Original Research

Prognostic Value and Usefulness of STESS Score in Refractory Status Epilepticus Patients

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ABSTRACT:
Introduction: Status epilepticus (SE) is the most severe manifestation of epilepsy, which requires intensive care. Its incidence ranges from 15 to 20 per 100,000 per year and is 2nd most frequent emergency in neurology. Refractory status epilepticus (RSE) establishes in 23-43% section of the patients with SE. **Aim**: the study aimed to investigate the prognostic value of STESS score in RSE patients. **Material and methods:** This retrospective analysis of patients with RSE was conducted on 52 patients of RSE who were admitted in the Emergency Medical Department or Neurology ward, of our tertiary care hospital (Postgraduate Institute of Medical Education and Research, Chandigarh). RSE was diagnosed if a first line (either lorazepam or diazepam) and a second line drug (either of the following: phenytoin or levetiracetam). Demographic information, history of epilepsy and precipitating causes were noted. The severity of RSE was determined by the Status Epilepticus Severity Score (STESS). **Results**: The mean age of patients at time of evaluation was 36.53± 15.81 (range: 13-70) years with male predominance. Risk factors for epilepsy like febrile seizure, neonatal seizure, congenital CNS malformation and perinatal distress were reported in the study sample. Status epilepticus severity score (STESS) was determined in all the patients. No patient had 0 score, 5 (9.61%) patients had 1 score, 15 (28.85%) had 2 score, 25 (48.08%) had 3 score, 6 (11.54%) patients had 4 score and 1 (1.92%) patient had 6 score (Table 1). STESS score is predictor of outcome of status epilepticus. Scores 0 to 2 are considered favourable; it was seen in 20 (38.46%) patients and unfavourable in 32 (61.54%) patients. **Conclusion**: Our results regarding the ability of STESS to predict mortality in patients with RSE are consistent with previous findings. Further prospective studies are necessary to analyze the role of baseline comorbidities and the capacity of such prognostic scales to predict long-term mortality and functional outcome in RSE.
Key Words: Status epilepticus, Refractory status epilepticus, Status Epilepticus Severity Score (STESS).

INTRODUCTION:

Epilepsy is one of the most common neurological disorders affecting 1-2% of the world population.[1] Status epilepticus (SE) is the most severe manifestation of epilepsy, which requires intensive care. Its incidence ranges from 15 to 20 per 100,000 per year and is 2nd most frequent emergency in neurology.[2] SE is defined as prolonged seizures or recurrent seizures, without any full recovery of

consciousness between them, without indicating any clear time frame.

For several years, in literature it was assumed by doctors, that SE was a seizure that lasted longer than 30 minutes or otherwise atleast two seizures without any complete regain of consciousness between these seizures.[3] In the year 1999, Lowenstein et al, stated some fresh working definition which lowered the said threshold to greater than five minutes of any persistent seizure activity.[3]

Refractory status epilepticus establishes in 23-43% section of the patients with SE. It is stated that occurrence of RSE is found to be mostly associated with severe, acute and potentially fatal etiologies such as, infections like encephalitis, a massive CVA, or progressive primary CNS tumors , with severe impairment of consciousness, 16 to 39% is the estimated short term fatality rate for RSE ; as compared to the non-refractory SE, and the mortality rate after RSE is estimated to be about 3 times higher.[4,5\]

Clinical scoring systems for predicting mortality in SE were recently introduced. STESS (Status Epilepticus Severity Score), has four clinical components: level of consciousness, worst seizure type, age, and history of seizures. Very few studies in literature have analyzed the ability of STESS score to predict mortality and functional outcome in RSE.[6]

Therefore this study was undertaken with an aim to investigate the prognostic value of STESS score in RSE patients within our hospital settings.

MATERIAL AND METHODS:

This retrospective analysis of patients with RSE was conducted on 52 patients of RSE who were admitted in the Emergency Medical Department or Neurology ward, of our tertiary care hospital (Postgraduate Institute of Medical Education and Research, Chandigarh). The study period was from January 2015 to June2016. All 52 patients, whose SE still persisted and coma induction was not feasible for lack of resources, were enrolled in the study, after obtaining an informed consent. They were chosen irrespective of etiology or duration of SE, age, sex, ethnic origin and occupation. The project was approved by the institutional Ethical Committee. RSE was diagnosed if a first line (either lorazepam or diazepam) and a second line drug (either of the following: phenytoin or levetiracetam).

