

Clinico-Demographic Profiles Of Seizures In Children- An Observational Study From A Tertiary Care Center.

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Abstract

Background: Seizure is one of the common causes of childhood hospitalization with significant mortality and morbidity. There is limited data regarding acute seizures episodes from the developing countries. Current study aims to find the prevalence and seizure semiology and short term outcome in children presenting to a tertiary center in Mahabubnagar, Telangana.

Methods: This prospective observational study was done at department of Pediatrics, S.V.S. Medical College and Hospital, Mahabubnagar, Telangana from October 2017 to September 2018.

Results: A total of 300 patients were admitted for seizures with 185 (61.6%) males and 115 (38.3%) females with a male female ratio of 1.6:1. Majority of children (152, 50.6%) were between 13 months to 5 years. Among these patients, 159 (53.5%) had fever with seizure. Generalized tonic-clonic seizures were the most common seizure type (52.3%). Common causes of seizure were febrile seizures (123, 41%), followed by seizure disorder (53, 17.6%), meningitis (44, 14.6%), encephalitis (21, 7%), neurocysticercosis (20, 6.6%), tubercular meningitis (13, 4.3%). Majority of the patients had complete recovery (262, 87.3%). Mortality (15, 5%) was mostly attributable to central nervous system infection.

Conclusion: Prevalence of seizures in our study is 8.6%. Febrile convulsions were common causes of seizure in children followed by symptomatic seizures including CNS infections.

Key Words: Seizures, febrile seizure, CNS Infections, neurocysticercosis.

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I. Introduction

A “seizure” is a paroxysmal alteration of neurologic function caused by the excessive, hyper-synchronous discharge of neurons in the brain. “Epilepsy” is the condition of recurrent, unprovoked seizures [1]. Seizures are the most common pediatric neurologic disorder. It is estimated that up to 10 % of all children experience at least one seizure during their childhood [2]. The incidence is highest in children less than 3 years of age, with a decreasing frequency in older children. Epidemiologic studies reveal that approximately 150,000 children will sustain a first-time unprovoked seizure each year, and of those, 30,000 will develop epilepsy [3]. The prevalence rate (PR) of epilepsy for developed and developing countries has a wide range and has been reported between 3/1000 and 22.2/1000[4]. A recent Indian data shows incidence and prevalence seizure from various parts of the country were like 27.27 per 100,000 per year in Kolkata, 7.5 per 1000 in Uttarakhand, 4.9/1000 in Kerala[5]. The prevalence rate of epilepsy in India is 6.24/1000 population [6]. A study from Kashmir valley found incidence of seizures in male and females as 3.74/1000 and 3.13/1000 respectively [7].

The causes of epilepsy in children are legion; however, for at least 50% of childhood epilepsy the cause is unknown [8]. Neonatal seizures (infections, birth asphyxia, and metabolic causes), febrile convulsions, meningitis, viral encephalitis, neurocysticercosis, cerebral malaria, and epilepsy are common causes of acute seizures in children [9].

According to American academy of Pediatrics, febrile seizure is defined as “seizure occurring in febrile children between the ages of 6 and 60 months who do not have an intracranial infection, metabolic disturbance, or history of afebrile seizure” [10]. Febrile seizures are classified in to 2 types: simple and complex. Simple febrile seizure is characterized by generalized tonic-clonic movements which usually last for less than 15 minutes in 24 hours, while in the complex type the convulsions are multiple, lasting more than 15 min. Majority (70%-75%) of them are of simple type[11, 12]. Febrile seizures accounts for the majority of seizures seen in

children younger than 5 years of age [13]. Geographical variations determine the common causes of acute seizure [14].

Central nervous system (CNS) infections are the main cause of seizures and acquired epilepsy in the developing world [15]. The clinical manifestations include sensory, motor, autonomic, cognitive, psychogenic, and/or affect alertness, awareness, and responsiveness and an ictogenesis due to abnormal enhanced synchrony in the brain [16]. Seizures are divided in to focal (seizures originating from one hemisphere) and generalized (involving both hemispheres). Based on intactness of consciousness, focal seizures are further divided in to simple (intact) and complex (impaired). Generalized seizures are categorized as motor (tonic-clonic, clonic, tonic, myoclonic, myoclonic-tonic-clonic, myoclonic-atic, atonic, epileptic spasms) and non-motor/absence (typical, atypical, myoclonic, eyelid myoclonia) [17].

