizure like event is a seizure . Because the diagnosis of epilepsy is sometimes unclear & can have serious consequences, it's important to rule out other potential mimickers before starting anti epileptic medications. It's best to have a thorough evaluation by a neurologist and perhaps in the epilepsy monitoring unit to exclude mimickers of epilepsy. This review describes the different mimickers of epilepsy and focuses on their circumstances, precipitators, prodromes, pathophysiology, and other manifestations that help distinguish them from epilepsy.

PL2.1. Non Convulsive Status Epilepticus

Eugen Trinka, Paracelsus Medical University, Frankfurt, Germany

Nonconvulsive status epilepticus (NCSE) is the persistence of a seizure with little or no clinical activity or the occurrence of two seizures without return of normal mentation between the seizures. Previously NCSE was diagnosed when the seizure had lasted at least 30 minutes or the time between two seizures was at least 30 minutes. More recently some investigators have proposed that the 30-minute time be reduced to 5 minutes as neuronal injury can occur in this time frame in some SE forms.

Over the last decade, continuous EEG (cEEG) monitoring has been increasingly used to evaluate patients that have altered mental status in intensive care units (ICUs). Many studies have shown that about 20% of patients undergoing ICU EEG monitoring have intermittent nonconvulsive electrographic seizures or NCSE. It is not clear when intermittent electrographic seizures become NCSE. Nor is it clear what impact these electrographic seizures have on outcomes and how aggressively they should be treated.

This lecture will explore these issues, outlining current knowledge and uncertain areras. We will discuss the definition and EEG characteristics of different forms of NCSE and the utility of EEG monitoring as well as the frequency with which electrographic seizures and NCSE are detected in critically ill patients. Finally, we will discuss new treatment paradigms for critically ill patients with electrographic seizures and NCSE and how that may differ from the treatment of convulsive status epilepticus.

PL2.2. Status Epilepticus: An Update

Iyad Khoudeir, Noor Hospital, Abu Dhabi, United Arab Emirates

Status epilepticus is a severe neurologic condition with significant morbidity and mortality. It requires urgent medical evaluation and an early and aggressive treatment before irreversible neuronal damage occurs.

The definition of the timing to begin a protocol treatment of a status epilepticus and classification of status epilepticus need to be clear in the minds. In addition to recognizing the underlying etiology, a prompt and specific treatment is a must to ensure successful treatment.

The management of status epilepticus remains a challenge. A rapid treatment and avoiding medical systemic complications are keys.

An agreement exists about first line treatment as well as about second line therapies with phenytoin or valproic acid. Pre-hospital treatment with an IM Midazolam is being encouraged more so if an IV line for Lorazepam is difficult to obtain and has shown to improve the results of the treatment in the emergency room as well as the outcome and to reduce the incidence of refractory status epilepticus. Newer

AEDs like Levetiracetam or more recently Lacosamide are being used; this is far to be based on evidence.

Although there is an agreement on using a general anesthesia in case of refractory status epilepticus; the choice of which anesthetic to use remains a "personal choice". A super-refractory status epilepticus is now accepted as the one persisting or recurring beyond 24 hours of use of an anesthetic.

Guidelines are available and a written protocol for therapy to be followed by ER physicians, neurologists and intensivists is recommended to enhance the chances of success in treating this urgent and challenging neurological condition.

PL2.3. SUDEP: Where We Stand?

Salah Baz, Royal Commission Hospital, Jubail, Saudi Arabia

Sudden unexpected death in epilepsy (SUDEP) is a significant cause of death among patients with epilepsy. Recent research suggests that multiple factors may contribute to SUDEP and that both cardiac and respiratory mechanisms are involved.

Both cardiac and respiratory abnormalities are highly likely to occur with generalized tonic–clonic seizures. Uncontrolled epilepsy appears to be the most highly associated modifiable risk factor for SUDEP. In most witnessed or recorded events, sudden death is immediately preceded by a seizure. The risk for SUDEP appears to be closely related to seizure control, and patients with refractory epilepsy are at the highest risk for SUDEP; 30–50% of the patients are found dead in bed, and often, they are found in the prone position.

We present the case of a 22-year-old woman wherein SUDEP was recorded in the video electroencephalogram monitor during admission at the epilepsy monitoring unit of our centre for the classification and management of nocturnal refractory seizure.

All the patient's seizures were nocturnal and the last seizure lasted for 90 seconds, followed by immediate isocerebral inactivity and death. Only three cases of SUDEP have been reported thus far with recording of the flattening of the electroencephalogram before any fatal cardiac or respiratory arrest.

