

Commentary on END-IT Score

Status epilepticus is a neurological emergency with mortality in the range of 7-39%.^[1] There had been efforts to construct prognostic scores to predict the outcome at and after discharge from the hospital. A reliable predictor is always helpful for clinicians to decide the management strategies and to communicate to the relatives. Currently, the available scores for outcome prediction are Status Epilepticus Severity Score (STESS) Epidemiology-based Mortality score in SE (EMSE) and the END-IT score.^[2-5] The first two scores were developed from retrospective studies and for predicting death vs. survival during the hospital stay. The STESS score considers four variables at the time of initial presentation to the hospital, such as age, history of seizures, seizure type, and level of consciousness. In contrast, EMSE takes into account etiology, age, comorbidities, and EEG data.

END-IT SCORE

Qiong Gao *et al.*,^[5] introduced END-IT score, and it differed from the first two scores in two major aspects. This was based on a cohort (retrospective) study on 132 patients with a median age of 25 years, and it is a score for predicting the functional outcome (assessed by Modified Rankin Scale {mRS}) of patients with SE three months after discharge from the hospital. Since mortality during the hospital stay is also included in calculating unfavourable outcomes at three months, it indirectly predicts short-term outcomes. The authors had followed existing diagnostic criteria and management protocol for SE available at the time of the study and used continuous EEG monitoring to detect Non-Convulsive Status Epilepticus (NCSE). However, the outcome assessment was based on a telephonic interview.

END-IT stands for encephalitis, NCSE, Diazepam resistance, imaging abnormality, and tracheal intubation, which were independent predictors of an unfavourable outcome at three months. Here NCSE indicates one that evolves and progresses from the convulsive status epilepticus (CSE). The imaging abnormalities may be in CT/MRI brain at any management point but should be attributable as the causative lesion or diffuse edema. This score does not apply to children less than 12 years and having SE secondary to cerebral anoxia.

Each parameter is given a score of 1 except for imaging to make the total score range from 0-6. Unilateral imaging abnormality gets a score of one, and bilateral or diffuse changes get a score of 2. Overall a score of ≥ 3 had a sensitivity of 83.9%, a negative predictive value of 82.8%, specificity of 68.6%, and a positive predictive value of 70.3% for an unfavourable outcome. Practically the etiology and refractoriness of the status epilepticus become essential factors predicting the outcome. However, in routine use of this score, we need to consider certain factors such as the heterogeneous nature of encephalitis and the imaging features secondary to status epilepticus.

In the issue Kapoor D, *et al.*,^[6] reports their assessment on the usefulness of the END-IT score as a predictive tool among children with SE. It is a commendable effort, especially when there is a scarcity of such scores for the pediatric population. However, this again is a retrospective cohort study. It differed from the original study in the age of participants, the diagnostic criteria of SE (instead of 30 minutes, 5 minutes is used), and the time of assessment of outcome (at the time of discharge and not at three months). EEG recordings were restricted to patients with refractory status epilepticus (RSE), super refractory status epilepticus (SRSE) and patients with suspected NCSE instead of all patients in the original study.

Further, not all participants had undergone imaging. A prospective study would have been ideal for validation of END-IT score among the pediatric population. However, the current study results give preliminary indications of the validity of END-IT score in the pediatric population and further justify a prospective study. As the authors mentioned, the END-IT score cannot be used for emergency decision-making at the time of admission. Some information such as etiology, neuro-imaging, and response to treatment may not be available.

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REFERENCES

1. Neligan A, Shorvon SD. Frequency and prognosis of convulsive status epilepticus of different causes: A systematic review. *Arch Neurol* 2010;67:931-40.
2. Rossetti AO, Logroscino G, Milligan TA, Michaelides C, Ruffieux C, Bromfield EB. Status epilepticus severity score (STESS): A tool to orient early treatment strategy. *J Neurol* 2008;255:1561-6.
3. Rossetti AO, Logroscino G, Bromfield EB. A clinical score for prognosis of status epilepticus in adults. *Neurology* 2006;66:1736-8.
4. Leitinger M, Höller Y, Kalss G, Rohrer A, Novak HF, Höfler J, *et al.* Epidemiology-based mortality score in status epilepticus (EMSE). *Neurocrit Care* 2015;22:273-82.
5. Gao Q, Ou-Yang T, Sun X, Yang F, Wu C, Kang T, *et al.* Prediction of functional outcome in patients with convulsive status epilepticus: The END-IT score. *Crit Care* 2016;20:46.
6. Kapoor D, Sidharth, Garg D, Malhotra RK, Kumar V, Sharma S. Utility of the END-IT score to predict the outcome of childhood status epilepticus: A retrospective cohort study. *Ann Indian Acad Neurol* 2021;24:390-5.

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