Anti seizure medications are the mainstay of therapy to control acute seizure and achieve seizure freedom in about two-thirds of patients [18].

There are limited studies based on clinic-demographic profile, and etiological causes of seizures in children from this part of rural Telangana. This cross-sectional observational study was therefore conducted to study the demographic profile, seizure semiology and a short term outcome in children presenting with acute seizures.

II. Methods

This hospital based prospective observational study was conducted at department of Pediatrics, S.V.S. Medical College and Hospital, Mahabubnagar, Telangana, for a period of one-year i.e., from October 2017 to September 2018. Informed consent was obtained from parents and the study was approved by the institute's ethical review board.

All the children between the age group of 1 month to 14 years who presented with complaints of seizure both provoked and unprovoked including recurrent seizures during the study period were included in the study. Children with head injuries and neonatal seizures were excluded from the study. Patients were again divided in to four age groups i.e., age group of 1 month to 12 months, 13 months to 5 years, 6 to 10 years and 11 to 14 years.

Clinical history including age, sex, type of seizure, associated symptoms (fever, cough, runny nose, rashes, vomiting, diarrhea and headache), and family history of seizure or epilepsy, and developmental history were documented. Routine laboratory investigations like complete Hemogram and smear for malaria parasite; sepsis screening by C-reactive protein, blood and urine culture sensitivity; metabolic work up for serum electrolytes, blood sugar and liver function tests; CSF analysis were done. Neuro-imaging for brain with CT scan and magnetic resonance imaging (MRI); electroencephalography (EEG) were performed and results recorded. Final outcome was categorized in to recovered, referred to higher center; left against medical advice (LAMA) and mortality were documented. All the data were recorded and analyzed using appropriate statistical methods.

III. Results

A total of 300 children were included in our study, 185 (61.6%) were males and 115 (38.3%) females with male to female ratio of 1.6:1 (fig 1). The incidence of seizures among different age group was: 1 month to 12 months 24.6 % (n=74), 13 months to 5 years 50.6% (n=152), 6- 10 years 14.3% (n=43) and 11 to 14 years was 10.3% (n=31) (fig 2). Fever was notably present in 208 (69.3%) of children at presentation (table 1). Majority of children (238, 79.3%) had generalized seizure, whereas 62 (21.4%) had partial seizure. Among the children with generalized seizures, GTCS was seen in 157 (52.3%) of the children followed by tonic seizures 45 (15%), clonic 19 (6.3%), absence 8 (2.6%), myoclonic 6 (2%) and atonic 3 (1%) (table 2, fig 3). Among partial seizures, simple partial seizures were noted in 54 (18%), and complex partial in 8 (2.6%) patients.

In the present study, simple febrile seizures was observed in 12 (41%), followed by seizure disorder in 53 (17.6%), symptomatic seizures such as meningitis 44 (14.6%), encephalitis 21 (7%), neuro-cysticercosis 20 (6.6%), tubercular meningitis 13 (4.3%), other causes (hypoglycemia, hypocalcaemia, OP poisoning, hepatic and hypertensive encephalopathy) were seen in 9 (3%) patients (fig 4). Stroke was the cause in 6 (2%) and complex seizures accounted for 11 (3.6%).

The final outcome was observed in our study were complete recovery 262 (87.3%), left against medical advice (LAMA) 13 (4.3%), referred to higher center 10 (3.3%) and mortality 15 (5%) (fig 5).

IV. Discussion

Seizures are the most common pediatric neurologic disorder. It is estimated that up to 10 % of all children experience at least one seizure during their childhood.

In the present study, out of 3453 admitted patients in pediatric department, 300 patients presented with seizures with a seizure prevalence of 8.6% whereas studies done by Chaudhary N et al [9]., found a prevalence of 3.4% but Adhikari et al [13]., found a higher prevalence of seizures (12.7%).

Male predominance was observed in our study (male: female ratio of 1.6:1) which is similar to the study done by Chaudhary N et al [9]. Studies done by Shivaprakash N C et al [14] and Saravanan S et al [15] found 1.4:1 and 1.36:1, respectively.