It has been hypothesized that a primary cause could be an alteration of cerebral blood flow auto regulation, which could lead to a sudden drop in cerebral perfusion and subsequent cessation of electrical activity.

PL3.1. Continuous Spike Wave during Sleep (CSWS) and the LKS

Ahmad Beydoun, American University of Beirut, Beirut, Lebanon

Encephalopathy with continuous spike-waves during slow sleep (CSWS) and the Landau-Kleffner syndrome (LKS) represent the extremes of the spectrum of maturational epilepsies. They are both age-related epileptic encephalopathies characterized by the development of psychomotor regression temporally associated with the appearance of specific types of epileptiform discharges that are highly activated by sleep.

The LKS is a functional disorder of childhood characterized by seizures that are relatively easy to treat and self-limited, an acquired aphasia, an EEG showing epileptiform discharges over one or both temporal regions and lack of discernible brain pathology that can explain the symptoms. The disorder typically presents with speech disturbance between the ages of 3 and 8 years in a child who has already developed age-appropriate language production. The onset initially consists of a loss of understanding of spoken language following which the speech output is disrupted and paraphasias and phonologic errors begin to appear. In severe instances, the child becomes entirely mute and does not respond to nonverbal sounds as well. The most common seizures include nocturnal hemiclonic seizures, atypical absences, or secondary generalized seizures. They have a variable relation to the language deficit, and 20% to 30% do not exhibit behavioral seizures at all. Characteristically, the seizures have a benign course, respond well to treatment with anticonvulsants and usually resolve on their own by the midteen years.

CSWS is a functional disorder of childhood characterized by spike waves occupying 85% of the

sleep recording, self-limited clinical seizures, behavioral and cognitive deterioration with or without premorbid developmental disturbances, and no brain pathology sufficient enough to explain the behavioral deterioration . The onset is usually in the first decade, with a mean age at onset of 4 to 5 years. All children have cognitive decline during the period of paroxysmal EEG manifested as reduced attention span, hyperactivity, abnormal behavior, aphasias, and apraxias. The seizures are commonly nocturnal and manifest as focal motor, complex partial, absence, and secondary generalized tonic-clonic. Diurnal atonic seizures and drop attacks can occur. Tonic seizures do not occur. Compared with LKS, the seizures are more frequent in CSWS, but, like LKS, they tend to respond to anticonvulsant therapy.

The diagnostic evaluation of children with a suspected diagnosis of LKS or CSWS consist of long-term of video-EEG monitoring, an epilepsy protocol brain MRI and sometimes functional neuroimaging (PET, SPECT). The treatment of those conditions vary across institution due to the paucity of controlled clinical trials. Valproate with or without a BZD appear to be the AEDs of choice. It is important to try to avoid CBZ, PHT, OXC, and PB since they can worsen those conditions. Other treatments include steroids, IVIg, and multiple subpial transections for children diagnosed with the LKS. The long-term prognosis for seizure disorder in both conditions is good, with 20% having persistent, usually rare, seizures. However, the long-term neuropsychologic consequences are not benign. The majority of patients who have either disorder have some permanent sequelae that limit their activities. Those with the earliest onset of spike and- wave discharges and longer persistence of epileptiform discharges have the worse neuropsychological sequel. Aggressive early treatment might prevent or halt the psychomotor regression.

PL3.2. Epileptic Spasms: Current View

Raida Al Baradei, KFSH-D & Dammam University, Dammam, Saudi Arabia

Infantile spasms (IS) is an age-specific (most patients have onset between 3 and 8 months of age) epileptic disorder of infancy and early childhood. Children with IS typically exhibit the electroencephalographic pattern known as hypsarhythmia. The combination of IS with hypsarhythmia is referred to as West syndrome. IS has been used to refer to either a seizure type or an epilepsy syndrome. Patients with the syndrome of IS may have other seizure types; also, seizures similar to IS may occur in other epileptic syndromes.

While relatively rare, IS is a significant disorder because of its strong association with developmental delay or regression (75 to 93 percent of affected children), high mortality rate, refractoriness to conventional antiepileptic drugs, and responsiveness to hormonal therapy.

The epidemiology, etiology, pathogenesis, and pathology of IS are reviewed here. In addition, the clinical features and diagnosis, and management and prognosis will be discussed.

