



CLINICAL PRESENTATION OF CHILDREN ADMITTED WITH SEIZURES IN A TERTIARY CARE HOSPITAL IN BANGLORE: A PROSPECTIVE STUDY

Paediatric Medicine

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ABSTRACT

Background: Seizures are one of the major reasons for hospitalization in pediatric population and it carries a high mortality and morbidity rate. The present study was conducted to know the profile of acute seizures episodes among young children from 1 month to 12 years of age. This study seeks to evaluate the age-specific distribution, etiology, classification, and outcome of seizure in children. **Methods:** This hospital based prospective study was carried out in the Department of Pediatrics of Dr. B. R. Ambedkar Medical College, Bangalore from June 1, 2021, to February 15, 2023. Demographics, clinical manifestations, laboratory results, diagnosis, and hospital course in hospitalized children 1 month to 12 years of age were evaluated. **Results:** Out of 100 patients with seizures who were admitted, 59 of them (59%) were 0male and 41 (41%) were female. 52% children were from 2-6 years of age. Of all the of seizures, majority (54%) were having Generalized Tonic Clonic Seizures (GTCS). **Conclusions:** Hospitalization due to an acute seizure episode is one of the most frequent causes and has a significant mortality rate. Children who were feverish frequently experienced convulsions and seizures due to CNS illnesses.

KEYWORDS

Seizures, Febrile Seizures, CNS Infections,

INTRODUCTION:

A seizure is a transient occurrence of signs and/or symptoms resulting from abnormal excessive or synchronous neuronal activity in the brain^{1,2}. The international league against epilepsy (ILAE) operational classification of seizure types divides epileptic seizures into four categories based on the presumed mode of seizure onset: Focal, generalized, unknown onset, and unclassified³.

Focal seizures arise from a neuronal network either discretely localized within one cerebral hemisphere or more broadly distributed but still within the hemisphere. Focal seizures can be described as motor and non-motor seizures. They are further described as preserved and impaired consciousness. Simple partial seizures now called as focal aware seizure, is associated with intact consciousness⁴. Complex partial seizures or focal seizures with impaired awareness are the second group.

In generalized seizures, clinical and EEG changes show generalized synchronous⁵ involvement of both hemispheres. It may be motor type or non-motor type.

If there is no enough clinical information available whether the seizure is focal or generalised, it is labelled as unknown onset.⁶

If the clinical characteristics are unusual and determination of onset cannot be made even after all work up, it is called unclassified seizure.⁶ Epilepsy is a disorder of the brain characterized by an enduring predisposition to generate seizures and by neurobiological, cognitive, psychological and social consequences of the condition.⁷ The diagnosis of epilepsy is clinically made if there is occurrence of one unprovoked epileptic seizure with either a second such seizure or enough EEG and clinical confirmation to demonstrate an enduring predisposition to develop recurrences. Epilepsy is considered present when two or more unprovoked seizures occurred in a time frame of longer than 24 hours.⁸

MATERIAL AND METHODS:

This hospital based prospective study was carried out in the Department of Pediatrics of Dr. B. R. Ambedkar Medical College, Bangalore over a period of 21 months i.e. from June 1, 2021, to

February 15, 2023 after taking permission from the ethics committee of the institution.

All 1 month to 12 year children admitted in Pediatric ward and whose parents gave the consent were included in the study. +Written Informed consent was obtained from the subject's parents or guardians. Demographics, clinical manifestations, laboratory results, diagnosis, and hospital course in hospitalized children 1 month to 12 years of age were evaluated. A detailed history was taken including age, sex, socioeconomic, family history, seizure characteristics, duration and number of seizures, history of prior provoked seizure, prior neurological insult, developmental history, birth history and family history of seizures. Complete physical examination and neurological examinations were performed. Biochemical studies including blood sugar and serum electrolytes were checked wherever necessary. CT-scan and magnetic resonance imaging of the brain was performed when clinically indicated. Treatment with anti epileptic drugs were documented and immediate outcome was documented. The complied data was tabulated in numerical figure in the form of frequency and percentage. Hypothesis was tested by suitable statistical method based on the objectives.

RESULTS:

Out of 100 participants included in the study 59 (59.0%) were male and 41% were female with sex ratio was 1.4 as seen in Table-1 and majority of participants were in age group of 1 to 6 years (52%) followed by 24% in age group 1 month to 1 year. 23% children with seizures were in 7 to 12 years age group.

