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Clinical profile and short-term outcome of pediatric status epilepticus at a tertiary care hospital

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Abstract
The condition known as status epilepticus is more common in children than it is in adults and can arise in a number of different contexts. It is most common in children who are ill with infections, as well as in patients who have a history of epilepsy, cerebral malformations, hypoxia, hypoglycemia, or who have experienced head trauma. The primary objectives of this research were to investigate the clinical profile and short-term outcomes of juvenile status epilepticus that occurred at a tertiary care facility.
Status epilepticus, paediatric emergency, febrile seizures, and neurological injury are some of the terms that come to mind when thinking about this condition.

Keywords: Status epilepticus, paediatric emergency, febrile seizures, neurological damage

Introduction
A seizure activity that lasts for more than five minutes, with or without a loss of consciousness, is specified as meeting the revised criteria for paediatric status epilepticus. Because of this criteria, early treatment assessment and intervention can take place before the seizure becomes resistant to the anti-epileptic medications [1, 2]. It is believed that anywhere from 1.3 to 16% of epileptic patients will acquire SE at some time in their lives [3]. It is estimated that approximately 70% of SE cases occur in infants younger than one year, 75% in children younger than three years, and the first episode of SE most usually takes place approximately 2.5 years following the first diagnosis [4].
It is more common in children than in adults and can happen in a number of contexts, but it is more common in children who are sick with an illness and in patients who have a history of epilepsy, brain abnormalities, hypoxia, hypoglycemia, or who have experienced head trauma. SE is often the initial, unprovoked sign of a seizure disease, however this is not always the case.
Status epilepticus can lead to a variety of consequences if it is not handled in a timely manner. Some of these complications include cardiac dysrhythmias, metabolic derangements, autonomic dysfunctions, hyperthermia, pulmonary aspiration, and permanent damage to the nervous system [6]. The primary objectives of this research were to investigate the clinical profile and short-term outcomes of juvenile status epilepticus that occurred at a tertiary care facility.

Material and Methods
Present study was single-center, prospective, descriptive & observational study, conducted in Department of Pediatrics, SSPM Medical College, Padve Inclusion criteria from Dec 2018 to Dec 2019

- Children of age 1 month to 12 years, either gender, admitted with status epilepticus or developed status epilepticus during the course of their illness, willing to participate in study.

Exclusion criteria
- Neonatal seizures. Seizures in developmentally abnormal children.
- Parents/guardians not willing to participate

Study was explained & a written informed consent was taken from guardians before participation in study.

Clinical details such as present complaints, demographic data, past history of seizures, birth history, developmental history, family history, drug history, immunization status were noted. Detailed clinical examination including a complete neurological examination was done. Investigations as complete haemogram, blood sugar, Serum sodium, Serum calcium were done for all patients. Liver function test, chest X-ray, Mantoux test, CSF analysis, EEG antiepileptic drug (AED) levels, toxicological studies, lumbar puncture, electroencephalography, and neuroimaging (Computed tomography [CT] scan and Magnetic resonance imaging [MRI] were done wherever indicated and results recorded.

Treatment details, clinical course, outcome with regard to complete recovery, any neurological deficits, morbidity and mortality were noted.

Data was collected and compiled using Microsoft Excel, analysed using SPSS 23.0 version & data was analysed with descriptive statistics.

Results

Table 1: Patient characteristics

Characteristic	Number of Cases
Age distribution (years)	
1 month to 12 months	23
1-3 years	61
4-6 years	11
6-12 years	13
Sex distribution	
Boys	65
Girls	43
Type of seizures	
Generalized tonic-clonic	65
Focal, impaired awareness	22
Focal evolving to bilateral tonic-clonic	12
Generalized tonic	9
Other characteristics	
Pre-existing epilepsy	33
Seizure duration,	16.53 ± 11.12 min

Table 2: Etiology

Suspected etiology	No. Of cases
Atypical febrile seizures	43
Meningitis	17
Cryptogenic	14
Hypoglycemia	13
Encephalitis	9
Head trauma	3
Hypocalcemia	3
CNS tuberculosis	2
Hypernatremia	2
Neurocysticercosis	1
Hyponatremia	1

Table 3: Duration of seizures.

Duration from onset of seizures to arrival in hospital	No. Of cases
< 2 hours	65
2-4 hours	38
> 4 hours	5

Table 4: Other characteristics

Parameter	Mean ± SD/ Number of cases (%)
Duration in ICU (no. of days)	3 ± 1.23
Duration of hospital stay (no. of days)	5.43 ± 2.78
Intubation required	17
Required mechanical ventilation	13
Length of Mechanical ventilation (day)	1.24 ± 0.5
Refractory status epilepticus (%)	7
General anaesthesia-Thiopentone required	11
Mortality	5
Acute CNS injury	3
Progressive encephalopathy	2
Median survival time (days)	1.47 ± 1.38

Discussion

Epileptic status is a prevalent type of paediatric emergency that needs to be recognised and treated as soon as possible. When it comes to children who have convulsive status epilepticus, having an understanding of the clinical profile and the factors that can predict morbidity and death is helpful in modulating care and improving prognosis.

The aetiology of status epilepticus in children varies with age; a febrile or acute symptomatic cause is most common in younger children younger than 2 years of age; whereas, remote symptomatic causes predominate in children older than 2 years of age. The distribution of etiologies for status epilepticus in children varies with age.[5] Children with SE who were older than 2 years had a higher incidence of a history of neurological injury and seizures than children with SE who were younger than 2 years. 5 In contrast to underdeveloped nations, where central nervous system infections are the most common cause of SE in children, the majority of cases of SE in affluent countries are caused by febrile SE and idiopathic (unknown aetiology) conditions.

Seizures that last for an extended period of time are linked to an elevated risk of both death and morbidity. Unfortunately, there is a large delay in children reaching the tertiary care centres in underdeveloped nations. This is caused by a lack of public awareness, the absence of rapid availability of medical care, and the lack of infrastructure to transport children to the proper places. The primary contributor to morbidity and mortality in SE patients is the underlying aetiology of the condition. If the underlying cause is not treated in a timely manner and in the correct manner, it will be impossible to control the seizures, regardless of the anti-epileptic treatment one decides to use.

Conclusion

The longer the symptoms of SE are persistent, the more challenging it is to treat them, and the greater the danger of long-term neurological damage.

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