Epilepsy for Pediatrician: Tips and Tricks

Prof. Prathiba Singhi, MBBS, MD, FIAP, FNAMS

Objectives:

1. Revisiting the diagnostic criteria for epilepsy.
2. Understanding the practical clinical approach of the most common types of epilepsy and epileptic syndromes.

Epilepsy is one of the most common neurological problems encountered and managed by general practitioners, general pediatricians and pediatric neurologists. Approximately 8-10% of the population have at least one seizure in their lifetimes, while 0.5-1% of children up to 16 years of age have epilepsy, with 60% of epilepsy cases started in childhood. An epileptic seizure is a transient occurrence of sign and/or symptoms due to abnormal excessive and synchronous neuronal activity within the brain. Epilepsy is a disorder of the brain characterized by an enduring predisposition to generate epileptic seizure and by the neurobiological, cognitive, psychological, and social consequences of this condition. This definition requires the occurrence of at least one episode of epileptic seizure and is usually applied as having two unprovoked seizures more than 24 hours apart.

Definition and diagnostic criteria

Based on the International League Against Epilepsy (ILAE), epilepsy in defined by any of the following conditions: 1) at least two unprovoked seizures occurring >24 hour apart; 2) one unprovoked seizure and a probability of further seizure similar to the general recurrence risk (at least 60%) after two unprovoked seizures, occurring over the next 10 years; 3) diagnosis of an epilepsy syndrome.[1] The central concept in this definition is an enduring alteration in the brain that increases the likelihood of future seizures, where a single epileptic seizure due to an enduring epileptogenic abnormality that increases the likelihood of future seizure would indicate epilepsy, and a single epileptic seizure in a normal brain would not.[2]

The 2017 ILAE Classification of the Epilepsies defined three diagnostic levels including 1) seizure type; 2) epilepsy type, and 3) epilepsy syndrome, emphasizing that etiology and comorbidities must be considered at each level.[1]

Clinical approach

In case of reported seizure, the first question that every general pediatrician and pediatric neurologist needs to answer is whether it is an epileptic seizure or a non-epileptic event. In infants and children, there some common non-epileptic events that mimic seizure. The next step of the diagnostic approach will be to evaluate the age of onset, type of seizure(s), precipitating factors, neurodevelopmental status, history of previous seizure(s), familial history of seizure, electroencephalograph (EEG) characteristics and/or neuroimaging (as indicated). Epilepsy syndromes present with more severe epilepsies, with some of it related to age-specific, which may help us in determining the possible differential diagnoses, and subsequently, the final diagnosis. In addition, it is also essential to consider the possibility of metabolic causes in certain epilepsy syndromes, (e.g. epileptic spasms, early myoclonic epilepsy, etc.), as some of them are treatable.

It is imperative for general pediatricians to refer to pediatric neurologists for further evaluation. The presence of any focal or specific type of seizures (e.g. spasms, myoclonic, atonic, gelatic, etc.), suspicion of epilepsy syndromes, familial hereditary pattern, neurodevelopmental delays, neurological deficit(s) or disorder(s), progressive epilepsies or non-responsiveness to antiepileptic drugs re required to be referred.

References

1. Wirrell E, Tinuper P, Perucca E, Moshè SL. Introduction to epilepsy syndrome papers. Epilepsia. 2022;63:1330-2. doi: 10.1111/epi.17262
2. Fisher RS, Acevedo C, Arzimanoglou A, Bogacz A, Cross JH, Elger CE, dkk. ILAE official report: a practical clinical definition of epilepsy. Epilepsia. 2024;5:475-82. Doi: doi: 10.1111/epi.12550