

Original Research Article

STUDY OF PROFILE OF CHILDREN ADMITTED WITH SEIZURE IN A TERTIARY CARE HOSPITAL

Zankhana Parekh¹, Kishan Chamar², Dviti Bhadiadra³

¹Associate Professor, Department of Paediatrics, SMT NHL municipal medical college, ahmedabad, Shivalik avenue, Opp Nirma Vidyavihar school, Near Bodakdev Fire Station, Bodakdev, Ahmedabad, India.

²Ex Resident, Department of Paediatrics, SMT NHL Municipal Medical College, Ahmedabad, India.

³3rd year Paediatrics Resident, Department of Paediatrics, SMT NHL Municipal Medical College, Ahmedabad, India.

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Corresponding Author:

Dr Zankhana Parekh,
Associate Professor, Department of
Pediatrics, SMT NHL Municipal
Medical College, Ahmedabad, India.
Email: zrp104@gmail.com

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ABSTRACT

Background: Seizure is one of the common causes of childhood hospitalization with significant mortality and morbidity. Primary objective of study was to find out risk factor and etiology among seizure presenting children then after classified based on seizure. These children associated outcome also observed as a secondary objective of the study.

Materials and Methods: The prospective hospital based observational study was conducted in tertiary care hospital in children admitted in the age group 1 months to 12 years in the Paediatric Department. Variables collected were demographics, clinical presentations, laboratory tests, and diagnosis with hospital course.

Results: A total of 80 patients were admitted for seizures with 39 (48.75%) males and 41 (51.25%) females. 53.75% had fever as a major finding as a risk factor. 41.25% had febrile seizure as a major etiology found during study observations. Generalized tonic-clonic seizures were the most common seizure type. (91.25%) Lower GCS score was significantly associated to cause of mortality

Conclusion: This research provides valuable insights into paediatric seizure management, underlining the importance of ongoing improvements in Healthcare practices to reduce both Morbidity and mortality. Effective early diagnosis, management, and timely intervention are crucial in improving outcomes.

Keywords: Seizures, Epilepsy, Encephalitis, Meningitis

INTRODUCTION

Seizure is a transient occurrence of signs and /or symptoms resulting from abnormal excessive or synchronous neuronal activity in the brain.^[1] It is a common cause of admission in children. Incidence is highest in children <3 years of age. 4-6 % of children <16 yrs of age encounter at least 1 episode of seizures.^[1,2] In India, the reported prevalence rates are 5 to 22 per 1,000. Seizures contribute about 1% admissions in paediatric emergencies.^[1,2] While febrile Seizures are considered the most common type of Seizures in children worldwide, developing countries have a Significant proportion with CNS infections.^[1,2] Acute seizures are common in meningitis, viral encephalitis and neurocysticercosis and in most cases are associated with increased mortality and morbidity including subsequent

epilepsy.^[2] The standardized mortality rate (SMR) in patients with a newly diagnosed unprovoked ranges from 2.5 to 4.1 according to the study population and design. The SMR is highest in the youngest patients and in those with symptomatic seizures.^[2] Identifying the causes and risk factors of Seizure predisposition helps in early identification & prevention of avoidable Causes of Seizures in childhood thus improving the outcome. ^[1]

MATERIALS AND METHODS

An Observational prospective study was performed at Paediatric Intensive Care Unit and Paediatric ward of a tertiary care hospital. This study done performed between the periods of January 2021 to December 2022. In the present study, 80 patients were enrolled based on following inclusion and exclusion criteria.

Inclusion Criteria: Children aged 1 months to 12 years Presented with seizures admitted at Tertiary care Hospital.

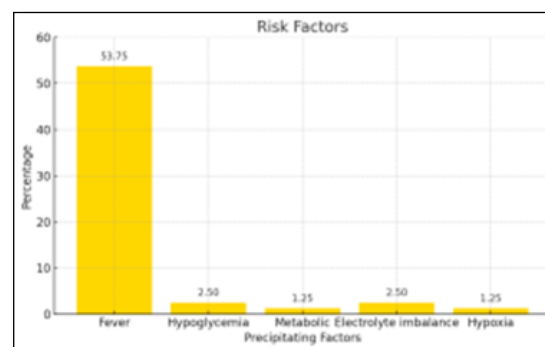
Exclusion Criteria: Relatives not willing to give consent. Based on inclusion and exclusion criteria, seizure-presenting children were enrolled at tertiary care centre for the study observations. Informed consent was taken from the enrolled patients' related parents/guardian. After informed consent, relevant data extracted from the medical records of 80 children. Detailed history taking and examination done according to predefined structured proforma.