Demographic information, history of epilepsy and precipitating causes were noted. The severity of SE was determined by the Status Epilepticus Severity Score (STESS). A STESS score of 0–2 was considered favorable and 3–6 as unfavourable.

All the data was recorded manually in the proforma as well as entered in Windows compatible SPSS version 22. The data was analysed using SPSS software and descriptive statistical methods were used, wherever appropriate. The p value of less than 0.05 was considered statistically significant.

RESULTS:

The present prospective study included 52 patients with refractory status epilepticus (RSE). The mean age of patients at time of evaluation was 36.53± 15.81 (range: 13-70) years. Study group included 35 men and 17 women. Mean age of onset of seizure was 32.83 ± 18.99 (range: 1-70) years and mean period of seizure was 46.88 ± 95.74 months (range: 12 hours – 456 months). Past history of seizures was present in 30 (57.69%) patients.
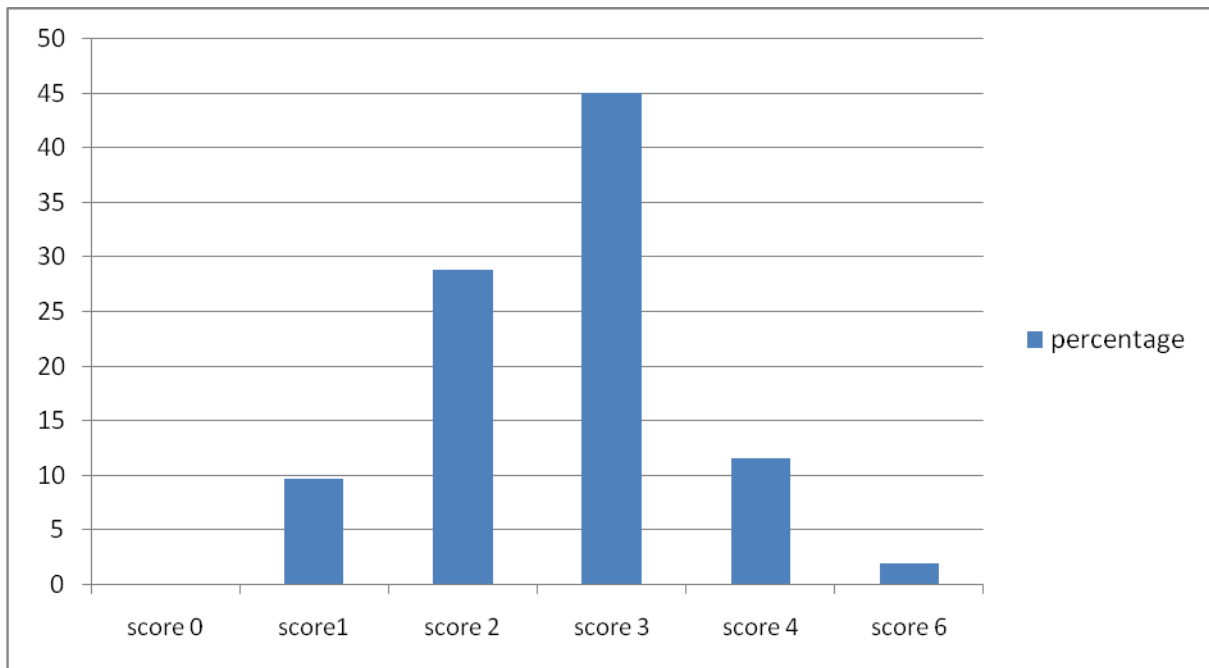
Risk factors for epilepsy like febrile seizure, neonatal seizure, congenital CNS malformation and perinatal distress were reported in the study sample. Type of seizures observed in the present study were simple partial, complex partial, GTCS, myoclonic jerks and secondary generalized. Predominantly, GTCS type was observed in 63.46% patients. Under worst seizure type, generalized-convulsive was most predominant with 76.92%, while nonconvulsive status epilepticus in coma and simple-partial/complex-partial/ myoclonic jerks were observed with less frequency in rest of the patients.

