

## Evaluating Short Term Outcomes Regarding Seizure Recurrence and Neurological Morbidity upon Discharge and During a 3- Month Follow – Up Period in the PICU

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### Abstract:

**Background & Method:** This Observational Study. study was conducted at Department of Pediatrics, at JLNMCH Bhagalpur. Study duration of Sep 2020 to July 2021. A detail history and clinical examination will be done and recorded on a proforma especially designed for the study. The etiology of the seizure was ascertained based on clinical data and relevant investigations. The neurological examination and seizure details were reviewed at discharge and once at 3 months follow up period. For those patients who did not come physically for follow up, a phone call was made to find the seizure outcome.

**Result:** Out of 211 patients 144(68.2%) patient had excellent recovery whereas 35(16.6%) patients had partial recovery. Recovery was poor in 32(15.2%) patients. No association (P=0.063) was observed between recovery and type of seizures.

**Conclusion:** Children with preexisting neurological deficits and those having etiologies known to have a poor prognosis had seizure recurrence on follow up at three months. Major cause of mortality in our study included severe CNS infection and hence the importance on prompt diagnosis and management for a better neurological outcome. The mortality amongst our study group was 12% and the most common cause being central nervous system infections.

**Keywords:** Seizure, Neurological Morbidity & PICU.

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### Introduction

Acute seizure is defined as recent and new paroxysmal event of epileptic origin. An epileptic seizure corresponds to a transient occurrence of signs and/or symptoms due to an abnormal excessive or synchronous neuronal activity in the brain. A seizure is a transient and time-limited event, with various manifestations depending on the localization of onset in the brain, the propagation of the discharges, the maturation of the brain, confounding disease process, sleep-wake state, medications and various other factors. Sensory, motor and autonomic function, consciousness, emotional state, memory, cognition behavior may be altered or modified during a seizure [1]. Acute symptomatic seizures: While all patients with epilepsy experience seizures, not all individuals with seizures have epilepsy. One or more epileptic seizures may occur in the context of a brain insult (systemic, toxic, or metabolic). These events (defined acute symptomatic seizures, provoked seizures, or situation-related seizures) are presumed to be an acute manifestation of the insult and may not recur when the underlying cause has been removed

or the acute phase has elapsed. Acute symptomatic seizure is a term used for seizures occurring at the time of a systemic insult or in close temporal association with a documented brain insult [2]. Acute symptomatic seizures differ from epilepsy in several important aspects. First, unlike epilepsy, the proximate cause of these seizures is clearly identifiable. The close temporal sequence makes causality likely for conditions such as CNS infections, metabolic disturbances e.g uremia, head injury, anoxia, or stroke, which all immediately precede or are concurrent with the seizure. Biologic plausibility also supports causality when there is an acute disruption of brain integrity or of metabolic homeostasis in association with the insult. In many cases, there is also a dose effect with more severe injury leading to a higher risk of seizures. Second, unlike epilepsy, acute symptomatic seizures are not necessarily characterized by a tendency for recurrence unless there is recurrence of the underlying acute causal condition [3]. Third, although acute symptomatic seizures are an undisputable risk factor for epilepsy, they

cannot be included in the definition of epilepsy, which is intended as the occurrence of two or more unprovoked seizures [4].

### Material and Method

This study was conducted at Department of Pediatrics, Jawahar Lal Nehru Medical college and Hospital, Bhagalpur. Study duration of Sep 2020 to July 2021. Total 211 Children in the age group 01 month to 18 years, admitted to PICU with following inclusion and exclusion criterion were recruited.

### Inclusion Criteria

- Active convulsions / seizures at presentation.
- Children with history of seizures in close temporal association with medical illness within a week prior to admission in PICU.
- Children developing seizures during their stay in

PICU.

### Exclusion Criteria

- ft against advice within 24hrs of admission.
- Patient less than one month of age.

### Methods

A detail history and clinical examination will be done and recorded on a proforma especially designed for the study. The etiology of the seizure was ascertained based on clinical data and relevant investigations.

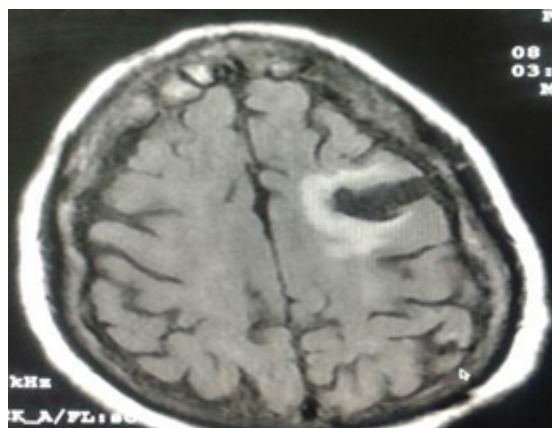
The neurological examination and seizure details were reviewed at discharge and once at 3 months follow up period. For those patients who did not come physically for follow up, a phone call was made to find the seizure outcome.

### Results

**Table 1: Outcome of Acute seizures in terms of seizure recurrence at discharge**

Outcome	Focal(n=55)	Generalized(n=150)	Myoclonic(6)	Total
Excellent	33(60.0)	128(72.0)	3(50.0)	144(68.2)
Partial	12(21.8)	23(15.3)	0(0)	35(16.6)
Poor	10(18.2)	19(12.7)	3(50.0)	32(15.2)

Out of 211 patients 144(68.2%) patient had excellent recovery whereas 35(16.6%) patients had partial recovery. Recovery was poor in 32(15.2%) patients. No association ( $P=0.063$ ) was observed between recovery and type of seizures.



A child with focal seizures showing gliosis over the right temporoparietal region due to perinatal insult.

### Discussion

In our study patients with generalized seizure had a better response to AED'S as compared to the ones with focal and myoclonic seizures respectively which was a similar finding in a study by Maytal et al<sup>[5]</sup>. Also myoclonic seizures had a poor response to AED'S in our study as compared to some studies as they had started in late childhood ages and that most of them were cases of SSPE whose prognosis is grave [6,7]. We noticed that 24(11.3%) patients in our study presented in status epilepticus, the most common cause of which being central nervous system infections, epilepsy due to mostly perinatal insult followed by atypical febrile seizures

respectively which was in contrary to a study by Knudsen et al [8]. This discrepancy could be due to better perinatal care and aseptic precautions in the western world as compared to developing countries where perinatal insults and infections are more common [9]. We also observed that over a short term follow up of over 3 months, patients with myoclonic seizures had seizure recurrence with neurological abnormality and maximum mortality. Whereas patients with generalized seizures had better neurological outcome with minimum seizure recurrence as compared to focal seizures which is a similar finding in a few studies [10]. The mortality amongst our study group was 12% and the most common cause being central nervous system infections which correlates with other studies.

## Conclusion

Children with preexisting neurological deficits and those having etiologies known to have a poor prognosis had seizure recurrence on follow up at three months. Major cause of mortality in our study included severe CNS infection and hence the importance on prompt diagnosis and management for a better neurological outcome. The mortality amongst our study group was 12% and the most common cause being central nervous system infections.

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