In our study, we found the commonest age group who presented with seizures was between 13 months to 5 years (50.6%). Study conducted by Poudyal P et al [19] and Ojha et al [20] noticed a higher incidence of seizures in less than 5 years age group 75.83% and 79.5% respectively. Many other studies like Saravanan S et al [15], also observed seizure incidence was more under 6 year age group.

Generalized seizure was the commonest type of seizures in our study 79.4% and 20.6% was of partial or focal seizures. This study correlates with Poudyal P et al [19].

Among the generalized seizures, generalized tonic clonic seizures were commonest type accounting for 52.3% followed by tonic, and clonic. This finding was almost similar to study done by Shivaprakash N C et al [14], (50%), Saravanan S et al [15], (50.2%), Adhikari et al [13], (69.9%). Among the partial or focal seizures, 18% were simple partial seizures this finding was similar to study done by Adhikari et al [13], (19.8%). A higher incidence of generalized tonic clonic type of seizures was observed by Chaudhary N et al [9], found 82.1%, Sastry CPVR et al [4], 63.3% in their study.

In our study, fever with seizures was seen in 71.3% of patients, 75.5% of patients had fever coexisted with seizures in study done by Ojha et al [20], similar observation was seen by Sastry CPVR et al [4], (66.6%), other studies done by Adhikari S et al [13], 53.5% and Saravanan S et al [15], 51.5% also observed more than half of the patients had fever during seizure episode. Chaudhary N et al [9], observed only 39.95% of patients had fever with seizures.

Majority of children 262 (87.3%) recovered completely in our study. This finding is similar to study done by Adhikari et al [13], and Saravanan et al [15]. Mortality in our study was 5% which is higher than mortality observed by Saravanan et al (3.1%) [15]. Central nervous system infections were the major cause of mortality among our patients.

V. Conclusion

Prevalence of seizures in children is 8.6% among the Pediatric population admitted to our center. Seizures are common below 5 years of age with male predominance and generalized tonic-clonic seizure is the most common seizure type. Febrile convulsions are most common cause, followed by symptomatic seizures including CNS infections. Seizure disorder was common in children without fever. Central nervous system infections were the major cause of mortality among the children presenting with seizures.

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TABLE 1 PRESENCE OF FEVER WITH SEIZURE

HISTORY OF FEVER	N (%)
WITH FEVER	159 (53)
WITHOUT FEVER	141 (47)
TOTAL	300 (100)

TABLE 2 TYPES OF SEIZURES

TYPE OF SEIZURES		N (%)
GENERALIZED	GENERALIZED TONIC CLONIC	157 (52.3)
	TONIC	45 (15)
	CLONIC	19 (6.3)
	ABSENCE	8 (2.6)
	MYOCLONIC	6 (2)
	ATONIC	3 (1)
FOCAL/ PARTIAL	SIMPLE	54 (18)
	COMPLEX	8 (2.6)
TOTAL		300 (100)