PL3.3. Genetics in Epilepsy

Riadh Gouider, Razi Hospital, Tunis, Tunisia

Genetic factors contribute to etiology in up to 40% of patients with epilepsy. Most of the epilepsies are believed to be polygenic with an evidence of complex inheritance due to multiple susceptibility genes. Nearly 1 to 2% of epilepsies are monogenic or Mendelian. They include symptomatic epilepsies, where there is associated diffuse brain dysfunction, and idiopathic ones.

The genetic architecture of the idiopathic epilepsies (IE) is unknown. Genes responsible for a small number of rare Mendelian IE have recently been identified and shown to encode ion channels involved in neuronal excitability. They are in majority responsible of autosomal dominant (AD) epilepsies. However, IE with autosomal recessive (AR) inheritance were rarely reported worldwide and few genes have been identified such as for benign rolandic epilepsy. These AR IEs seemingly occur as sporadic conditions and are underestimated because of the lower clustering of familial cases in studied populations compared to AD ones. AR inheritance was proposed for few focal and generalized IEs, and while some loci were described, no genes responsible

for AR IEs have been identified, and the pathogenesis of these disorders remains unknown.

Childhood absence epilepsy (CAE) is a common form of idiopathic generalized epilepsies (IGEs) for which causative genes are unknown. Several AD genes cause absence seizures in families with heterogeneous IGEs, and several genes encoding subunits of voltage-gated calcium channel or c-aminobutyric acid (GABA)A receptors are potential susceptibility factors for CAE in humans. No genes are known for AR CAE. However, four genes, encoding α1, β4, α2δ2, and γ2 subunits of voltage-gated calcium channels cause absence seizures in the spontaneous AR mouse models Cacna1a in tottering (tg); Cacnb4 in lethargic (lh); Cacna2d2 in ducky (du); Cacng2 in stargazer (stg). In a previous study, we excluded these genes in five Tunisian families with an AR CAE.

Juvenile myoclonic epilepsy (JME) is another common specific familial IGE trait that has been subject to extensive linkage analysis. It is clinically and genetically heterogeneous and its mode of inheritance is still debated as there have been reports of AD, AR inheritance, and multifactorial models. Few AR loci were suggested for JME. An association with HLA was suspected in 32 unrelated Arab patients with JME. Recently a locus was identified in Tunisian families.

Progress in identifying the causative genetic defects is near complete in a subset of symptomatic epilepsies caused by chromosomal abnormalities, amino-acidopathies and lysosomal disorders. Molecular analysis can be crucial for their diagnosis and prognosis: for example diagnosis in the progressive myoclonus epilepsies (PME) is largely based on molecular findings. Unverrich-lundborg disease (ULD), the most common form of PME worldwide, is frequent in Tunisia. Through our experience, phenotypic particularities were noticed in some geneticay proven UD families suggesting that modifying factors may exist, either genetic or environmental, that influence the effect of the major gene.

PL4.1. Women and Epilepsy

Cigdem Ozkara, University of Istanbul, Istanbul, Turkey

Women with epilepsy (WWE) has special considerations related to the effect of reproductive hormones to seizures, pregnancy, lactation, special side effects of antiepileptic drugs (AED) and several social restrictions resulted from epilepsy. Fertility rates are reduced, one third of them may suffer from abnormal ovarian function, including anovulatory menstrual cycles and polycystic ovaries. These complications may be more common in patients given sodium valproate.

Enzyme inducing AEDs such as carbamazepine, phenytoin, phenobarbital, primidone, topiramate, and oxcarbazepine can induce the hepatic pathways responsible for catabolism of female sex hormones, which leads to alterations in the menstrual cycle and increase the turnover of oral contraceptive pills and steroid hormones which can increase the risk of unexpected pregnancy.

Long term AED treatment with especially inducer drugs can produce osteomalacia and osteoporosis. This is, in part, due to induction of vitamin D metabolism but reduction in bone density may also happen with non-inducing AEDs. Vitamin D and calcium supplementation are important in this population.

In some women seizures aggravate during their menstrual cycle, which is known as catamenial epilepsy. The use of intermittent clobazam just before and shortly after the onset of menstruation may be helpful in these conditions.

