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Behavior Problems in Children With Epilepsy (Age 6–14 years): A Prospective Observational Study

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ABSTRACT

Background: Epilepsy's psychological effects are variable, some may experience a few mental health issues while some may experience serious problems such as anxiety, depression, attention deficit hyperkinetic disorder (ADHD), and mood disorders. Hence, there is a need to screen these problems at an early age for timely intervention. So, our study was conducted to determine the prevalence of emotional and behavioral problems in children with epilepsy.

Methods: This was a prospective observational study on 111 children, 6 to 14 years of age. The overall prevalence of emotional and behavioral problems in childhood was determined by calculating the percentage of children with child behavior checklist score indicative of specific emotional and behavioral problems. The prevalence for specific morbidities was also calculated and reported separately for each condition. Results were presented in the form of tables, charts, graphs, and narratives.

Results: The overall prevalence of emotional and behavioral problems in children was 38.7%. Attention problem (13.5%), aggressive behavior (10.8%), social problems (8.1%), and withdrawal/depression (6.3%) were the four leading syndromes. The prevalence of emotional and behavioral problems was significantly associated with the age of onset of epilepsy, type of epilepsy, frequency of seizures, and antiepileptic drug therapy used by child.

Conclusion: As there is a higher prevalence of emotional and behavioral problems in children with epilepsy, age of onset, frequency of seizure, and duration of diseases were found to be significantly associated with the occurrence of behavioral problems. Therefore, prompt and early screening for these problems, as well as integrated management consisting of pharmacotherapy, behavioral modification, parental education and counselling, psychotherapy and psychoeducation would help to reduce their effect in these patients.

Keywords: Attention problems, Child behavior checklist, Counselling, Epilepsy

INTRODUCTION

A seizure is a transient, paroxysmal, pathophysiological disturbance of cerebral function caused by spontaneous, excessive discharge of neurons. The World Health Organization (WHO) defines epilepsy as a neurological condition characterized by the occurrence of two or more unprovoked seizures. For epidemiological classification purposes, epilepsy is considered to be present when two or more unprovoked seizure occurs at an interval > 24 hours. Epilepsy is the most common chronic neurological disease in the general population and childhood, affecting ~50 million people worldwide.[1] Approximately 5% to 10% of children have a seizure episode during the first two decades of life.[2] The lifetime prevalence rate of epilepsy is 1%.[3] Children with epilepsy suffer from symptoms of disease, adverse effect of therapy, risk of recurrence, development of behavioral

problems risk of accident, and social stigma. Cognitive effects sometimes also occur due to the injurious effects of the seizures on the brain. The patients may also sustain physical injuries such as burns and fractures as a result of the seizures. In addition, antiepileptic drugs (AEDs) for epilepsy are often associated with side effects which, may impair patients' quality of life.[4] Pediatric epilepsy is of particular concern to psychiatrists due to the high frequency of associated mental problems, including psychiatric and neurodevelopment disorders, and psychosocial problems. Children with epilepsy have also been found to be at an increased risk for unmet mental health needs, hence there was a need to conduct this study in second tier study where there have not been various studies to address this important issue for timely screening and intervention of these emotional and behavioral problems in children.

MATERIALS AND METHODS

Aims and objectives

To find behavioral problems in children with epilepsy and factors affecting them

A) Onset of seizure
B) Duration of seizure
C) Frequency
D) Type of seizure
E) Anti-epileptic drug

Study design -Prospective observational study
Study period - January 1, 2018, to March 31, 2019
Study area - OPD follow-up case of epilepsy

Inclusion criteria

- 6–14-year-old children with epilepsy.

Exclusion criteria

- Febrile seizure,
- Symptomatic epilepsy
- Dyselectrolytemia
- Pyogenic meningitis
- Intellectual deficit (ID)-less than 70 intelligent quotient (IQ)

Study group

Children presenting with epilepsy in the age group of 6 to 14 years.

