e-ISSN: 0975-1556, p-ISSN:2820-2643

Available online on www.ijpcr.com

International Journal of Pharmaceutical and Clinical Research 2022; 14(12); 753-757

Original Research Article

A Hospital Based Observational Assessment of the Clinical Profile of Children Presented with Seizure

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Received: 25-09-2022 / Revised: 20-10-2022 / Accepted: 30-11-2022

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Conflict of interest: Nil

Abstract

Aim: The aim of the study was to describe the clinical profile of children presenting with seizure including common causes of seizure and classify the seizure types.

Methods: The present study was conducted in the Department of Paediatrics, S.K. medical college and Hospital, Muzaffarpur, Bihar, India for nine months and 120 patients were selected in the study.

Results: Majority of the patients were in 6 months-5 years 55% followed by 6-10 years 25% and >10 years 20%. There were 70% were male as compared to female 30%. According to type of seizure, majority of the patients had GTC 55% followed by partial 33.40%. In the present study, majority of the patients had febrile etiology 30% followed by infection 25% and seizure disorder 16.66%. Out of 120 patients, 96 were discharged without deficit and 16 were discharged with deficit.

Conclusion: Seizures are one of the most common neurological presentations leading to stress and anxiety among care takers. Seizures were found predominantly in male children. Most of the seizures witnessed were of Generalized Tonic Clonic type with febrile convulsion being the commonest variety of seizures in our pediatric population.

Keywords: Generalized tonic-clonic seizures, Neurocysticercosis, Encephalitis, Tubercular meningitis

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Introduction

Status epilepticus (SE) is a major medical and neurological emergency. Despite advances in treatment, it is still associated with significant morbidity and mortality. The working group on SE of the epilepsy foundation has defined SE as: “More than 30 minutes of continuous seizure activity or two or more sequential seizures without full recovery of consciousness between seizures”. [1] Lately it is becoming increasingly recognized that seizure duration of more than 10 minutes can lead to brain damage and duration of seizure activity in definition of SE is being decreased. [2] The incidence of childhood convulsive SE (CSE) in developed countries is approximately 20/100,000/year but it varies according to socioeconomic and ethnic characteristics of the population. [3] Age is a main determinant of the epidemiology of SE and even within the pediatric population there

are substantial differences between older and younger children in terms of incidence, etiology, and frequency of SE. SE can clinically manifest as convulsive (tonic clonic, clonic, tonic or myoclonic) or non-convulsive (absence, simple partial, complex partial) seizures. Duration of SE is a major determinant of response to antiepileptics and final neurological outcome. The reported mortality at hospital discharge in SE is 9–21%. The short-term mortality (all age groups) rates reported from India and other developing countries range between 10.5% and 28%. [4]

Seizure control usually requires transport to an emergency room and immediate management of continuing seizures with the key role of drug treatment for its termination. An ideal drug is the one which is easy to administer, effective, safe and has long lasting anticonvulsant activity. [5] Benzodiazepines are used as first line agents in parenteral, rectal and sublingual routes. [6] Intravenous lorazepam has been successfully used in status epilepticus both in the emergency room for children and adults as an abortive medicine [7] and has less respiratory depression and longer half-life. [8] Intravenous access poses a great problem in out of hospital setting and young children. In a difficult situation, rectal diazepam is the first line drug and is effective in 60e80% of patients. [9] Investigation of children with seizures is based on history and examination as there is extensive differential diagnosis including meningitis, encephalitis, cerebral malaria, toxic ingestion, electrolyte imbalance, tumors and underlying chronic illness. Seizures can be the presenting symptoms of any serious underlying pathology. Prolonged seizures contribute to morbidity and can be life threatening. Emergency room doctors and staff should be well aware of standard management in children who present with seizures in order to avoid complications of prolong seizures and early seizure control.

The aim of the study was to describe the clinical profile of children presenting with seizure including common causes of seizure and classify the seizure types.

Materials and Methods

The present study was conducted in the Department of Paediatrics, S.K. Medical College and Hospital, Muzaffarpur, Bihar, India for nine months and 120 patients were selected in the study.

Inclusion Criteria

- Children of both genders above the age of 1 year and below 12 years were included.
- Children attending with first - time seizures alone were included.
- Children with a history of fever were included.
- Children with a history of head injury were included.
- Children with acute symptoms and signs of seizures with altered sensorium were included in the pediatric intensive care unit were included.

Exclusion Criteria

- Children after 12 years of age were excluded.
- Children with the previous history of seizures or treatment of seizures were excluded
- Children with severe head injuries requiring surgical interventions were excluded.
- Children with head injuries but associated with other body injuries were excluded.