GTCS was seen in 54 cases (54%), tonic seizures were seen in 27 cases (27%), myoclonic seizures were seen in 15 cases (15%), the least percentage was attributed to focal seizures 2 (2%). Absence seizures were seen in 2 (2%) cases. The GTCS, tonic and myoclonic was statistically significant at 5% level ($p < 0.01$). (Table-1)

On observing the pattern of occurrence of intercurrent illnesses in patients admitted with seizure, the majority of the subjects had by Upper respiratory infections 20 (20%) followed by pneumonia 9 (9%) and diarrhea 4 (4%). Occurrence of intercurrent illness along with seizure were found to be statistically significant $p < 0.05$, chi-

square 12.80, $t=8.99$. [Table-2].

On enquiring about presence of family history of seizures, 33 cases were having family history. The association of family history and occurrence of seizures in children was found to be statistically significant. In participants having Febrile seizures, 31 (31%) were having Anemia and 19% of participants with Febrile seizures were not having anaemia. The occurrence of Anemia with Seizures was found statistically significant $p<0.05$, chi-square 10.88. [Table-3]

Table-1 Socio-demographic distribution of participants

	Number	Percentage
Gender		
Male	59	59
Female	41	41
Total	100	100
Age group		
1 month -1 Year	25	25
2-6 Yrs	52	52
7 -12 Yrs	23	23
Total	100	100
Type of seizure		
GTCS	54	54
Tonic	27	27
Focal	15	15
Myoclonic	2	2
Absence	2	2
Total	100	100

Table 2: Distribution of inter-current illnesses along with seizure in participants

Associated intercurrent illness	Number	Percentage
Pneumonia	9	9
Diarrhea	8	8
Urinary tract infections	5	5
Upper respiratory infections	20	20
Viral exanthema	4	04
Others	54	54
Total	100	100

Table 3- Distribution of participants according to occurrence of Family history and presence of Anemia

	Number	Percentage
Family history		
Yes	33	33
No	67	67
Total	100	100
Anemia		
Febrile seizures with anaemia	31	31
Febrile seizures without anaemia	19	19
Seizures with anaemia	20	20
Seizures without anaemia	30	30
Total	100	100

DISCUSSION:

Children are substantially more prone to seizures. The incidence is far more common in developing nations. Therefore, it is crucial to detect the disease early and take appropriate actions to actively control it. Therefore, it was intended for the current study to analyze the seizure spectrum in the pediatric age group, 100 patients who were admitted to the pediatric department participated in this study over a one and half year period.

In the current study, 59% of participants admitted with seizure were male and 41% were females. Males experience seizures in greater numbers, and data by Shetty et al. support this observation⁷. The fact that conditions like Focal Seizures, which make up the majority of the etiology of seizures, are more common in males with a sex ratio ranging between 1.4 and 1.2, may be one explanation for the above mentioned observation. The study on focal convulsions conducted by Bhat B V¹⁰ et al. revealed a sex ratio of 1.46.

According to our study, children aged 1 to 6 years had the highest incidence of seizures (52%), followed by children aged 1 month to 1 year (significantly higher at 25%), and children aged 7 to 12 years (significantly lower at 23%). Overall, it was found that as age increases, the incidence of seizures decreases. According to a research

by Dalmia et al., newborns account for 49% of all seizures, followed by infants, young children, and teenagers (14%). According to evidence found in published research, epilepsy incidence follows a bimodal platform and distribution¹¹. In the first twenty years of life and later in old age, the initial peak is observed.

Non febrile seizures were more common in the first year of life, particularly in the first month, according to research by Ellenberg JH et al. Epilepsy was shown to be most prevalent among children under the age of six in one study by Henry et al. In order to determine whether there are variations in the prescription of medications, it is crucial to examine the age of distribution of this seizure type in epidemiological research. Depending on the age ranges of the patients.¹²

The most frequent seizure type among children in the current study was generalized tonic-clonic seizures. Out of 100 patients, 54% had GTCS. According to the study by Shetty et al., GTCS account for 61% of all cases of pediatric seizures, making it the most prevalent form. Sil et al. reported a similar observation in their epidemiological study. The most common form of seizure documented in children aged 1 to 6 years was GTCS.¹³

In the current study, the majority of the cases presented with fever(73%). Pneumonia, diarrhea, URTIs, and viral fever were among the illnesses that were linked to seizures. In our study most cases of febrile seizures are associated with upper respiratory tract infections and acute gastro enteritis.

CONCLUSION

The incidence of convulsions is highest in the age group of 1 to 6 years and in males. The most common type of seizure is generalized tonic clonic. The most common cause of convulsion is febrile seizures. One third of the patients have a family history of convulsions.

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