There is a higher risk of major congenital malformations (MCMs) with valproate (VPA), compared to carbamazepine (CBZ), and possibly compared to phenytoin (PHT) or lamotrigine (LTG). AED polytherapy probably contributes to the development of MCMs and reduced cognitive outcomes compared to monotherapy. Intrauterine exposure to VPA, PHT or phenobarbital (PB) may reduce the cognitive outcomes. Neonates of WWE taking AEDs probably have an increased risk of being small for gestational age and possibly have an increased risk of a 1-minute Apgar score. However these effects are mainly dose related especially for VPA when it is higher than 1000mg. If possible,

avoidance of high doses of AEDs and polytherapy throughout pregnancy should be considered.

Almost 70 % of the pregnancies remained seizure-free throughout pregnancy. Women with idiopathic generalized epilepsies were more likely to remain seizure-free than with localization-related epilepsy. Seizures were more likely to occur in the first trimester of pregnancies and pregnancies exposed to lamotrigine were more likely to have seizures and more GTCS. Monitoring of drug levels especially for LTG is considered as it causes an increase in the clearance and a decrease in the concentrations.

Supplementing WWE with at least 0.4 mg of folic acid before pregnancy is rcommended. The AED that provides the best seizure control in monotherapy at the lowest effective dose should be chosen. Breastfeeding should be encouraged for all the usual reasons however caution should be taken as Primidone and levetiracetam probably transfer into breast milk in clinically important amounts.

PL4.2. Epilepsy in the Elderly

Hassan Hosny, Cairo University, Cairo, Egypt

Epilepsy has increasingly been recognized as very common in the elderly. Reasons for the rising incidence of epilepsy in the elderly are largely unknown, but may include longer survival of people with underlying medical conditions such as stroke. Stroke and other vascular catastrophes are the most common risk factors for epilepsy in the elderly in addition to cerebral brain tumors and traumatic brain injuries. A diagnosis of neurodegenerative disease are associated with at least six fold risk for epilepsy. Factors complicating the treatment of seizures in old age groups include concurrent medical diseases, polytherapy, changes in pharmacokinetics and altered pharmacodynamics. Many AEDs pose problems in the aged due to limited tolerability.

Debates

Debate 1.1. All Patients with Seizure Freedom for 2 Years Should Discontinue AEDs

Ahmad Beydoun, American University of Beirut, Beirut, Lebanon

Taoufik Alsaadi, SKMC, Abu Dhabi, United Arab Emirates

Once a patient has initiated an antiepileptic drug (AED) and achieved a sustained period of seizure freedom, the decision to discontinue AED should be balanced against continuation of AED therapy indefinitely. Studies show that the rate of seizure recurrence after AED withdrawal is about two to three times the rate in patients who continue AEDs. However, there are many benefits to AED withdrawal that should be evaluated on an individualized basis. AED discontinuation may be considered in patients whose seizures have been completely controlled for a prolonged period. There are several factors that would increase risk of recurrences which will be reviewed and discussed. As a consequence, the decision to withdraw or withhold treatment must be still individualized. In any patient, the decision to discontinue treatment should also take into effect the social aspects like driving license, job and leisure activities as well as emotional and personal factors and patients with adverse effects or drug interactions. Patients will ultimately have to decide themselves whether they wish to discontinue drug treatment.

Debate 2.1. Benign Childhood Epilepsy with Centro-temporal Spikes: Treat or Not with AED

Ahmed Al Rumayan, Prince Sultan Military Medical City, Riyadh, Saudi Arabia
Sonia Khan, Prince Sultan Military Medical City, Riyadh, Saudi Arabia

Benign epilepsy with centrotemporal spikes (BECTS) is a common disorder in childhood. In regards to treatment, most investigators have indicated qualifications, for example, treating those with early onset, multiple seizures at onset, and large numbers of seizures. After a brief overview of BECTS, a review of the data in favor of treatment with anticonvulsant medications is followed by the data indicating that treatment is not indicated, challenging against the judgment regarding treatment. Antiepileptic drug (AED) treatment is often not recommended, particularly if only simple partial seizures occur and if the child and family are comfortable with this approach . The goal of this debate is to assess the value

of treating versus not treating benign epilepsy (of childhood) with centrotemporal spikes (BECTS).

Oral Communications

OC1. Clinical Experience with AEDs

Bernhard Steinhoff, Christoph Kurth, Kork, Munich, Germany

Background

Recently, with lacosamide, retigabine and perampanel, three new antiepileptic drugs were launched in Germany for add-on treatment of patients with partial-onset seizures. These new AEDs offer unique modes of action. We collected their efficiency in difficult-to-treat patients at our tertiary referral centre.