Sample size

The sample size was calculated using the simple random sampling formula; a sample size of 140 was calculated, out of which 111 completed the study.

Data collection

Children with epilepsy aged between 6 and 14 years attending the follow-up at the Pediatric Outpatient department (OPD) of a tertiary care center in a second-tier city who met the study criteria were recruited, having obtained consent from their legal guardians.

Data analysis

Researcher-designed socio demographic questionnaire

This questionnaire captured data on various variables, such as type of seizures, frequency of seizures, age of onset of epilepsy, and whether the patient is on monotherapy, polytherapy, or not on medication.

The results were assessed using the Child behavior Checklist (CBCL).

Ethical considerations

Approval to carry out the study was obtained from the ethics committee. Study participants received adequate information about the study and the potential risk and benefits to ensure that they gave informed consent as per the consent explanation. The information obtained from the participants was confidential and was only used for the purposes of this study.

RESULTS

The study was done on 140 children, of which 111 completed the study and 29 were lost to follow-up. [Table 1] shows emotional and behavioral problems finding on CBCL. Sixty-eight (61.3%) had normal behavior and 33 (38.7%) had behavioral problems. The most common behavioral problems were attention behavioral problems (13.5%) and aggressive behavioral problems (10.1%), while 9 (8.1%) and 7 (6.3%) patients had social and withdrawal problems, respectively.

Table 2 shows the relation of behavioral problems with various factors such as the age of onset of seizures, duration of episodes, frequency of seizures, type of epilepsy, and antiepileptic drugs. Results that were found to be significantly associated with *p*-value less than 0.05 were

Table 1: Prevalence of behavioral problems as per child behavior checklist.

Behavioral problems	Number of subjects
Normal	68 (61.3%)
Attention problems	15 (13.5%)
Aggressive problems	12 (10.1%)
Social problems	9 (8.1%)
Withdrawal problems	7 (6.3%)

Table 2: Relation of behavioral problems with other factors.

Frequency of seizures			
Behavior and behavioral Problems	<3 Episodes	3–5 Episodes	>5 Episodes
Normal	26 (81.1%)	37 (61%)	5 (28%)
Abnormal	6 (19.9%)	24 (39%)	13 (72%)
Chi square = 35.93; $p = 0.003$			
	Generalized epilepsy	Focal epilepsy	Others
Normal	52 (57.7%)	16 (76.1%)	12 (93%)
Abnormal	38 (42.3%)	5 (23.9%)	1 (7%)
Chi square = 9.42; $p = 0.022$			
According to No. Of antiepileptic drugs			
	Monotherapy	Polytherapy	
Normal	47 (77%)	21 (42%)	
Abnormal	14 (23%)	29 (48%)	
Chi square = 26.83; $p = 0.001$			

1. Behavioral problems were more (39.5%) in children with three to five episodes of seizures and maximum (72.3%) in > 5 episodes group and it is statistically significant $p = 0.003$.
2. Behavioral problems were more common in generalized tonic–clonic seizures and result was clinically significant ($p = 0.022$).
3. Behavioral problems were more common in children who were on polytherapy compared with those who were on monotherapy.

DISCUSSION

Sociodemographic characteristics of children with epilepsy

In this study, we found that there were 60 males (54.1%) and 51 female (45.9%). In previously reported studies, the prevalence of epilepsy by gender is variable. In the US, Ethiopia, Tunisia, Kenya, and Zambia, a higher prevalence has been reported in males. In a study done in Kenya, there were 177 males (66.1%) giving a male to female ratio of 2:1, while in Uganda and Nigeria, a higher prevalence has been reported in females as compared with males.[5]

Clinical characteristics of children with epilepsy

Almost two-thirds (67.6%) of the children had the first seizure at less than 8 years of age.

At least one-half (50.3%) of children attending epilepsy follow-up clinic had not had a seizure during the last one year, which is the definition of inactive epilepsy. This contrasts with a study done by Mung'ala et al in rural Kenya where the prevalence of inactive epilepsy was found to be 68.2%.[6] The reason for this could be due to the fact that the study was done in a community setting as opposed to this study, which was done in a hospital setting where more severe forms of disease are likely to be found.