Statistical analysis: Statistical analysis done with the help of IBM SPSS 26.0 version software. Qualitative data were represented with mean with standard deviation whereas quantitative data were represented as frequency with percentage. Outcome based quantitative data were compared with the help of chi-square. <0.05 of any value considered as a statistical significant.

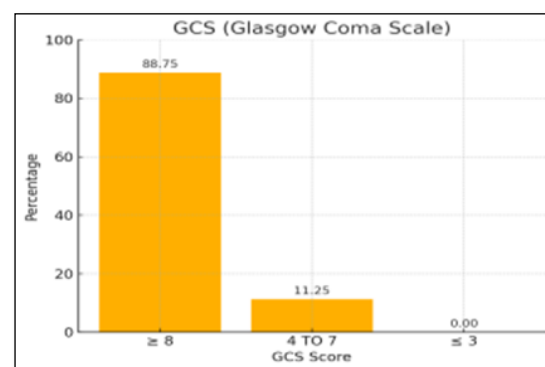
RESULTS

A prospective observation study was done in under 12 years of children whom admitted for seizures at our tertiary care centre. These studies done between the times of January 2021 to December 2023. During this study period, 80 children patients were enrolled based on inclusion and exclusion criteria. Overall, mean age of the children was 2.91 ± 3.09 . Age were categorized into three groups: 51.25% had 1month- 1 year, 27.50% had >1 year – 5 year and 21.25% had >5 year - 12 year. Most common age group was ≤ 1 year. 48.75% were male whereas 51.25% were females observed during the study observations. Majority of the child patients were coming from lower middle socioeconomic class whereas least number of child patient were coming from upper lower socioeconomic class. (Table: 1) Out of 80 patients, 91.25% had generalized seizure whereas 8.75% had focal seizure. Overall, mean seizure time was 4.44 ± 2.44 minutes. 61.25% of children seizure was done within 5 minutes whereas 38.75% of children seizure was done in more than 5 minutes. 10% had past history of seizure disorder on AEDs, 23.53% had past history of seizure disorder not on AEDs and 66.25% had not previous history of seizures. (Table: 2) Seizure associated risk factor found as followings: fever (53.75%), Hypoglycemia (2.50%), Metabolic (1.25%), electrolyte imbalance (2.50%) and hypoxia (1.25%). (Figure 1) Childhood seizure associated etiology were following observed during the study: 41.25% had febrile seizure, 1.25% had epilepsy syndrome, 2.50% had Remote

Symptomatic Epilepsy, 36.25% had acute symptomatic seizure and 36.25% had Unknown cause. (Table: 3) In the present study, 0% had ≤ 3 score of GCS, 11.25 % had 4 to 7 score and 88.75% had ≥ 8 score of GCS. (Figure 2) Among laboratory findings, WBC, Sodium, Serum creatinine and blood sugar level were having normal level in majority of findings. (Table: 4) Out of 80 childhood seizures, 6.25% was death, 27.5% was DAMA and 66.25% was discharged. On the basis of death, DAMA and discharge cases, seizure type, duration of seizure, Seizure Episodes in the last 24 hrs. And GCS score were compared. Type of seizure were not significantly associated with death, DAMA and discharge cases. ($p=0.4953$) Within five minutes of seizure time significantly associated to discharge whereas more than five minutes of seizure time significantly associated to occurrence of death. ($p=0.0069$). Last 24 hours of Seizure Episodes were not significantly associated with death, DAMA and discharge cases. ($p=0.622$). >8 score was significantly associated to discharge whereas <8 score of GCS significantly associated to occurrence of death. ($p<0.0001$).



Graph: 1 Distribution of precipitating risk factors:



Graph: 2 GCS (Glasgow Coma Scale)

Table 1: Demographic Profile

Variable	Sub variable	Frequency(%) / Mean \pm S.D
Age group	1 month - 1 year	41 (51.25)
	>1 year - 5 year	22 (27.50)
	>5 year - 12 year	17 (21.25)
Mean Age		2.91 ± 3.09
Gender	Male	39 (48.75)

Socio-economic Status (according to modified Kuppuswamy classification)	Female	41 (51.25)
	Upper	5 (6.25)
	Upper middle	6 (7.5)
	Lower middle	48 (60)
	Upper lower	3 (3.75)
	Lower	18 (22.5)

Table 2: Seizure details

Variable	Sub variable	Frequency(%) / Mean \pm S.D
Duration of seizure (In Minutes)	0- 5 min	49 (61.25)
	> 5 min	31 (38.75)
Mean Duration of seizure		4.44 \pm 2.44
Types of seizure	Generalized seizure	73 (91.25)
	Focal seizure	7 (8.75)
	Absence seizure	0 (0)
Past history of seizures	Past history of seizure disorder on AEDs	8 (10)
	Past history of seizure disorder not on AEDs	19 (23.53)
	No seizures previously	53 (66.25)