Design and Methods

After the introduction of each drug (2008, 2011 and 2012) patients were followed for at least six months on add-on lacosamide, retigabine and perampanel. We assessed efficacy, tolerability and retention rate.

Results

We recruited 107 patients with lacosamide, 40 with retigabine and 74 with perampanel. 50% responder rates were 35%, 15% and 46%, respectively. Freedom of seizures for at least three months was achieved in 5%, 2.5% and 14% of our patients. Adverse events were observed in 36% of patients under lacosamide, 40% of patients under retigabine and 54% of patients with perampanel. Six-month retention rates were 73%, 50% and 70%, respectively.

Conclusions

With all new AEDs we did see seizure freedom in some of our very difficult-to-treat patients. It is tempting to speculate that the new mode of action of each drug may have been an explaining condition. The highest rate of seizure freedom but also most adverse events were seen with add-on perampanel. Retention rates were similar for lacosamide and perampanel and lower for retigabine.

OC2. Did We Know the Epilepsy Burden in Arab Countries?

Hani Benamer, London, United Kingdom

Background

The association between epilepsy and migraine has long been discussed. Epidemiological studies from Western and Asian populations showed that individuals with epilepsy are (2-4) times more likely to develop migraine than their relatives without seizures. Studies showed that risk of migraine is elevated in patients with both generalized and partial epilepsy.

Objective

The study is an observational, retrospective hospital-based study aimed to detect the type of epilepsy which is more linked to migraine in Emirati patients whom are genetically different from Western or Asian populations.

Methods

Fifty Emirati patients diagnosed with epilepsy and migraine were followed up in Neurology clinic at AlQassami Hospital between October 2012 and October 2013. Data including age, sex, type and duration of epilepsy, type and duration of migraine and family history of both epilepsy and migraine were collected from each patient. The results were expressed in percentages.

Results

There were thirty female patients and twenty male patients. Their ages range between (15-35) years. The epilepsy duration vary between (8-10) years while the duration of migraine ranges between (4-8) years. Thirty-five patients (70%) have generalized epilepsy and fifteen patients (30%) have partial epilepsy. Thirty-two patients (64%) have migraine without aura while eighteen patients (36%) have migraine with aura. Juvenile myclonic epilepsy represents Twenty-five patients (60%) in the generalized epilepsy group. Other types are tonic clonic epilepsy (14%) and tonic epilepsy (14%). In the generalized epilepsy group, 20 patients (80%) have migraine without aura and 10

patients (20%) have migraine with aura. In the partial epilepsy group, 10 patients (70%) have partial epilepsy with secondary generalization and 5 patients (30%) have complex partial epilepsy. Nine patients (60%) out of them, have migraine without aura while six patients (40%) have migraine with aura. Twenty-five patients (50%) with epilepsy have strong family history of epilepsy. All these patients have juvenile myclonic epilepsy.

Conclusion

Juvenile myclonic epilepsy if found to be the commonest type of epilepsy associated with migraine. Migraine with aura is the type of migraine which is more linked to epilepsy. Migraine is increased in epileptic patients with family history of epilepsy. This demonstrates a possible strong genetic basis between epilepsy and migraine. The co-morbidity of migraine and epilepsy may be explained by a state of neuronal hyper-excitability that increases the risk of both disorders.

OC3. Driving Restrictions of Patients with Seizure

Ahmed Shatila, Taoufik Al Saadi, Abu Dhabi, United Arab Emirates

Background:

There are no driving guidelines in the UAE for patient with epilepsy. The last study to asses accidents/driving violations for epileptic patients in the UAE was in 1996.

Objective:

The purpose of this study is to help determine adequate driving guidelines in the UAE.

Methodology:

Fifty-Four licensed physicians who are currently practicing in the UAE and have experience treating epileptic patients were surveyed. A link to a 7 question survey was emailed to the physicians

Results:

Most physician surveyed (87%) do not feel that they should report all seizure cases to the DMV. In regards to patient with epilepsy 50% feel no need to report. The physicians surveyed were equally divided in regards to when a patient should be allowed to drive after a seizure (6months 46.3% vs 12 months 46.3%.) The majority of physician surveyed would allow a patient to drive if risk of reoccurrence is less than 25% (59.26). Majority of physician surveyed would all a patient to drive if they were seizure free for 6 months after medication withdrawal. (53.85%)

Conclusion:

Majority of physicians surveyed would allow a patient with only nocturnal seizures to drive.

