Original Research Article

Clinical Profile and Etiology of Adolescent Epilepsy: A Study at Tertiary Care Hospital

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Abstract

Background: Epilepsy is the most common neurological disorder of adolescence. The clinical profile, etiology and clinical pattern, varies with age dependent fashion and adolescent epilepsy differs sharply from others. **Aim:** To observe the clinical profile and etiology of adolescent epilepsy in a tertiary care hospital. **Material and Methods:** A total of 30 adolescents between 10 to 18 years age group with epilepsy were evaluated for clinical signs and etiology of epilepsy. Then careful physical and neurological examinations of all children were performed. Then EEG tracing and MRI findings were recorded. **Results:** Generalized type of seizure was seen in 25 (83.33%) cases, amongst these cases of generalized seizure, commonest subtype was tonic-clonic in 22 (73.3%) cases followed by absence seizure 2 (6.6%). Neurocysticercosis 6 (20%) was the commonest etiology followed by fever triggered seizure 5 (16.6%) and hypoxic ischemic encephalopathy in 3 (10%) cases. **Conclusion:** In adolescent epilepsy, generalized tonic-clonic seizure alone and febrile seizure plus syndromes are more often diagnosed with neurocysticercosis and fever triggered seizure as the common etiology.

Key Word: adolescents, seizure, generalized tonic-clonic seizure, neurocysticercosis

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Received Date: 07/05/2018 Revised Date: 01/06/2018 Accepted Date: 22/07/2018
DOI: https://doi.org/10.26611/1014722

Access this article online

Quick Response Code:

Website: www.medpulse.in

Accessed Date: 06 August 2018

INTRODUCTION

Epilepsy is a disorder of the brain characterized by an enduring predisposition to generate the seizure. It has been defined as paroxysmal involuntary two or more unprovoked seizures that will have future recurrences.[1] Adolescence, a period of development from the age of 10-18 years, is a transitional stage of physical and psychological human development. Adolescents show significant neuropsychological progress in the years leading up to adulthood.[2] Epilepsy is the most common neurological disorder of adolescence.[3,4] There are some important epilepsy syndromes commonly present in adolescence such as juvenile myoclonic epilepsy (JME), Juvenile absence epilepsy (JAE), febrile seizures and generalized tonic-clonic seizure alone, etc. Epilepsy may have an onset at this time or pre-existing epilepsy may continue to remit or deteriorate. Accurate history taking is crucial to the diagnosis. Investigations are used to classify epilepsy syndromes in order to guide treatment and inform on prognosis and to identify any underlying cause. The clinical profile, etiology and clinical pattern, varies with age dependent fashion and adolescent epilepsy differs sharply from others. The present study was conducted to observe the clinical profile and etiology of adolescent epilepsy in a tertiary care hospital.

MATERIAL AND METHODS

This prospective cross-sectional study was conducted in paediatric, medicine ward and outpatient department of our tertiary care hospital over a period of two years. A total of 30 adolescents between 10 to 18 years age group with epilepsy were evaluated for clinical signs and

How to cite this article: Sheenu Gupta, Veeranna Kotrashetti, Imran Patel. Clinical Profile and Etiology of Adolescent Epilepsy: A Study at Tertiary Care Hospital. *MedPulse International Journal of Pediatrics.* August 2018; 7(2): 30-32.
http://medpulse.in/Pediatrics/index.php

etiology of epilepsy. Approval from Institutional Ethics Committee was obtained prior to initiating the study. Informed written consent was taken from the parents or guardians of all children.

Inclusion criteria

- All patients of age group of 10 to 18 years
- Patients with history of seizure episode
- Both gender
- Willing to participate in the study.

Exclusion criteria

- Age <10 years of age
- Adult patients (>18 years of age)
- Not willing to participate in the study

After taking informed consent, parents were interviewed in person for a detail history about the age of onset of seizure, type of seizures, frequency of seizure, family history of seizure disorder, presence of neurological abnormality before first seizure, birth history, past history of meningitis, encephalitis, head trauma were taken. Then careful physical and neurological examinations of all children were performed. Then EEG tracing and MRI findings were recorded.

RESULTS

In this study, majority of the patients were of the 11 years with mean age of 11.58±1.36 years. Out of 30 patients included, 17 (56.67%) were male and 13 (43.33%) were female. These cases were classified as per ILAE revised terminology for organization of seizures and epilepsies 2011-2013. Generalized type of seizure was seen in 25 (83.33%) cases, whereas, in 5 (16.67%) cases focal type of seizures was seen. Amongst the 25 cases of generalized seizure, commonest subtype was tonic-clonic in 22 (73.3%) cases followed by absence seizure 2 (6.6%) and myoclonic seizure 1 (3.3%).

