Should children over 12 years have an EEG after a single unprovoked epileptic seizure?

S.Kodagali, A.Orsini, E.Morris, S.Thomas, Z.Zaiwalla, G.Anand

Background:

The utility of electroencephalographic recording (EEG) for diagnosis of an epilepsy syndrome after the first unprovoked epileptic seizure has been widely debated. While recent studies have suggested that an EEG after the first seizure may be helpful in some patients, current guidelines do not recommend their use in routine practice until after the second seizure event.

Aim:

To establish whether a standard sleep and wake video EEG (vEEG) performed in children over the age of 12 years, after a single unprovoked epileptic seizure, could offer greater yield of diagnosis of epilepsy syndromes than in younger children.

Methods:

Retrospective analysis of indications and EEG findings of consecutive wake and sleep vEEGs performed between Jan 2010- Dec 2010. Data were analyzed for both the whole group, and the two sub-groups studied (age 1 month 12 years and 12-17 years).

Results:

- 103 EEGs were performed after first unprovoked seizure
- Median age – 7 years; range: 1 month to 7 years
- In the study population, 18 children had a diagnosed neurodevelopmental problem. Twenty-one children had a family history of epilepsy and 14 of prior febrile seizures.
- Seizure semiology included tonic-clonic, (n=52), focal (n=12), focal with secondary generalization (n=16), autonomic (n=6), atonic (n=1), myoclonic (n=1), and uncertain (n=15) seizure types.
- vEEG outcomes included normal (n=50, 48.5%), non epileptic events recorded (n=6, 5.8%), and suggestive of an epilepsy syndrome (n=47, 45.6%).
- Excluding the 6 patients with non-epileptic events, the remaining 97 were divided into two sub-groups based on the age at the time of the EEG recording – Group A (1m-12 yrs), Group B (12yrs-17 yrs).
- In group A, an epilepsy syndrome was identified in 41% (30/74), compared to 74% (17/23) in group B (chi-square test, p <.05). Of the patients in study group B, only 2 had an underlying neurodevelopmental problem. Where a diagnosis of an epilepsy syndrome was made, more than two thirds of patients had genetic generalised epilepsy syndromes (n= 12; 5 cases of juvenile absence epilepsy, 5 juvenile myoclonic epilepsy, and 2 unspecified), with only 5 cases of focal epilepsy identified (BECTS (n=2), Gastaut late-onset occipital epilepsy (n=1), focal lesional (n=1), and others (n=1)).

Patients' group	EEG not supportive of epilepsy syndrome	EEG supportive of epilepsy syndrome
A + B	50	47
A only	44	30
B only*	6	17
*p<0.5

Conclusion:

This study demonstrates that a vEEG performed after a first epileptic seizure may identify an epilepsy syndrome in a significant proportion of patients over the age of 12 years.