OC4. Public Awareness and Attitude Towards Epilepsy in Saudi Arabia

Mohammed Jan, Riyadh, Saudi Arabia

There is a considerable misconception about epilepsy in our community. It is frequently linked to evil spirit possession. Primary school teacher's knowledge and attitudes toward epilepsy can have significant impact on the performance and psycho-social development of the child with epilepsy. Parents' attitudes toward children with epilepsy are influenced by their knowledge. Misconceptions should be identified and corrected for optimal care. We will present three studies that examined the public, teachers, and parent's knowledge and attitudes towards epilepsy in Saudi Arabia and identify contributing factors to negative attitudes.

Our results included 749 public interviews, 620 primary school teachers, and 117 parents. Most of the public participants (77%) had prior knowledge about epilepsy which correlated with their educational level as those with higher level of education were more likely to link epilepsy to organic causes ($p= 0.008$). However, 15% also linked epilepsy to evil spirit possession and up to 37% preferred spiritual rituals and religious healing to medical treatments. Although most respondents (61%) would accept an epileptic patient in a regular job, 71% reported reservations on marrying someone with epilepsy, particularly by males ($p=0.001$). Regarding the teachers, only 17% felt very well informed about epilepsy. Teachers with higher education were more likely to have goody knowledge ($p=0.009$). Teachers of Saudi nationality were also more likely to report good knowledge, independent of their educational level ($p=0.013$).

Overall, teachers with good knowledge were less likely to have negative attitudes including minding to have an epileptic child in their class (p=0.028) or thinking that they should be placed in a special classroom (p=0.029). Regarding the parents, most of them (70%) felt informed and recognized various treatment modalities, many believed that epilepsy is a mental disorder (48%), correlates with evil (44%), or affects the child's intelligence (38%). Up to 53% admitted to treating their child differently and avoiding upsetting or punishing him/her. This behavior was less likely if they achieved college education (p=0.01). Some parents (29%) admitted to using non-medical treatments, usually traditional or religious practices. Those parents were more likely to believe that epilepsy is a mental disease (p=0.002) or correlates with evil (p=0.015).

OC5. Polarity Convention and Source Localization

Shireen Qureshi, Dammam, Saudi Arabia

The Art and Science of EEG reading is harmonious in way of recognition of waveforms (spikes, sharp waves and slow waves) and principles of neuro generator localization in the brain. EEG signal represent the summated electrical activity generated by large population of neurons (105 or more), mainly from cortical neuronal layers.

Neurons are aligned in bundles oriented perpendicular to the cortical surface and activated by synapses on soma-dendritic membranes. Neuron behaves as an extracellular, trans cortical, surface-to-depth, radially oriented "dipoles", a generator with positive and negative poles. Pyramidal cells: major source of synaptic potentials, radially oriented. Solid angle theorem provides rational basis for principle of EEG localization. Solid Angle Theorem Provides A Rational Basis For Principles Of Localization In EEG. The Potential (Voltage) Generated By A Neuronal Source Is Not Necessarily Directly Proportional To The Distance From The Source. Therefore One Cannot Infer The Distance Or Depth Of A Source From Its Voltage Currents Are Not Restricted To The Immediate Neighborhood Of The Generator. Potential Difference Between 2 Electrodes Depends On Their Orientation With Regard To Configuration And Orientation Of The Electrical Field Within It Rather Than Proximity To The Generator.

This will be well explained in systematic review of EEG reading based on waveform recognition with respect to polarity convention and localization of neurogenerators.

OC6. Modulation of Epileptic Focus and Network

Faisal Al Otaibi, Dammam, Saudi Arabia

Neuromodulation strategies have been proposed to treat a variety of neurological disorders, including medication-resistant epilepsy. Electrical stimulation of both central and peripheral nervous systems has emerged as a possible alternative for patients who are not deemed to be good candidates for resective procedures. In addition to well-established treatments such as vagus nerve stimulation, epilepsy centers around the world are investigating the safety and efficacy of neurostimulation at different brain targets, including the hippocampus, thalamus, and subthalamic nucleus. Also promising are the preliminary results of responsive neuromodulation studies, which involve the delivery of stimulation to the brain in response to detected epileptiform or preepileptiform activity. In addition to electrical stimulation, novel therapeutic methods that may open new horizons in the management of epilepsy include transcranial magnetic stimulation, focal drug delivery, cellular transplantation, and gene therapy. We review the current strategies and future applications of neuromodulation in epilepsy.