The most common type of seizures were generalized tonic–clonic seizures (GTCS) were reported in 71.1% of children. Mung'ala et al in a study in rural Kenya also reported a high prevalence of GTCS and/or secondarily generalized seizures in overall two-thirds of children.[6] Similar findings have been reported in Pakistan and Uganda where the prevalence was 77% and 53%, respectively.[7,8] The reason for these differences may be due to difficulties in diagnosis in low- and middle-income social settings along with less number of cases were presented of absence seizure. The overall prevalence of emotional and behavioral problems in epilepsy. The overall prevalence of emotional and behavioral problems in children with epilepsy on follow-up in the OPD Pediatric Department of medical college hospital in a second-tier city was 38.8%.

Behavioral problems according to frequency of seizure

In our study, we found an increased frequency of seizure was associated with more prevalence of behavioral problems. Behavioral problems were more (39.5%) in children with three to five episodes of seizures and maximum (72.3%) in 99 > 5 episodes group and it is statistically significant ($p = 0.003$). Similar findings have been reported by Dunn et al and Freilenger et al, where increased an frequency of seizures has been seen to associated with emotional and behavioral problems.[9,10]

Behavioral problems with types of epilepsy

According to our study, behavioral syndromes were more with generalized epilepsy group and attention behavioral problems were more common in the generalized epilepsy group [Table 2]. The cause of high prevalence of generalized tonic clonic epilepsy as well as attention problems may be easily recognized by parents, society, and this apparently life threatening.

According to type of anti-epileptic drugs

According to our study, children who were taking more than one AED (polytherapy) were found to had more emotional and behavioral problems, 58% of children were on polytherapy having behavioral problems, while 22.96% of children were on monotherapy and had behavioral problems [Table 2]. Dunn et al have reported a significant association between polytherapy and behavioral problems.[9] Similar to our study, Freilinger et al found polytherapy to be associated with higher scores in attention, social, and aggressive behavior scales.[10] A

study done by Mishra et al found that there were no significant differences as regard to total behavioral problems between children on monotherapy as compared with polytherapy in both younger (10.5% vs. 17.1 %, $p = 0.35$) as well as older age groups (35% vs. 41.5%, $p = 0.41$), respectively.[11]

CONCLUSION

The results provide an important estimate of the burden of behavioral problems in children with epilepsy. There is a high prevalence (46.3%) of emotional and behavioral problems among children on treatment for epilepsy. Therefore, early screening for these problems as well as education of parents and other caregivers as well as children about their concerns would help to reduce their effect and help in the management of these patients. The most prevalent problems were attention problems, aggressive behavior, social problems, and withdrawal/depression Awareness of these conditions by the clinicians managing these patients would inform the choice of AED prescribed to avoid those, which may contribute to behavioral difficulties, as well as form a basis for integrated management comprising both pharmacotherapy and psychotherapy. Also, behavioral problems were more with increased frequency of seizures, those who were taking polytherapy, and those with GTCS type of seizures. These factors will also help in deciding the AED therapy, why it is important to control seizure frequency, and will also help the future studies to take up these factors in important consideration.

RECOMMENDATIONS

Screening of children with epilepsy for emotional and behavioral problems by clinicians would ensure early detection and hence reduce their effect. Sensitization of clinicians who treat children with epilepsy will inform the choice of AEDs used in their management, to avoid those medications linked to behavioral problems. Counseling regarding behavior problem must be given so as to lesser the burden. Patients on AED should be monitored with tools particularly on a polytherapy AED and normal IQ. All children should be sent to psychiatrists and pediatric psychologists for early detection and prompt intervention. Individual and group psychotherapy may be of help in children with epilepsy. It has been reported to improve self-esteem and reduce emotional and behavioral problems.

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Conflict of interest

None declared.

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