Table 3: Etiology

Etiology		Number of Patient	Percentage
Febrile Seizure		33	41.25%
Epilepsy Syndrome		1	1.25%
Remote Symptomatic Epilepsy		2	2.50%
Acute Symptomatic seizure	Hypocalcemic Seizure	15	18.75%
	Hyponatremic Seizure	1	1.25%
	Hypoglycemic Seizure	1	1.25%
	TB Meningitis	2	2.50%
	viral Meningitis	1	1.25%
	Bacterial Meningitis	6	7.50%
	ADEM.	2	2.50%
	Hypernatremia	0	0%
	Metabolic encephalitis	1	1.25%
Unknown Cause		29	36.25%

Table 4: Laboratory Parameters

LAB test	Low	Normal	High
WBC counts	2(2.5%)	43(53.75 %)	35(43.75%)
Na+	3(3.75%)	76(95%)	1(1.25%)
Blood sugar	2(2.5%)	75(93.75%)	3(3.75%)
Serum calcium	1(1.25%)	77(96.25%)	2(2.5%)

Table 5: Outcome Based Parameters

		Discharge (n=53)	DAMA (n=22)	Death (n=5)	p-value
Seizure types	GTCS	47 (88.68)	21 (95.45)	5 (100)	0.4953
	Focal	6 (11.32)	1 (4.55)	0 (0.0)	
	Non-convulsive	0 (0.0)	0 (0.0)	0 (0.0)	
Duration of Seizure (in minutes)	0- 5 min	37 (69.81)	12 (54.55)	0 (0.0)	0.0069
	> 5 min	16 (30.19)	10 (45.45)	5 (100)	
Seizure Episodes In the last 24 hrs.	First episode (including the present episode)	39 (73.58)	14 (63.64)	4 (80)	0.622
	Multiple episode on presentation	14 (26.42)	8 (36.36)	1 (20)	
GCS Score	>8	53(100)	18(81.82)	0	<0.0001
	7-Apr	0	4(18.18)	5(100)	
	3	0	0	0	

DISCUSSION

Seizures are the most common paediatric neurologic disorders, occurring in almost 10% of children.^[4] It

have been found to have a higher incidence in younger children in many studies with a decreasing frequency in the older age group, and are found to be more common in males.^[5] Childhood seizure is one

of the most important causes of attending medical centres, especially emergency departments, and can be a cause of morbidity and disability in childhood. Thus, it becomes imperative to catch the disease early and intervene accordingly to optimally control the disease activity. This was a hospital based prospective study of children admitted with acute onset of seizures in a tertiary care hospital of Gujarat. It was aimed in studying demographics, clinical seizure types, etiological and outcome during the hospital stay of those children. In the present study, overall mean age was 2.91 ± 3.09 years. Most common age group was 1month to 1year group whereas >5 to 12 years of age group. In the present study, 48.75% were boys whereas 51.25% were girls observed during the study. According to these studies, males were preponderance found compared to females. In the present study, 6.25% had upper SES, 7.5% had upper middle SES, 60% had lower middle SES, 3.75% had upper lower SES and 22.5% had lower SES. In the present study, 91.25% had generalised seizure and 8.75% had focal seizure. Mean duration of seizure was 4.44 ± 2.44 minutes. In the present study, 53.75% had fever, 2.50% had hypoglycaemia, 1.25% had metabolic, 2.50% had electrolyte imbalance and 1.25% had hypoxia observed as a risk factor. 63.49% had fever, 45.24% had headache and 90% had fever, 78% had altered sensorium, 60 % had lethargy and irritability. Whether routine neuroimaging should be done in all children admitted with acute episodes of seizure is debated. Etiological analysis revealed FS to be the Most common cause of seizures in children. In the present study, 41.25 % had febrile seizure, 36.25%

had Acute Symptomatic seizure, 36.25 % had unknown cause, 1.25% had epilepsy and 2.50% had remote symptomatic epilepsy type found as an etiology. In the present study, 0% had ≤ 3 score of GCS, 11.25 % had 4 to 7 score and 88.75% had ≥ 8 score of GCS. Higher GCS score correlates with better outcome and fewer complications. In the present study, mortality was 6.75%. Within five minutes of seizure time significantly associated with discharge whereas more than five minutes of seizure time significantly associated with occurrence of death. Lower GCS score was indication of brain dysfunction.

CONCLUSION

This study highlights the need of early diagnosis, etiology of seizures so that timely interventions can be provided for effective management which ultimately reduces morbidity n mortality in patients admitted with seizures.

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