OC7. Psychogenic Non Epileptic Seizures

Mashael Al Khateeb, Dammam, Saudi Arabia

Epilepsy it's not always what you think - a series of videos showing different kinds of semiology for one seizure type.

"In the field of epilepsy, original observations are often the key to diagnosis and successful treatment. Indeed, the acumen to recognize the unexpected or unusual semiology distinguishes astute physicians.

Psychogenic non-epileptic seizures (PNES), also,known as non-epileptic attack disorders

(NEAD),are events resembling an epileptic seizure ,but without the characteristic electrical discharges seen in epilepsy.

People with PNES can spend years in treatment for epilepsy, We believe that semiology of seizure are important part in epilepsy classifications and treatment as well . For this reason I choose cases with different semiology but they share same diagnosis, that taught the clinician an important lesson and influenced the way they approached the care of their patients."

In this session , I will present challenging cases I believe that many of you will be intrigued by these cases and perhaps see clues that we learn from patients as we try to unravel the mysteries of epilepsy. Despite the advances in technology, oftentimes original observations hold the key to diagnosis. And we hope that these cases inspire clinical scientists to solve today's unanswered questions in epilepsy.

Posters

P1. Epilepsy and Pregnancy

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Background

Corniche hospital a major maternity hospital in Abudhabi , UAE with 8,000 -9,000 deliveries per year Epilepsy is the commonest neurological disorder in child bearing age . All major epilepsy and pregnancy registries confirm that exposure to anti epileptics (AED) is associated with 2-3 fold increased rate congenital malformations .

Objectives

Our objective is to observe

1. Congenital malformations in foetuses exposed to antiepileptic's in our population along with other risk factors
2. Mode of delivery, Gestation at birth and birth weight .

Methods

Prospective observational study of pregnant mothers attending Obstetric medicine Neurology clinic from Feb 2008 – Feb 2014. 102 patients had 129 pregnancies. Use of preconception folic acid ,type and dose of AED use were studied .Anomaly scans were ordered for early bookers .New-borns were examined for Congenital malformations at birth . Gestation at delivery, mode of delivery & Birth weight analysed.

Results

84% have generalised epilepsy , 11% partial epilepsy 5% others .20% consanguinity, only 62% with confirmed preconception folic acid use . 90 % pregnancies exposed to AED.

Conclusion

Three babies had major malformations. Multiple confounding factors identified - lack of folate use, consanguinity and family h/o congenital malformations 80% of the IUGR babies are exposed to valproate.

P2. AED Toxicity

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Background

Epilepsy is affecting more than 50 million people worldwide, antiepileptic drugs (AED) is effective and remains the primary mode of management. Adverse effects of AED are important factor in treatment failure with major impact on health-related quality of life in people with epilepsy. AEDs may cause dose-related adverse or idiosyncratic adverse effects (i.e. serious cutaneous, hematological and hepatic events). Stevens-Johnson syndrome (SJS), toxic epidermal necrolysis (TEN) and Drug rash with eosinophilia syndrome are among the severe cutaneous drug reactions that have been reported after AED, especially in high risk patients like older age, malignancy or radiation exposure.

Objective

To recognize the early clinical features of adverse drug reactions using a case study, clinical methods and tools that have been developed to recognize early adverse drug reactions and screen patient at high risk

Methods

We will present a case of TEN in patient with phenytoin post-cranial radiation for brain metastases and will discuss different aspect of Neuropharmacology of antiepileptic drugs including history, Classification of AED, Pharmacokinetic Considerations, Other Clinical indication of AEDs and adverse effect and multi-organ toxicity with special concern to clinical methods and tools like SCORTEN score (severity-of-illness Score for Toxic Epidermal Necrolysis) which calculates the risk for death in both SJS and TEN.

Conclusion

AED can cause multiple adverse reactions which can be serious and fatal, understanding of theoretical and clinical aspect of AED Neuropharmacology are essential for all physician who deal with these drugs to implement treatment practice that minimize such adverse outcomes.

P3. EEG/EKG Correlation

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Studying the incidence, types of cardiac arrhythmia's and there correlation with electroencephalographic changes and types of epilepsy may lead to a better understanding of the cause of Sudden Unexpected Death in Epileptics.

We recorded simultaneous electroencephalogram and electrocardiogram in 102 epileptics with equal number of males and females. Ages ranged from 6 months and 56 years.