A thorough clinical history taking was done to include the information of age (from 1 year to 12 years), gender, type of seizure, loss of consciousness, with or without status epilepticus, associated symptoms (fever, headache, vomiting, and

altered sensorium), developmental history, and family history of seizure or epilepsy.

Preliminary investigations such as complete blood count, blood glucose, serum electrolytes, cerebrospinal fluid (CSF) analysis, Malaria parasite test, Chest X-ray, Montoux test, and neuroimaging including computed tomography (CT) scan head or cranial magnetic resonance imaging (MRI), EEG, and other tests were undertaken depending the urgency, availability, and necessity being taken into account.

Data analysis- Analysis of data was made using descriptive statistics and hypothesis testing. The Chi-square test and Fisher test were used to examine the association between different variables and strength of the relationship. $P < 0.05$ was considered as statistically significant.

Results

Table 1: Socio-demographic variable

Variables	N%
Age in years	
6 month- 5 years	66 (55)
6-10 years	30 (25)
>10 years	24 (20)
Gender	
Male	84 (70)
Female	50 (30)

Majority of the patients were in 6 months-5 years 55% followed by 6-10 years 25% and >10 years 20%. There were 70% were male as compared to female 30%.

Table 2: Type of seizure

Type of seizure	N%
GTC (Generalized tonic-clonic)	66 (55)
Partial	40 (33.40)
Absence	5 (4.16)
Myoclonic	4 (3.34)
Status E	3 (2.5)
Others	2 (1.6)

According to type of seizure, majority of the patients had GTC 55% followed by partial 33.40%.

Table 3: Etiology

Etiology	N%
Infection	30 (25)
Febrile	36 (30)
Seizure disorder	20 (16.66)
Head injury	16 (13.34)
Space occupy lesion	16 (13.34)
Metabolic disorder	2 (1.66)

In the present study, majority of the patients had febrile etiology 30% followed by infection 25% and seizure disorder 16.66%.

Table 4: Outcome

Outcome	N%
Discharge without deficit	96 (80)
Discharge with deficit	16 (13.34)
Referred	6 (5)
Death	2 (1.66)

Out of 120 patients, 96 were discharged without deficit and 16 were discharged with deficit.

Discussion

Seizures are defined as a transient occurrence of signs and/or symptoms resulting from abnormal excessive or synchronous neuronal activity in the brain. Seizures constitute the commonest neurological problem in children with significant epilepsy having its onset in childhood. A considerable treatment gap exists in developing countries due to poverty, stigmatization, and lack of trained manpower. Evidence-based clinical practice guidelines can improve the quality of care. [10,11]

The common causes of seizures in children include: Neonatal seizures (infections, birth asphyxia, and metabolic causes), febrile convulsions, meningitis, viral encephalitis, neurocysticercosis, cerebral malaria, and epilepsy (symptomatic, cryptogenic, and idiopathic). [12] Between 6 months and 5 years of age, febrile seizures account for 2–5% of all seizures in children experiencing the first episode. Infections remain the major cause of seizures in developing nations. [13]

Many studies done before shows high incidence of seizure in younger age group of children and a decreasing trend in older ones as well as more common incidence of seizure in males. [14] In our study also most children were younger than 5 years of age, even though not very significant but males had higher prevalence compared to female. Seizures presented with fever in 30% of cases. Generalized tonic-clonic seizure was found to be the commonest clinical seizure type and had higher incidence among children presenting with febrile seizure which is in accordance with the previous studies. [15,16]

Partial seizures represented 33.40% of children in the current study. In the setting of higher incidence of Neurocysticercosis in developing countries partial seizure is common. [17] First attack of seizure can have many possible etiologies, neurologic/developmental causes, infection, metabolic disturbances, traumatic head injury, toxins, febrile seizure etc. [15,17] One of the most common cause of seizure attack was reported to be due to febrile seizure. [13] In our study febrile seizures constitute 30% and were found to be main the etiology of a first attack of seizure in children less than 5 years of age.

In our study the mortality rate during hospital stay among children admitted with acute episode of seizure was found to be similar with the mortality reports from other developing countries and amounting to 3.00%. [17] There was poor outcome in children diagnosed with encephalitis and status epilepticus there was good outcome in those children diagnosed with febrile seizure and neurocysticercosis. [18]

Conclusion

Seizures are one of the most common neurological presentations leading to stress and anxiety among care takers. Seizures were found predominantly in male children. Most of the seizures witnessed were of Generalized Tonic Clonic type with febrile convulsion being the commonest variety of seizures in our pediatric population. A seizure protocol should be established in emergency department in order to avoid missing

common causes of provoked seizures that needs to be followed and definitive treatment strategies should be made.

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