

A STUDY ON ETIOLOGICAL EVALUATION OF CHILDREN AGED 2 MONTHS-12 YEARS WITH STATUS EPILEPTICUS ADMITTED IN A TERTARY CARE CENTRE

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Abstract

Introduction: Status epilepticus is defined as a seizure lasting more than 30 minutes or recurrent seizures for more than 30 minutes during which the patient does not regain consciousness. Generalized, convulsive status epilepticus refers to more than 5 min of (i) continuous seizures or (ii) two or more discrete seizures between which there is incomplete recovery of consciousness. Pathologically, however, hippocampal neurons begin to die after 30 minutes of sustained seizure activity.

Materials and Methods: A total of 380 children in the age group of 1 month to 12 year were admitted to PICU, Department of Paediatrics, Santhiram Medical College, Nandyal, Andhra Pradesh during 1-year study period. Among them 33 had status epilepticus. On admission, a detailed history was taken, detailed clinical examination was done and were subjected to relevant investigations. The data regarding their name, age, sex, type of seizures according to international classification of epileptic seizures, past history of seizures, birth history, developmental history, family history, drug history and immunization status were collected in a preformed proforma.

Results: Among 380 children admitted to PICU, status epilepticus was observed in 8.7%. Out of 33 children, most affected were 1-3 years (54.5%) followed by 1 month to 12 months (22.72%). Out of 33 children, males (51.51%) were affected more than the females (48.48%). Out of 33 cases of status epilepticus, 57.5% children presented as first episode of seizure and duration of seizure was less than 2 hours in 65.1%. Out of 33 cases, commonest cause was due to atypical febrile seizures (33.3%) followed by meningitis (22.7%). Out of 33 cases, death was observed in 3% of the cases and neurodeficits was observed in 9% of the cases and all of them between 1 month to 3 years of age.

Conclusion: Status epilepticus is a severe life threatening emergency with substantial morbidity and mortality. Major causes were due to atypical febrile seizure and meningitis Patients with younger age, males and seizures lasting longer duration had higher mortality and morbidity, predicting the poor outcome. It requires the immediate detection of etiology and aggressive treatment for reducing the mortality and morbidity.

Key Words: Status epilepticus, hippocampal neurons, meningitis, mortality and morbidity.

INTRODUCTION

Status epilepticus is defined as a seizure lasting more than 30 minutes or recurrent seizures for more than 30 minutes during which the patient does not regain consciousness.¹ Generalized, convulsive status epilepticus refers to more than 5 min of (i) continuous seizures or (ii) two or more discrete seizures between which there is incomplete recovery of consciousness. Pathologically, however, hippocampal neurons begin to die after 30 minutes of sustained seizure activity.²

The limitation of this definition thus suggests that treatment should not be initiated until pathological damage has already been demonstrated. Newer operational definitions have suggested that seizures lasting longer than 5 minutes are unlikely to discontinue spontaneously and should be treated. This is a more useful definition since treatment for SE is not delayed.³ In addition, individual unprovoked seizures can on occasion be observed and may not warrant aggressive treatment. In our study duration of SE has been taken as 5 minutes. We wanted to determine the aetiology and epidemiology of status epilepticus in 2-months-old infants to 12-years-old children and assess the neuroimaging.⁴

The failure to diagnose status epilepticus leads to high mortality. 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 status epilepticus is being decreased. The longer the SE is present, more difficult is the control and more is the risk of permanent neurological damage. Immediate intervention is important whenever the patient has SE.¹³ It is important to consider SE whenever a seizure activity or a series of seizure activity persist for more than 10 minutes or and to consider therapy.⁵

The objective was to study the etiology and short-term outcome of patients admitted with status epilepticus between the age group 1 month to 12 years at a medical college hospital.

MATERIALS AND METHODS

A total of 380 children in the age group of 1 month to 12 year were admitted to PICU, Department of Paediatrics, Santhiram Medical College, Nandyal, Andhra Pradesh during 1-year study period. Among them 33 had status epilepticus.

Study design: Prospective descriptive study.

Study Place: Department of Paediatrics, SIMS and RC, Bangalore, India.

Study population: All children in the age group of 1 month to 12 years admitted with status epilepticus.

Sample size: 33.

Study period: From January 2023 to December 2023.

Inclusion criteria

- All children admitted in the PICU with status epilepticus in the age group of 1 month to 12 years.
- Children admitted for other complaints and developing status epilepticus during the course of their illness.

Exclusion criteria

- Neonatal seizures.
- Age group more than 12 yrs.
- Seizures in developmentally abnormal children.