Table 1: Distribution of cases according to examination and investigations

Examination	Frequency	Percentage
General physical examination		
Normal	26	86.67%
Abnormal	04	13.33%
Neurological examination		
Normal	24	80%
Abnormal	06	20%
EEG Report		
Normal	17	56.67%
Abnormal	13	43.33%
MRI examination		
Normal	13	43.33%
Abnormal	13	43.33%
Not done	04	13.33%

In majority of the cases physical (26/30 cases) and neurological (24/30 cases) examination was normal. On investigations, EEG was normal in 17 (56.67%) cases. MRI was done in 26 (86.6%) cases which revealed abnormality in 13 (43.3%) cases.

Table 2: Distribution according to Syndrome classified

Syndrome classified		Frequency	Percentage
Unclassified		16	53.33%
Classified	FS+	5	16.67%
	GTCSA	5	16.67%
	JME	2	6.67%
	JAE	2	6.67%
Total		30	100%

FS+=Febrile seizures plus; GTCSA=Generalized tonic-clonic seizure alone; JME=Juvenile myoclonic epilepsy; JAE=Juvenile absence epilepsy Applying ILAE revised terminology for organization of seizures and epilepsies 2011-2013, we were able to classify only 14 (46.7%) in an epileptic syndrome, while 16 (53.3%) were unclassified. Among the common syndrome were GTCSA and FS plus 5 (16.6%) each were classified.

Table 3: Distribution of etiology

Etiology	Frequency	Percentage
Symptomatic	18	60%
Neurocysticercosis	06	20%
fever triggered seizure	05	16.6%
hypoxic ischemic encephalopathy	03	10%
tuberculoma	01	3.3%
Idiopathic	12	40%

There were 18 (60%) cases of symptomatic epilepsy and 12 (40%) were idiopathic. Neurocysticercosis 6 (20%) was the commonest etiology in our study followed by fever triggered seizure 5 (16.6%), hypoxic ischemic encephalopathy 3 (10%) and tuberculoma 1 (3.3%).

DISCUSSION

Among 30 adolescent patients studied majority i.e., 17 (56.67%) were male. In our society, usually the boys get more preference in seeking care for health problems which might explain the male preponderance in our study. In present study, generalized type of seizure was seen in 25 (83.33%) cases, whereas, in 5 (16.67%) cases focal type of seizures was seen. Amongst the 25 cases of generalized seizure, commonest subtype was tonic-clonic in 22 (73.3%) cases followed by absence seizure 2 (6.6%) and myoclonic seizure 1 (3.3%). In a study by Al-Sulaiman *et al*, the main seizure types were generalized 60.4% and partial 32.7% these findings were consistent with our study.[5] Ismail HM reported the common seizure type were generalized 41.4% and partial 37.9%, partial with secondary generalization in 20.7%.[6] The types of epileptic syndrome included localization related 15

(51.7%), generalized 12 (41.4%) and undetermined in 2 (16.9%). Ahmed S *et al*reported highest 16(32%) patients of tonic-clonic seizure and myoclonic seizure in 4(8%).[7] In our study, neurocysticercosis 6 (20%) was the commonest etiology followed by fever triggered seizure 5 (16.6%), hypoxic ischemic encephalopathy 3 (10%) and tuberculoma in 1 (3.3%). In a study of paediatric epilepsy by Sillanppa *et al*, etiology of seizure was idiopathic in 28%, cryptogenic in 22% and remote symptomatic in 50%.[8]Another study by Al-Sulaiman *et al* reported hypoxic ischemic encephalopathy etiology in 14.8% cases followed by febrile seizure in 9.1%.[5] In a study from rural Uttarakhand, neurocysticercosis related seizure accounted for a significant proportion of the crude prevalence rate of active epilepsy 24.8% of the patients with active epilepsy had seizure secondary to neurocysticercosis and 9.9% had remote symptomatic seizure related to calcified granuloma (47%).[9] MRI was done in 26 (86.6%) cases which revealed abnormality in 13 (43.3%) cases. Ismail HM found abnormal neuroimaging report in 27.6%,[6] whereas, Sharma *et al* found abnormality in 26%. This was consistent with our study.[10]In our study, EEG was normal in 17 (56.67%) cases. An EEG should not be used to diagnose epilepsy, but remains absolutely necessary for proper management of epileptic patients. We found more normal EEG tracing while other studies reported it to be 14% and 18%.[11,12] This discrepancy might be due to majority of patients were treated with antiepileptic drugs by local doctors before doing EEG.

CONCLUSION

In adolescent epilepsy, generalized tonic-clonic seizure alone and febrile seizure plus syndromes are more often diagnosed with neurocysticercosis and fever triggered seizure as the common etiology. Accurate diagnosis of epilepsy in developing countries is a challenge, and misdiagnosis should be avoided in order to establish the correct treatment.

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Source of Support: None Declared
Conflict of Interest: None Declared