Original Research Article

Status epilepticus in children at a tertiary care centre

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Abstract

Background: Status epilepticus is a major neurological medical emergency associated with significant morbidity and mortality. The present study describes the status epilepticus cases with respect to age distribution, aetiology, types of seizures and response to treatment among paediatric patients admitted at a tertiary care hospital. **Methods:** Children in the age group of one month to 14 years hospitalised and diagnosed with status epilepticus at a tertiary care hospital during 2014-15 were included in this descriptive hospital-based study. The children with seizures who had more than 30 minutes of continuous seizure activity or two or more sequential seizures without full recovery of consciousness between seizure were identified as status epilepticus patients. For older children more than 5 years age, operational definition with >5 min of (i) continuous seizures or (ii) two or more discrete seizures between which there is incomplete recovery of consciousness was considered. The age distribution, aetiology, types of seizures and response to treatment was described. **Results and Conclusions:** Out of 37 total paediatric status epilepticus cases, majority i.e. 26 (70.3%) belonged to age group of 6 months to 5 years. Complex febrile seizures was the most common diagnosis observed in 12 (32.4%) children. Generalised tonic clonic seizures were the most common types of seizures observed in 25 (67.6%) children. Most of the patients i.e. 28 (75%) responded to lorazepam plus fosphenytoin treatment.

Keywords: Generalised tonic clonic seizures, Complex febrile seizures, lorazepam.

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Received Date: 05/02/2021 Revised Date: 19/03/2021 Accepted Date: 21/04/2021
DOI: https://doi.org/10.26611/10141823

Access this article online	
Quick Response Code:	Website: www.medpulse.in
	Accessed Date: 11 May 2021

INTRODUCTION

Status epilepticus is a major neurological medical emergency associated with significant morbidity and mortality.[1,2] Its most widely used definition is "More than 30 minutes of continuous seizure activity or two or more sequential seizures without full recovery of consciousness between seizures".[3] However, as there is an increased chance of brain damage with more than ten minutes of seizure activity, the seizure duration in status epilepticus definition was suggested to be decreased for older children and adults as reflected in the operational definition.[4] Working definition: Generalized, convulsive status epilepticus in adults and older children (>5 years old) refers to >5 min of (i) continuous seizures or (ii) two or more discrete seizures between which there is incomplete recovery of consciousness.[5] Status epilepticus can represent an initial manifestation of a seizure disorder, an exacerbation of a pre-existing seizure disorder, or an insult other than a seizure disorder.[2] Status epilepticus has varied clinical presentations, different causes that vary with age and geographical regions. The duration of status epilepticus is positively correlated with treatment refractoriness, and children with prolonged uncontrolled seizures have a poor prognostic outlook. The present study describes the status epilepticus cases with respect to age distribution, aetiology, types of seizures and response to

How to cite this article: Madhurasree R Nelanuthala, Madhuri B Engade, Alok Tummuri, Amulya. Status epilepticus in children at a tertiary care centre. *MedPulse International Journal of Pediatrics.* May 2021; 18(2): 32-34. http://medpulse.in/Pediatrics/index.php

treatment among paediatric patients admitted at a Hyderabad tertiary care hospital.

METHODS

Children in the age group of one month to 14 years hospitalised and diagnosed with status epilepticus at a tertiary care hospital during 2014-15 were included in this descriptive hospital-based study. The children with seizures who had more than 30 minutes of continuous seizure activity or two or more sequential seizures without full recovery of consciousness between seizure were identified as status epilepticus patients. For older children more than 5 years age, operational definition with >5 min of (i) continuous seizures or (ii) two or more discrete seizures between which there is incomplete recovery of consciousness was considered.[3,5] The age distribution, aetiology, types of seizures and response to treatment was described.

OBSERVATIONS

Out of 37 total paediatric status epilepticus cases, majority i.e., 26 (70.3%) belonged to age group of 6 months to 5 years (Table 1). Complex febrile seizure was the most common diagnosis observed in 12 (32.4%) children (Table 2). Generalised tonic clonic seizures were the most common types of seizures observed in 25 (67.6%) children (Table 3). Most of the patients i.e., 28 (75.7%) responded to lorazepam plus fosphenytoin treatment (Table 4).

