The Restoration Act (INGO) is proudly offering virtual seminars on various clinical topics of inborn errors of metabolism, genetics, and neurology in collaboration with the Ministry of Health Kurdistan Regional Government, Directorate General of Health Duhok, Iraqi & Kurdistan Boards for Medical Specialization/Pediatric, University of Duhok College of Pharmacy and Pediatric Department of Medicine, Kurdistan Pediatric Society, Hevi Hospital, and the Iraqi Pediatric Society.

"Management of Common Pediatric Epilepsies"

Held 23 April 2024

Watch the recorded Virtual Clinical Seminar

Presented by:

Renowned Pediatric Neurologist

Dr. Jean-Baptise Le Pichon, MD, PhD, FAA

Dr. JB's written answers to questions asked during the live seminar:

Question: What is the most appropriate antiepileptic drugs given for epileptiform discharges in seizure free autism cases and their efficacy?

Dr. JB Answer: *Hummm… This question is a bit confusing, but I will do my best to answer:*

1. *If the child is seizure-free and only has epileptiform discharges on EEG, there is no need to treat. Always remember that you treat the child, not the test. Abnormal EEGs with interictal discharges should not be a reason to treat UNLESS the child has clinical seizures.*
2. *Children with autism have a much higher incidence of epilepsy than neurotypical children (20 to 30%, depending on the studies). In my experience, they respond very well to topiramate and zonisamide. I would recommend avoiding levetiracetam as it can cause a lot of irritability.*

Question: What is the most effective antiepileptic drug to treat epilepsy among cases with ASD?

Dr. JB Answer: This question was answered above (ASD: Autism Spectrum Disorder).

Question: Do epileptiform discharges in a normal child need anti-seizure medicine?

Dr. JB Answer: NO!!! If there are no clinical seizures, there is nothing to treat. The one exception being 3hrz generalized spike and wave discharges. If this is present, it is probable that the child has absence epilepsy, and absence seizures are often missed or attributed to the child being inattentive.

Question: [What is the] difference between phenobarbital and phenobarbitone? are the same?

Dr. JB Answer: Nothing, just different names for the same drug (also Luminal in some regions of the world).

Question: Is there a role for asking kids with epilepsy to be away of microwaves and WiFi? Does the smart technology worsen epilepsy?

Dr. JB Answer: No, there is no evidence that microwaves or wifi cause any problems. Smart

technology is generally not an issue. The only exception being screens projecting flashing images. If they reach the right frequency, they can provoke seizures in photosensitive epilepsies (Juvenil Myoclonic Epilepsy being one of the most photosensitive epilepsies).

Question: In the steering of absent Pediatric Neurologist, who should see patients with epilepsy and neurological disease - General Pediatric Senior of adult neurologist ?
Dr. JB Answer: That is a tough question. I would say anyone who can. Any care is better than no care!

Question: Can we give midazolam infusion for non intubated child with status epilepticus?
Dr. JB Answer: Yes, I have seen it done in our pediatric intensive care unit, but BEWARE! That child is at very high risk for respiratory insufficiency, so be ready to intubate!

Question: Refractory to others anti epileptic drugs?
Dr. JB Answer: See above.

Question: My question is why there are focal and generalized seizures and not only generalized ones as we know each neuron is connected to thousands of other neurons in the brain and each of these neurons is further connected to many other neurons making the total number of neurons in the brain interconnected to each other. Which means that if one neuron goes crazy all others can be affected as wel [sic? - no further typing]
Dr. JB Answer: Excellent question. To answer it I will take the image of a pond. If you throw a rock in the middle of the pond, the wave will spread evenly to the rest of the pond. That would be the equivalent of a generalized seizure. If you throw a rock on the side of the pond it will slowly propagate from one side to the other. This is equivalent to a seizure starting focally, say in the temporal lobe. It will eventually reach the rest of the brain but will do so gradually. Clinically, what you will observe is called a "Jacksonian March".

Question: [What is the] Antiepileptic drug of choice in patient with liver failure?
Dr. JB Answer: Levetiracetam or gabapentin, they have no liver metabolism.

Question: Why [do] we give loading dose in AED?
Dr. JB Answer: Loading doses are necessary for children in status epilepticus to improve rapidly reaching the Cmax for the drug. This is necessary, especially with drugs with slower absorption and bioavailability such as phenytoin, phenobarbital, or valproate. It is not absolutely necessary for drugs with very high bioavailability, such as levetiracetam.

Question: what is the idea behind giving loading dose ? what is the benefits ?
Dr. JB Answer: See above.

Question: [What is] duration of AED and when to stop?
Dr. JB Answer: Most neurologists will treat until the child reaches two years of seizure freedom and then will gradually wean the anti-seizure medication.

Question: What is the best antiepileptic in newborn?
Dr. JB Answer: There are lots of arguments about that, but it is generally accepted that phenobarbital and levetiracetam should be first line. Phenytoin is also frequently used. Valproate should almost never be used.

