International Journal of Medical and Health Research
ISSN: 2454-9142
www.medicalsciencejournal.com
Volume 4; Issue 3; March 2018; Page No. 174-176

Assessment of clinical profile of children of age group 6 months- 5 years admitted with seizure in PMCH Patna

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Abstract
Seizures are an abnormal, unregulated electrical discharge of nerve cells in the brain or part of the brain. This abnormal discharge can alter awareness or cause abnormal sensations, cause involuntary movements, or convulsions. Convulsions are violent, involuntary, rhythmic contractions of the muscles that affect a large part of the body.
This prospective, hospital based, descriptive study was undertaken in Department of Paediatrics in Patna medical college and Hospital, for 1 year between 1st November 2016 to 31st October 2017. The data from all 602 patients admitted with seizure in age group of 6 months to 5 years were collected and presented as below. The children admitted for other complaints and developing seizures during the course of their illness were included. Seizures in developmentally abnormal children were also included.
Seizures are not only the cause of high morbidity and mortality in children but also are the reason of physical, mental and financial distress for parents. Male preponderance and younger age at presentation were the highlights. Generalized seizures were the far most common type of all seizures. Febrile seizure was the most common etiology in this age group. CNS infection and Neurocysticercosis were also common. Being a developing nation, strict measures to prevent infection through interventions at home and community can reduce the occurrence of seizures in children thus preventing long term neurological squeals in children.

Keywords: seizures, febrile seizures, febrile convulsions etc.

Introduction
Seizures are an abnormal, unregulated electrical discharge of nerve cells in the brain or part of the brain. This abnormal discharge can alter awareness or cause abnormal sensations, involuntary movements, or convulsions. Convulsions are violent, involuntary, rhythmic contractions of the muscles that affect a large part of the body.
Seizures in children are often similar to seizures in adults. However, some types of seizures, such as febrile seizures and infantile spasms, occur only in children.
Certain conditions in children, such as breath-holding spells and night terrors, may resemble seizures but do not involve abnormal electrical activity in the brain and thus are not seizures [1].
A seizure itself does not appear to damage the brain or cause lasting problems unless it continues for more than about an hour (most seizures last only a few minutes). However, many disorders that cause seizures can cause lasting problems. For example, some disorders can interfere with the child's development. Whether some types of recurring seizures can affect the developing brain is debated.
An epileptic seizure, also known as an epileptic fit, is a brief episode of signs or symptoms due to abnormal excessive or synchronous neuronal activity in the brain [2]. The outward effect can vary from uncontrolled jerking movement (tonic-clonic seizure) to as subtle as a momentary loss of awareness (absence seizure). Diseases of the brain characterized by an enduring predisposition to generate epileptic seizures are collectively called epilepsy [2] [3].
Seizures can also occur in people who do not have epilepsy for various reasons including brain trauma, drug use, elevated body temperature, low blood sugar and low levels of oxygen. Additionally, there are a number of conditions that look like epileptic seizures but are not.
A first seizure generally does not require long term treatment with anti-seizure medications unless there is a specific problem on either electroencephalogram or brain imaging [4].
5–10% of people who live to 80 years old have at least one epileptic seizure and the chance of experiencing a second seizure is between 40% and 50%. About 50% of patients with an unprovoked apparent "first seizure" have had other minor seizures, so their diagnosis is epilepsy. Epilepsy affects about 1% of the population currently and affected about 4% of the population at some point in time [4]. Most of those affected—nearly 80%—live in developing countries.
Seizures have a number of causes. Of those who have a seizure, about 25% have epilepsy. A number of conditions are associated with seizures but are not epilepsy including: most febrile seizures and those that occur around an acute infection, stroke, or toxicity. These seizures are known as "acute symptomatic" or "provoked" seizures and are part of the seizure-related disorders [5].In many the cause is unknown.
Different causes of seizures are common in certain age groups:

- Seizures in babies are most commonly caused by hypoxic ischemic encephalopathy, central nervous system (CNS) infections, trauma, congenital CNS abnormalities, and metabolic disorders.
- The most frequent cause of seizures in children is febrile seizures, which happen in 2–5% of children between the

ages of six months and five years.
- During childhood, well-defined epilepsy syndromes are generally seen.
- In adolescence and young adulthood, non-compliance with the medication regimen and sleep deprivation are potential triggers.
- Pregnancy and labor and childbirth, and the post-partum, or post-natal period (after birth) can be at-risk times, especially if there are certain complications like pre-eclampsia.
- During adulthood, the likely causes are alcohol related, strokes, trauma, CNS infections, and brain tumors.

Seizure types are organized by whether the source of the seizure is localized (focal seizures) or distributed (generalized seizures) within the brain. Generalized seizures are divided according to the effect on the body and include tonic-clonic (grand mal), absence (petit mal), myoclonic, clonic, tonic, and atonic seizures. Some seizures such as epileptic spasms are of an unknown type [6].

Focal seizures (previously called partial seizures) are divided into simple partial or complex partial seizure. Current practice no longer recommends this, and instead prefers to describe what occurs during a seizure.