FIGURE 1 SEX DISTRIBUTION OF PATIENTS WITH SEIZURES

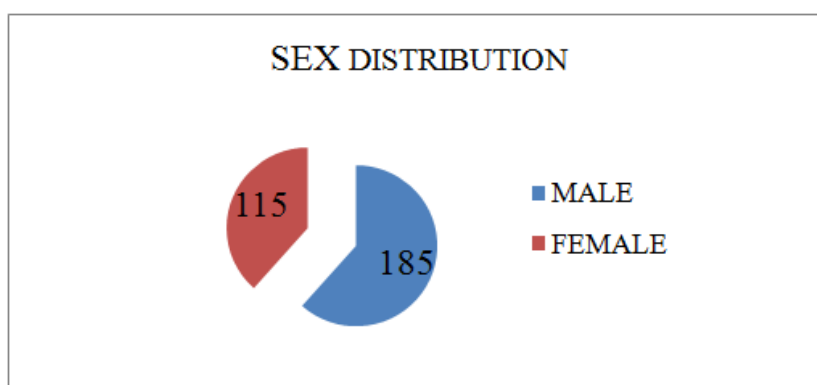


FIGURE 2 AGE DISTRIBUTION OF PATIENTS WITH SEIZURES

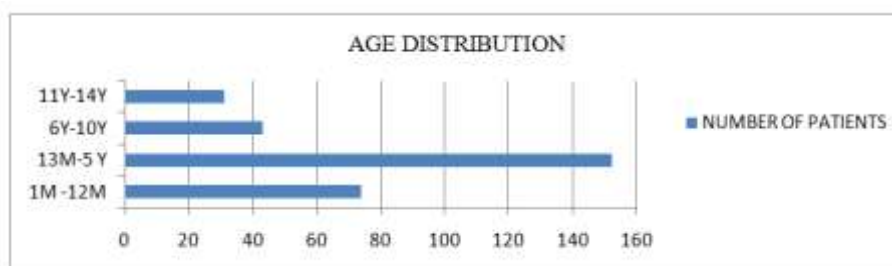


FIGURE 3 GENERALIZED SEIZURES SUB TYPES

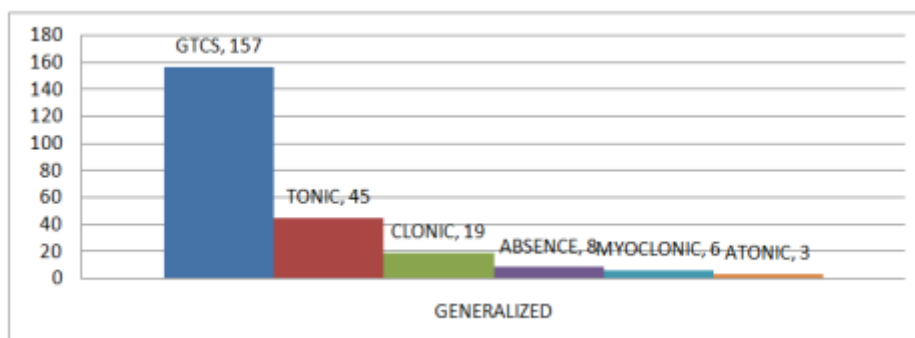


FIGURE 4 DISTRIBUTIONS OF PATIENTS ACCORDING TO ETIOLOGY OF SEIZURES

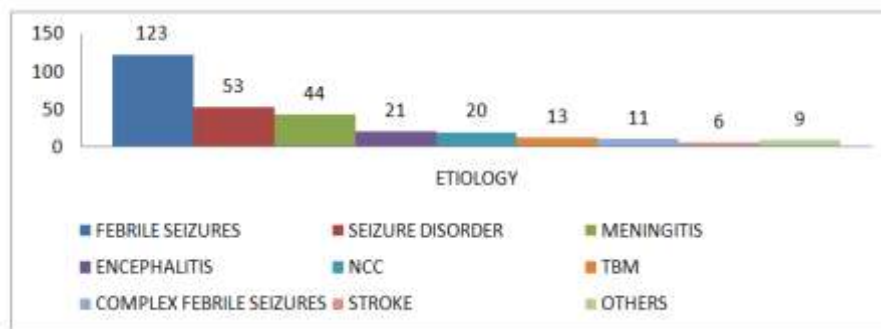
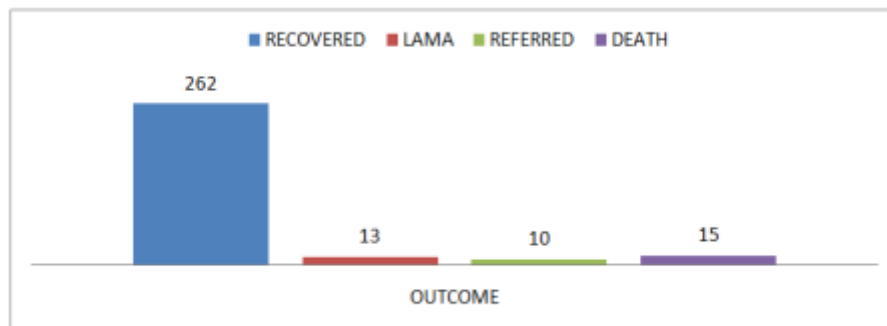


FIGURE 5 SHORT TERM OUTCOME OF PATIENTS WITH SEIZURE



K Venkataramana Reddy. "Clinico-Demographic Profiles Of Seizures In Children- An Observational Study From A Tertiary Care Center." OSR Journal of Dental and Medical Sciences (IOSR-JDMS), vol. 18, no. 3, 2019, pp 71-75.