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A STUDY OF ETIOLOGY AND CLINICAL PROFILE OF FEBRILE CONVULSIONS AND EPILEPSY AMONG CHILDREN

Paediatrics

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ABSTRACT

Introduction: Around the world epilepsy is the most common neurological disorder of chronic nature. Prevalence of epilepsy is higher in developing countries, especially India. Seizures among children are common and challenging for the pediatrician. The objective of this study was to evaluate the etiology and characteristics of febrile convulsions and epilepsy among children

Methods: The present study was a prospective observational study conducted in a government district headquarters hospital among pediatric patients who had seizures. Subjects were recruited from pediatric ward, consecutively hospitalization of pediatric patients, and of either sex who presented with history of seizures. The data included demographic details and complete history of family history, birth details etc.

Results: Total febrile seizures were 25.46% and overall incidence was around 2.57%. Preponderance of male constituting 62.65% over female 37.35% was observed. Most of the febrile seizures were simple type. Fever due to upper respiratory tract infection was commonest cause. It was not associated with any complications. Epileptic cases were 38.65% of total cases and overall incidence was 3.9%. In this group also, there was male preponderance. It increased with age. Commonest presentations of epileptic seizures were generalized in 67.46%. Most common cause of acute symptomatic seizures was viral encephalitis (28.34%). Numbers of deaths were more in acute symptomatic.

Conclusions: Although febrile seizures are commonly benign, most families consider them very frightening. This puts pressure on clinicians to accurately reassure families by being equipped with the recent up-to-date knowledge. It is important to realize some special febrile seizure syndromes, which can have some long-term neurological abnormalities. More studies are still needed to help the medical community's understanding of the mechanisms, pathways, correlations, and clinical implications of seizures

KEYWORDS

Characteristics, Etiology, Febrile convulsions

INTRODUCTION

Fever is the most common cause of convulsions among the children of age less than five years. Febrile seizures are the most common among early childhood. Till date the etiology, importance as well as management of febrile seizures remained controversial. It is mainly aggravated by pyrexia due to infection which is outside the central nervous system. It has been estimated that 2-4% of children are affected by febrile seizures. Boys are commonly affected than girls.[1,2] There are two types of febrile seizures i.e. complex and simple. Complex type of febrile seizures may be focal or may manifest as generalized, they continue for more than 15 minutes, they are characterized by multiple seizures. On the contrary, the simple febrile seizures are isolated, they are brief, they last for less than 15 minutes and they are not repeated.[3]

Globally in all parts of the world, epilepsy is the most common neurological disorder of chronic nature. Prevalence of epilepsy is higher in developing countries, especially India. The reason for high prevalence is due to high incidence of infections of the cranium, trauma to head, injuries during birth, and perinatal birth asphyxia etc. Epilepsy is responsible for about 33% of seizures among children. In epilepsy, the centre of focus is in the brain. The incidence of epilepsy in developing countries is 2-6 times more than in developed countries i.e. it is 18 per 1000 population in developing countries compared to only 2.7-8 per 1000 population in the developed countries.[4]

If any child is having more than two episodes of epilepsy which are happening 24 hours apart as well as which are not provoked seizures then it can be called as epilepsy. Generalized epilepsy and partial epilepsy are the two types of epilepsy. Generalized seizures include absence seizures, petit mal, myoclonic, clonic, tonic, atonic and tonic-clonic. Whereas partial seizures may be simple without impairment of consciousness or complex with impaired consciousness. Seizures among children are common and challenging for the pediatrician.[5] Present study was carried out with the objective to study etiology and characteristics of febrile convulsions and epilepsy among children.

METHODS

The present study was a prospective observational study. Study was conducted in a government headquarters hospital. Study was done for a period of one year. Subjects who had seizures were included in the study. Pediatric patients of either sex who presented with history of seizures with any etiology those who were willing to participate were included in the study. Whereas those who are not willing to give consent were excluded. Study subjects were recruited from pediatric ward, consecutively hospitalization of pediatric patients, and of either sex who presented with history of seizures. A proforma with details like history of fever, duration and type of seizure, repetition of seizure within 24 hours. History of epilepsy and anti-epileptic drug use, seizure type, duration of seizures level of consciousness, as well as relevant past history and family history was recorded.

Necessary investigations like peripheral smear, complete blood count. Random blood sugar, serum sodium, serum potassium, serum calcium, blood urea, serum creatinine, liver function tests, blood culture and sensitivity, HIV-ELISA, urine examination, lumbar puncture, Chest X-ray were done. All patients were treated according to established guidelines. For the purpose of analysis statistical test like percentage, proportion, chi-square and chi-square for trend were used where ever applicable. P value <0.05 was considered as statistically significant.