Better understanding of seizures in terms of clinical presentation and etiology is required not only for abortion of acute attack but also for long term control of epilepsy. Also several preventive measures need to be undertaken at community level so as to decrease the burden of epilepsy in the community. With this background in mind we carried out the present study to understand the clinicoetiological profile of seizures in pediatric patients.

Methodology

The study was conducted in Department of Paediatrics in Patna medical college and Hospital for a time period of 1 year between 1st November 2016 to 31st October 2017. Design of study was Hospital based, Prospective, Analytical and Descriptive. The data from all patients admitted with seizure in age group of 6 months to 5 years were collected and presented as below. The children admitted for other complaints and developing seizures during the course of their illness were included. Seizures in developmentally abnormal children were also included. Total sample size was 602.

The following information was obtained from each patient: age, sex, type of seizure, and final diagnosis were discussed in current study.

The approval of the institutional ethic committee had been taken before the study. All the patients were informed and consent taken. The aim and the objective of the study were conveyed to all patients.

Results & Discussion

The data from the patients admitted for the reason of the seizure in paediatric department were collected and presented as below. Table 1 show the age, sex and type of the seizure.

Table 1: Age & Sex of Patients

Age	No. of Cases	Sex	No. of Cases	P value
Less than 1 year	108 (17.9%)	Male	342 (56.8%)	0.001
1- 3 years	280 (46.5%)	Female	260 (43.1%)	
3 – 5 years	214 (35.5%)			
Total	602 (100%)			

Table 2: Types of Seizure

Type of seizures	No. of Cases
Generalized	
Generalized tonic clonic	282 (46.8%)
Clonic	55 (9.1%)
Tonic	36 (59.8%)
Myoclonic	18 (29.9%)
Absence	1 (0.001%)
Total	392 (65.11 %)
Partial	
Simple partial	60 (9.96%)
Complex partial	118 (19.6%)
Secondary generalization	21 (3.4%)
Total	199 (33%)
Others/ Unclassified	11 (2%)
Total	602(100 %)
Fever	
Present	433 (72%)
Absent	169(28%)
Status	
Present	62(10.2%)
Absent	540(89.7%)

Table 3: Analysis of etiological profile

Diagnosis	No	%
Febrile Seizures	176	29.2%
Meningitis	118	19.6 %
Encephalitis	102	16.9 %
Cerebral palsy	58	9.6 %
Tubercular Meningitis	55	9.4 %
Seizure Disorder	48	7.9 %
NCC	15	2.4 %
Stroke	11	1.8 %
Others	15	2.4 %
Total	602	100 %

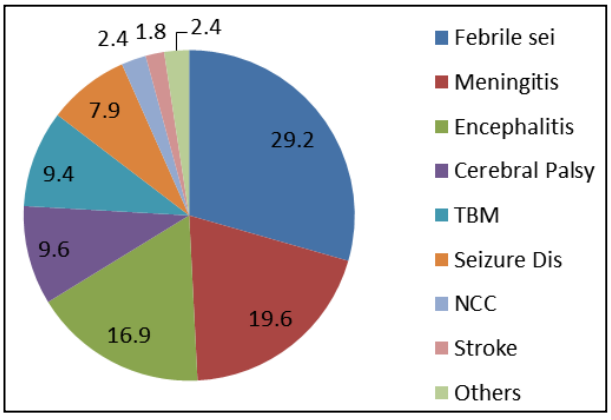

Fig 1: Etiology

As in our study most studies show high incidence of seizures

in younger children with a decreasing frequency in older age group and more common in males (p value=0.001) [7]. Seizures coexisted with fever in 72% of cases. Most studies show generalized seizures are much more common compared to partial seizure [8]. In the current study generalized tonic-clonic was commonest seizure type and found to have higher incidence among febrile children. Most studies show generalized seizures are much more common compared to partial seizure [9] similar to our study.

There was no significant difference in the outcome among male and female. Fever was not independently associated with increased mortality during the acute illness. Meningitis and encephalitis cause significant childhood mortality and morbidity [10]. Children with diagnosis of encephalitis and those with status epileptics had poor outcome with high mortality [11]. In our study 61 patients expired directly due to seizures or underlying etiology. Mortality rate (10.1%) was comparable to other studies in similar demography. Febrile seizure had good outcome with majority of children discharged after recovery. As evident from current study provoked seizures including CNS infections and neurocysticercosis account for a good no of cases. Most of these might be prevented with improvement in sanitation. Attempt should be made to know the burden of other causative organisms for CNS infections and preventive measures like sanitation and immunization should be undertaken. Health care facilities should be prepared for emergency management of seizures to decrease mortality and morbidity.

Conclusion

Seizures are not only the cause of high morbidity and mortality in children but also are the reasons of physical, mental and financial distress for their parents. Male preponderance and younger age at presentation were the highlights. Generalized seizures were the far most common type of all seizures.Being a developing nation, strict measures to prevent infection through interventions at home and community can reduce the occurrence of seizures in children thus preventing long term neurological sequels in children.

Long term follow up of patients was not undertaken in this study. Lack of investigation facility contributed to some undiagnosed cases. Larger multicentric studies are further required.

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