Status epilepticus severity score (STESS) was determined in all the patients. No patient had 0 score, 5 (9.61%) patients had 1 score, 15 (28.85%) had 2 score, 25 (48.08%) had 3 score, 6 (11.54%) patients had 4 score and 1 (1.92%) patient had 6 score (Table 1, graph 1). STESS score is predictor of outcome of status epilepticus. Scores 0 to 2 are considered favourable, it was seen in 20 (38.46%) patients and unfavourable in 32 (61.54%) patients (table 2). A total of 39 (75%) patients required ventilatory support in the present study.

TABLE 1: showing STESS score in refractory status epilepticus

STESS score	No. of patients(%) (n=52)
0	0
1	5 (9.61)
2	15 (28.85)
3	25 (48.08)
4	6 (11.54)
6	1 (1.92)

Graph 1: showing STESS score in refractory status epilepticus

Table 2: Comparison of STESS scores

STESS scores	Study group (n=52) No. (%)
Favourable (0 – 2)	20 (38.46)
Unfavourable (>2)	32 (61.54)

In the present study, Out of 52 patients 25 (48.08%) expired during the course of the study, while 27 (51.92%) recovered.(table 3)

Table 3 : Comparison of outcome of RSE

Outcome of RSE	Study group(n=52) No. (%)
Recovered	27 (51.92%)
Expired	25(48.08%)

DISCUSSION:

This prospective study was carried out on 52 patients of refractory status epilepticus (RSE). This study highlights the difficulty and limitations in obtaining information on RSE. The mean age of patients at time of evaluation in the present study was 36.53 ± 15.81 with Male predominance. Vargas-Garcia et al, in their study, analyzed 11 patients (men 63.6%) with a mean age of 40 ± 20.8 years, 135 which is similar to our study.[7]

Two clinical scoring systems for predicting mortality in SE were recently introduced: STESS (Status Epilepticus Severity Score), which has four clinical components (level of consciousness, worst seizure type, age, and history of seizures), and EMSE (Epidemiology-based Mortality score in Status Epilepticus), which also has four components (etiology, comorbidity, age, and electroencephalography [EEG]) [8]

RSE is a serious neurological emergency associated with high mortality and high rates of functional decline. It has been reported that SE duration, symptomatic etiology or greater consciousness impairment at baseline could be factors related to a poor prognosis or refractoriness in patients with SE.

The results of the present study showed that under worst seizure type, generalized-convulsive was most predominant with 76.92%, while non convulsive status epilepticus in coma and simple-partial/complex-partial/ myoclonic jerks were observed with less frequency in rest of the patients.

Observed Mean hospital stay of study group was 10.36 ± 12.96 (range: 1-60) days. The in-hospital mortality rate in our study was 48.08%, which is slightly higher than previously reported rates.[9-15] Majority of the patients died due to complications related to underlying etiology or other comorbidities like acute respiratory failure or septic shock. Therefore optimizing the treatment of patients with RSE to avoid the complications of a prolonged ICU hospitalization is important.

Overall predominant STRESS score in the present study was 48.08% (3 score). Favourable, score was seen in 38.46% patients and unfavourable in 61.54% patients. Madzar et al. indicated that STESS score: 3 was a potential predictor of long-term functional outcome in this setting[16], while Gaspard et al. reported that STESS was associated with both mortality and poor functional outcome in patients with new-onset RSE. [17]

In literature the STESS scoring system is described as a useful scale but, J. Ciurans et al reported that the addition

of mRS scores to STESS remains a point of discussion, because even though a higher STESS may indicate the appropriateness of more intensive treatment, a high mRS score means that the patient already had poor functional status and could experience further functional decline or even die if treatment is intensified and in addition.[6]

CONCLUSION:

Our results regarding the ability of STESS to predict mortality in patients with RSE are consistent with previous findings. Though STESS scoring system is described as a useful scale for predicting functional outcome in RES Patients still Further prospective studies are necessary to analyze the role of baseline comorbidities and the capacity of such prognostic scales to predict long-term mortality and functional outcome in RSE.

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