Forty six percent of patients with abnormal electroencephalogram had electrocardiographic abnormalities. Electrocardiographic abnormalities included: sinus tachycardia (63.8%), sinus bradycardia (10.6%), respiratory sinus arrhythmia (10.6%), ventricular ectopics (6.4%), atrial ectopics (4.3%) and long pauses (4.3%). Electrocardiographic abnormalities were most commonly found in patients with generalised electroencephalographic discharges (57.1%), next in focal (43.8%), and last in focal with secondary generalisation (37.5%).

Electrocardiographic abnormalities in epileptics correlated well with the Electroencephalographic changes. They are found in a high percentage of epileptics (42.2%) and are higher in patients with positive interictal electroencephalogram (46.7%) than in those with negative interictal electroencephalogram (29.6%).

P4. Case Series: Neuro Cutaeneous Syndromes

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Background

Neurocutaneous syndromes (NCS) are a heterogenous group of disorders characterised by abnormalities of both the integument and central nervous system that are believed to originate from a defect in differentiation of the primitive ectoderm. Cutaneous manifestations usually appear early in life and progress with time, but neurological features generally present at a later age.

Objective

To study the clinical profile of children with neurocutaneous syndromes and their various symptomatology, the seizure types and the response to treatment.

Subjects and Methods

A retrospective crosssectional study was conducted in the Department of Paediatrics, Pushpagiri Medical College Hospital,Tiruvalla, during the period from January 2013 to June 2013. Children between the age group 0 and 15 years were included in the study on the basis of standard diagnostic criteria for different NCS. Investigations done were CT,MRI ,EEG,and skin biopsy for appropriate cases.

Results

The study population comprised of 10 children (5 boys, 5 girls). The various forms of NCS observed were Sturge Weber syndrome (SWS) – 4 Neurofibromatosis (NF1)- 2 , Hypomelanosis of Ito (HOI) – 2, Tuberous sclerosis complex (TSC) – 1 , and Incontinentia pigmenti (IP) – 1.A total of 8 children (80%) presented with neurological symptoms and the remaining 2 (20%) presented with cutaneous symptoms of which 1 was found to have learning

disability on evaluation.The neurological problems were,70 % had seizures of which100% were SWS and TSC , 50% were HOI and NF1 .72% had generalised tonic clonic seizures (GTCS) and 28% had focal seizures. The child with TSC showed refractory epilepsy. Developmental delay was detected in 50% of cases and maximum delay was seen in HOI. Family history of the same disease was obtained in 2 cases (50% of NF1 and 100 % of IP).

Conclusions

The leading NCS in this study was SWS.70% of children with NCS presented with seizures. The commonest type of seizure among them is GTCS.Children with TSC had seizures refractory to anticonvulsants. Careful evaluation of NCS children can reveal problems like Learning disabilities.

P5. Evaluation of Seizure Susceptibility in Experimental Model of Tri- Nitorbenzene Sulphonic Acid Induced Ulcerative Colitis in Rats

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Background and Objective

Epilepsy is one of the most prevalent chronic neurological disorders. There has always been a substantial need to develop new antiepileptic drugs and to understand the interplay between epilepsy and diverse conditions like inflammatory disorders to explore other prospective of possible therapeutic interventions. Study was designed to assess the seizure susceptibility in experimental models of ulcerative colitis.

Design and Methods

Colitis was induced by single intra-colonic application of 20 mg Trinitrobenzene sulphonic acid in wistar rats. Zonisamide,Thalidomide,Vehicle was given in different groups of animals. Another group of animals was subjected to administration of normal saline in colon without any treatment. After 14 days, seizures were induced by either intraperitoneal injection of Pentylenetetrazole or by maximal electro shock in two different sets of experiments. Seizure score, colitis score, oxidative stress and TNFα, IL10 levels in brain and serum samples was assessed. Histopathological examination of colon was done. Naïve animal were also taken for comparison.

Results

Mean colitis score decreased in thalidomide treated group but not in Zonisamide treated group as compared to vehicle treated and naïve group. Seizure score was decreased in Zonisamide treated group but not in thalidomide group as compared to vehicle treated or naïve groups. Seizure score was significantly higher in vehicle treated group as compared to non ulcerative colitis group. Oxidative stress was significantly lower in Zonisamide and thalidomide treated groups as compared to vehicle treated group. TNF α, IL10 levels results supported the abovesaid findings. There was no significant difference in groups of pentylenetetrazole or maximal electroshock methods of seizure induction.

Conclusion

Seizure susceptibility may increase in experimental models of ulcerative colitis and anti-inflammatory agent may ameliorate this effect.