RESULTS

Our study had a total of 209 cases among which 125 (59.8%) cases were male and 84 (40.2%) were female thus male to female ratio is 1.49:1. The incidence of seizure was maximum in the age group of 6 months to 3 years i.e. 89 (42.6%) cases. Chi square test was applied to study the distribution of seizure cases as per the sex distribution and it was found statistically not significant. Also in our study among 83 cases of febrile seizures 52 (62.65%) were male and 31 (37.35%) were female, i.e. male to female ratio is 1.68:1.

Among of 83 cases of febrile seizures typical type were more common 56 (67.47%) cases compare to atypical type, with 27 (23.53%). Amongst atypical type generalized pattern of seizures were more common.

Coming to the etiology our study shows that cause of fever in febrile seizures was mainly secondary to upper respiratory tract infection, i.e. 63.85%, followed by malarial fever 9.64%.

Table 1: Etiological distribution of febrile seizures.

Etiology	No. of cases	Percentage
URTI	53	63.85
Malarial fever	08	09.64
LRTI	07	08.44
AGE	03	03.62
Others	12	14.45
Total	83	100

In our study out of 126 epilepsy cases 85 (67.46%) were generalized seizure, 36 (28.57%) were focal seizures and 5 (3.97%) remain unidentified. Also, amongst total 126 cases of epilepsy acute

symptomatic were 60 (47.62%) most common, followed by idiopathic 45 (35.71%), and 21(16.66%) were remote symptomatic.

In our study out of 126 epilepsy cases 110 (87.30%) cases survived while 16 (12.70%) died. Common cause of death was in acute symptomatic type of epilepsy 11 (73.33%). The various causes of death were compared with sex of the study subjects, it was found statistically non-significant.

DISCUSSION

There were 209 seizure cases out of which in the present study 209 seizure cases were beyond neonatal age, out of which 126 (60.3%) were epileptic and 83 (39.7%) were febrile seizures. Similar finding was shown in the study of Verma AK et al who studied 69 cases of seizures and found 48 (69.5%) epileptic seizures and 21 (30.5%) were febrile seizures.[6]

In the present study out of 83 cases of febrile seizures 52 (62.65%) were male and 31 (37.35%) were female cases. Thus, the present study shows male preponderance, with male to female ratio of 1.68:1. Preponderance of male was also noted in the study by Sehagal et al who studied 150 case and found 65% male 35% female and Forsgren et al who studied 128 cases and found male to female ratio as 1.72:1.[7,8]

In the present study, the incidence of febrile seizures was 66.26% in between 6 months to 3 years, and there were 18.07% cases in between 3-5 years. Only 3.6% cases were below the age of 6 months and 12.04% above the age of 5 years. Similar type of finding was reported by Bhandari et al that 76.5% developed seizures before the age of three years.[9]

In the present study simple, febrile seizures were 56 (67.47%) and complex was (23.53%), which is similar to the findings by Deng CT et al who studied total 117 case and noted 66.6% simple febrile seizures and 33.3% were complex.[10]

In the present study, out of 83 febrile seizure cases 53 (63.85%) cause of fever was URTI, followed by malarial fever 9.64% then LRTI (8.44%). Similar finding were with the study by Simpson and George with study of 28 patients 70% URTI and 20% with LRTI, Bala et al who studied 150 cases and found 60.6% cause of fever was URTI.[11]

In the present study there were 126 cases of epileptic seizures with the incidence of 3.9%. Out of which 74 (58.73%) were male and 52 (41.27%) were female. There are very few epidemiological studies looking at the incidence of epilepsy from India specially hospital based. A recent study conducted in Kolkata urban population showed an annual incidence rate of 27.27 / 100,000 population/year.[12]

In the present study, out of 126 epilepsy cases 60 cases were due to CNS infection i.e. 47.62% followed by idiopathic (cryptogenic) which were 45 (35.71%) and remote symptomatic 21 (16.6%). Similar findings were presented by Murthy et al with 54% acute symptomatic, 19% idiopathic (cryptogenic) 27% were remote symptomatic.[13]

CONCLUSION

Although febrile seizures are commonly benign, most families consider them very frightening. This puts pressure on clinicians to accurately reassure families by being equipped with the recent up-to-date knowledge. It is important to realize some special febrile seizure syndromes, which can have some long-term neurological abnormalities. More studies are still needed to help the medical community's understanding of the mechanisms, pathways, correlations, and clinical implications of seizures.

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