On admission, a detailed history was taken, detailed clinical examination was done and were subjected to relevant investigations. The data regarding their name, age, sex, type of seizures according to international classification of epileptic seizures, past history of seizures, birth history, developmental history, family history, drug history and immunization status were collected in a preformed proforma. A detailed examination including a complete neurological examination was done. Investigations including complete haemogram, blood sugar, Serum sodium, Serum calcium were done for all patients. Liver function test, chest X-ray and mantoux test were done only when indicated. CSF analysis was not done routinely. EEG and imaging studies were done wherever indicated and results recorded. Children were assessed for the etiology and short term outcome during their stay at hospital under the criteria for complete recovery, recovered with neurological deficits, discharged against medical advice or absconded and mortality.

RESULTS

Among 380 children admitted to PICU, status epilepticus was observed in 8.7%. Out of 33 children, most affected were 1-3 years (54.5%) followed by 1 month to 12 months (22.72%). Out of 33 children, males (51.51%) were affected more than the females (48.48%). Out of 33 cases of status epilepticus, 57.5% children presented as first episode of seizure and duration of seizure was less than 2 hours in 65.1%. Out of 33 cases, commonest cause was due to atypical febrile seizures (33.3%) followed by meningitis (22.7%). Out of 33 cases, death was observed in 3% of the cases and neurodeficits was observed in 9% of the cases and all of them between 1 month to 3 years of age.

Status epilepticus	N	%
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Present	33	9%
Absent	347	91%
Total	380	100%

Table 1: Prevalence

Age Group	N	%
2 months-12 months	7	22.72%
1-3 years	18	54.54%
4-6 years	3	9.09%
7-12 years	5	13.63%
Total	33	100

Table 2: Age distribution

Gender	N	%
Male	17	51.51
Female	16	48.48
Total	33	100%

Table 3: Gender Distribution

Duration of seizures	Known seizure disorder	First episode
< 2 hours	9 (27.2%)	12 (37.8%)
2-8 hours	4 (13.6%)	6 (16.6%)
> 8 hours	1 (1.5%)	1 (3%)

Table 4: Duration of seizures

Etiology	Total	Mortality	Neurodeficits
Atypical febrile seizures		0	1 (1.5%)
Meningitis		1 (3%)	1 (1.5%)
Encephalitis		0	0
Hypoglycemia		0	0
Hypocalcemia		0	0
Hyponatraemia		0	0
Hypernatraemia		0	0
CNS tuberculosis		0	0
Neurocysticercosis		0	0
Head trauma		0	1 (1.5%)
Epilepsy		0	0
Total	33 (100%)	1 (3%)	3 (9%)

Table 5: Etiology and short term outcome

Duration	Mortality	Neurodeficits
< 2 hours	0	1
2-8 hours	0	1
> 8 hours	1	1

Table 6: Short term outcome based on duration

Out of 33 cases of status epilepticus, 2 children had seizures lasting more than 8 hours, out of which 1 died and one had neurodeficit.

DISCUSSION

Status epilepticus is a major medical and neurological emergency. Despite advances in treatment, it is still associated with significant morbidity and mortality. A total of 380 children in the age group of 1 month to 12 year were admitted to PICU, Department of Paediatrics, Santhiram Medical College, Nandyal, Andhra Pradesh during 1-year study period.

Among them 33 (8.6%) had status epilepticus. The prevalence of status epilepticus varies from 2.3%-9.1% as per western literature and our results are corroborative to the reports.⁶

The prevalence rate is age dependent and is highest in the age group less than 3 years of age. 77.2% (25/33) of patients were less than 3 years of age in our study.⁷

Predominant involvement of younger age group has been reported by different authors. Among gender there were more males in 51.5% (17/33) and are corroborative with other works. The two most common causes of status epilepticus in our study were an atypical febrile seizure in 33.3% (11/33) and meningitis in 22.7% (7/33) and are in concordance with Nahin Hussain.⁸

In our study 57.5% (19/33) had presented for the first time without any past history of seizures and are in concordance with other work and the first-time presenters 19.6% (6/33) had a longer duration of seizures in comparison to cases with prior history of seizures.⁹

Mortality was associated with bacterial meningitis, which has a worse outcome in this area than in developed countries and has also been associated with a poor outcome in children with CSE.¹⁰

In our study 3% (1/33) children less than 3 years had mortality and are in concordance with other studies which ranges from 3-9%. While 9% (3/33) of the surviving children developed neurodefecits with most of them less than 3 years (6%) and are in concordance with other studies indicating younger age greater the risk.

CONCLUSION

Status epilepticus is a severe life threatening emergency with substantial morbidity and mortality. Major causes were due to atypical febrile seizure and meningitis Patients with younger age, males and seizures lasting longer duration had higher mortality and morbidity, predicting

the poor outcome. It requires the immediate detection of etiology and aggressive treatment for reducing the mortality and morbidity.

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