CLINICAL NEUROPHYSIOLOGY

Focal EEG abnormalities in juvenile myoclonic epilepsy

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Background and Objective: Juvenile myoclonic epilepsy (JME) is a common genetically determined idiopathic generalized epilepsy. JME typically presents with generalized tonic-clonic, myoclonic or absence seizures or a combination of these. The EEG in untreated patients is usually abnormal, with generalized discharges of an irregular mixture of 3-6 Hz spike / poly-spike and slow waves, with intra-discharge fragmentation and unstable frequency. However, focal clinical and EEG features are often reported in JME. The aim of this study was to identify the prevalence of various focal EEG abnormalities in patients with JME.

Methods: Clinical and EEG data of patients attending the Epilepsy Clinic of the Institute from July 2001 to June 2006 with a diagnosis of JME was analyzed. All the patients had GTCS and myoclonic jerks with or without absences. A 60 minute awake and sleep EEG (hyperventilation - 3 min and Photic stimulation 1-30Hz) after sleep deprivation was performed. The prevalence of various focal EEG abnormalities – focal onset (spike / slow wave) of generalized discharges, independent focal spike / sharp wave discharges, focal slowing (either associated with or independent of generalized discharges), phase reversals, asymmetry in generalized discharges and & photo paroxysmal response (PPR) were noted. Two consultants independently read all EEGs and findings in agreement were reported.

Results and Discussion: There were 167 patients; 80 were males. The age ranged from 7 to 50 years. Mean duration of epilepsy was 9 years. About a third of the patients had seizures on awakening. Focal semiology in GTCS was noted in 11.2% and asymmetric myoclonic jerks were seen in 24.5%. The EEG was abnormal in 65% (109). Among the patients with abnormal EEG, generalized spike and wave (SW) activity was noted in 34%, polyspike and wave (PSW) in 51.3%, generalized sharp wave activity in 9.2%, slowing in 5.5% and PPR was positive in 24.7%. Focal EEG abnormalities were noted in 38% - focal spikes before or after the generalized SW in 8.2%, asymmetry of SW/PSW discharges was found in 8.2%, independent focal spikes/SW activity in 27.5%, and focal slowing in 4.5%. Asymmetry of generalized discharge during PPR was noted in 1.8%. Focal EEG abnormalities were predominant in the frontal (45.2%) and temporal (28.6%) leads and 19% showed hemispherical discharges. Focal abnormalities in most cases were restricted to frontal/temporal lobes. Phase reversals, pathognomonic of focal epilepsies, were noted in 9 patients.

Conclusion: Focal EEG abnormalities were noted in 38% of patients with JME. Independent spike or sharp-wave discharges were the commonest focal abnormality. This study substantiates that patients with JME, often showing clinical and EEG focal abnormalities, which if not appreciated, may lead to misinterpretation and erroneous diagnosis of a focal seizure.

References

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