Question: Any role of paraldehyde in status epilepticus?
Dr. JB Answer: Interesting question. I have never used paraldehyde for the treatment of Status Epilepticus (or anything else for that matter). I am not sure why we don't use it in the USA.

Question: In case iv levetiracetam iv is not available, can we give oral levetiracetam in persistent

epilepsies of status epilepticus in newborns or older children?
Dr. JB Answer: Yes, it has an excellent bioavailability and will be rapidly absorbed. It will reach Tmax in about one hour, but you will reach effective concentrations much faster. The dose is 1:1 with IV.

Question: What are special dietary needs for epilepsy?
Dr. JB Answer: As a general rule there are no special dietary needs with a few exceptions:

1. Patients on a ketogenic diet should avoid carbohydrates.
2. Carnitine supplementation may be of value for patients on valproate.

Question: Can [you] use medazolam by IV like lorazepam in status epilepticus, and why cannot repeat like lorazepam? because if afraid from sedation, both are sedating!
Dr. JB Answer: IV lorazepam is generally given as a loading dose of 0.1mg/kg in the emergency room for status epilepticus. It can be repeated once or twice but be ready to bag and mask ventilate if respiratory depression occurs.
Midazolam is an excellent alternative. In fact it is available in a nasal formulation in the USA (Nayzilam) that is frequently used for rescue. In the hospital midazolam is most often used as a drip in patients in status epilepticus, but there is no reason it can't be used for the initial rescue. Any benzodiazepine will work!

Question: My question is whats the best 1st. line AED for the focal and generalized seizure?
Dr. JB Answer: Focal: Carbamazepine or oxcarbazepine
Generalized: Levetiracetam, zonisamide, or topiramate would be excellent first choices depending on the patients.

Question: the age to do L.P in a patient with seizures and fever is below 1 year of age (in nelson text book is less than 6 months)
Dr. JB Answer: More recent data argues that if you have a source, in a child 3 months old or more you do not need an LP. In a child younger than 3 months with a fever and a seizure you always need an LP.

Question: Do we have non- pharmacological care to help them
Dr. JB Answer: Yes, the ketogenic diet and surgeries (VNS, RNS, focal resections, callosotomies, etc.) are all non-pharmacological options.

Question: After 3 years of phenobarbital. Do we have to begin with?
Dr. JB Answer: Ideally no child should be on phenobarbital for three years. But if that is the only option, it is better than having seizures. If there are other options, another ASM should be substituted as soon as possible after three months of age. The best choice of ASM will dependent on the child and the seizure type.

Question: What should be discharge medicine which epileptic should be if pt hv status epilepticus what is duration
Dr. JB Answer: The Antiseizure Medicine (ASM) should be adapted to the child's epilepsy and special circumstances (focal vs generalized epilepsy, is the child irritabole at baseline-don't use levetiracetam-, is the child younger than 3 years old- don't use valproate, etc.).
The definition of Status Epilepticus varies. In the old days it was at least 30 minutes in duration. Most experts now agree that it should be closer to 5 or 10 minutes or anytime two seizures occur in succession without returning to baseline in between the seizures.

Question: How many patients [do you] treat by surgery
Dr. JB Answer: At our hospital I would guess that we do about 15 to 20 resections a year and 20 to 30 VNS. But it is a guess. Generally, surgery is reserved for medication resistant epilepsy.

Question: What about cognitive S/E of anti epilepsy drugs

Dr. JB Answer: Valproate is the only ASM to have ever shown a drop in the IQ of the children of mothers who took VPA during the pregnancy.
Phenobarbital is extremely sedating.
Topiramate can cause cognitive slowing.
The other ASMs are generally well tolerated from a cognitive point of view.

Question: What can be the drug of choice for seizure in head trauma patients and in neonates?
Dr. JB Answer: Head trauma: If intracerebral hemorrhage, levetiracetam is the drug of choice. If not available phenytoin or phenobarbital are acceptable substitutions.
Head trauma: No intracerebral hemorrhage and no seizures: No ASM is needed.

Question: You prefer surgery over medical treatment ?
Dr. JB Answer: Surgery is generally reserved for patients who have failed medical management.

Question: What is the best AED in cases that along with epilepsy have psychiatric problems e.g. depression?
Dr. JB Answer: All ASMs have a potential risk of increasing suicidality. But levetiracetam is great in suicidal patients as it is virtually impossible to overdose.

Question: Child after Encephalitis and brain insult. If develope seizure. With what we have to begin?
Dr. JB Answer: Levetiracetam is always a good choice. Carbamazepine or oxcarbazepine would also be excellent choices.

Question: You mentioned in the lecture that carbamezapine used only for focal epilepsy?? Why
Dr. JB Answer: Because it can cause status epilepticus in certain generalized epilepsies, such as absence epilepsy.

Question: Anti histamin with antiepileptics?
Dr. JB Answer: First generation antihistamines (with the exception of diphenhydramine) should be avoided. Second generation antihistamines (cetirizine, etc.) are OK.