Table 1: Age wise distribution of types of seizures

Age group	Frequency	Percentage
< 6 months	8	21.6%
6 months to 5 years	26	70.3%
> 5 years	3	8.1%
Total	**37**	**100%**

Table 2: Diagnosis among the Status Epilepticus Cases

Diagnosis	Number of cases
Viral Encephalitis/ Meningitis	**2 (5.4%)**
Complex Febrile Seizure	**12 (32.4%)**
Breakthrough Seizure	**6 (16.2%)**
Mal-Formation	**2 (5.4%)**
Metabolic causes	**1 (2.7%)**
Seizure Disorder	**3 (8.1%)**
Seizure Under Evaluation	**11 (29.7%)**
Intracranial Hemorrhage	**0**
Miscellaneous	**0**
Total	**37 (100%)**

Table 3: Types of seizures presented in status epilepticus patients

Type	Generalised tonic clonic	Tonic	Clonic	Focal	Total
Frequency	25	7	0	5	37
Percentage	67.6%	18.9%	0%	13.5%	100%

Table 4: Response to treatment in status epilepticus patients

Drugs	(Lorazepam + Fosphenytoin)	(Lorazepam +Fosphenytoin +Phenobarbitone)	(Lorazepam +Fosphenytoin + levepril)	Midazolam infusion	Anaesthesia	Total
Number of Cases	28	2	7	0	0	37
Percentage	75.7%	5.4%	18.9%	0%	0%	100%

DISCUSSION

Out of 37 total paediatric status epilepticus cases, the majority, i.e., 26 (70.3%), belonged to the age group of 6 months to 5 years. Earlier studies have also reported that status epilepticus is more commonly observed in younger children.[6-7] Gulati S *et al.* study observed that 56% of status epilepticus patients belonged to five years and below age group.[8] Similarly, recent study from Odisha in India done in children with status epilepticus (age group one month to 14 years), it was found that children aged less than five years comprised the majority of the cases (63.8%).[9] Kumar M *et al.* study reported 43% of patients of status epilepticus from 2-4 years age group.[2] They suggested that the probable reason for the higher

prevalence of status epilepticus in younger children may be that the mechanisms for control of seizure activity are fragile in younger children and may disrupt with minimal abnormalities in neurofunction. Complex febrile seizure was the most common diagnosis observed in our study among 12 (32.4%) children. Kumar M *et al.* also found that fever was the most common symptom associated with status epilepticus children observed in 67.14% patients.[2] In our study, generalised tonic clonic seizures were the most common types of seizures observed in 25 (67.6%) children. Das K *et al.* study reported that generalized tonic-clonic seizures, were observed in 92.6% children.[9] Kumar M *et al.* also found that generalized tonic-clonic seizures, were observed in 91.4% children.[2] Our study results showed that most of the patients i.e., 28 (75.7%) responded to lorazepam plus fosphenytoin treatment. Combination of phenytoin and Phenobarbitone was reported to be most effective in a similar study.[2] Abend NS and Loddenkemper T described the importance of timely and proper management of status epilepticus in children considering the risk of neuronal injury and prognostic outcomes. They opined that the management includes "emergent" treatment with benzodiazepines like intravenous lorazepam, intramuscular midazolam or rectally diazepam followed by "urgent" therapy with phenytoin/fosphenytoin, phenobarbital, levetiracetam or valproate sodium. If seizures are refractory to this treatment, then infusions of midazolam or pentobarbital should be used.[10]

The study limitations are hospital based small sample study.

The present study described the status epilepticus presentation and management aspect at the tertiary care centre catering to lower and middle-class strata of society. Similar data from various centres will help in review and framing guidelines for status epilepticus diagnosis and treatment.

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Source of Support: None Declared
Conflict of Interest: None Declared