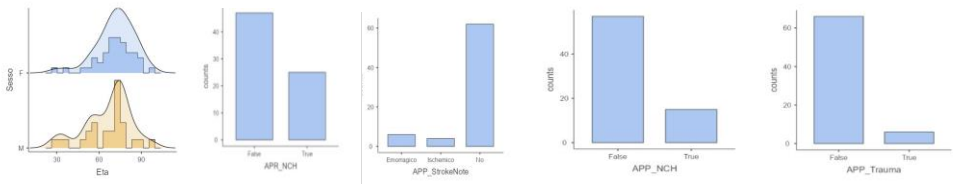
Clinical, Laboratory, and EEG Predictors of Outcome in Status Epilepticus: A Retrospective Tertiary Center Study.

Lanzone J[1], Bellini A[1], Curti D[1], Fanelli G.F[1], Cursi M[1],Filippi M[2]

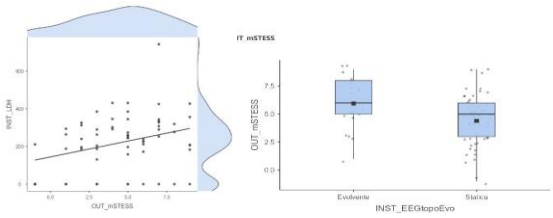
1 Neurophysiology Service, IRCCS San Raffaele Scientific Institute, Milan, Italy;
2 Vita-Salute San Raffaele University, Milan, Italy

Status epilepticus (SE) is a life-threatening neurological emergency characterized by heterogeneous presentations and outcomes. This study aimed to identify clinical, laboratory, and electroencephalographic (EEG) predictors of outcome in patients with SE, focusing on blood biomarkers, EEG patterns evaluated using the American Clinical Neurophysiology Society (ACNS)/AAN criteria, and anamnestic factors such as prior epilepsy diagnosis.



METHODS: We retrospectively reviewed the medical records of patients evaluated for SE by the EEG service of Ospedale San Raffaele in 2022. Inclusion criteria were the presence of SE confirmed by EEG and/or clinical criteria. Patients with hypoxic encephalopathy secondary to cardiac arrest were excluded. Collected data included demographics, clinical presentation, history of epilepsy, laboratory parameters (e.g., CRP, white blood cell count, sodium levels, liver function tests, LDH), and EEG findings classified according to the AAN grading system. Outcomes were assessed using days of hospitalization, the Status Epilepticus Severity Score (STESS), the Glasgow Outcome Scale – Extended (GOSE), the modified Rankin Scale (mRS), and mortality.

RESULTS: A total of 80 patients were included (mean age: 69 ± 15 years; 62% female). A prior diagnosis of epilepsy was present in 43% of cases. EEG features such as topographic evolution were significantly associated with higher STESS scores (p = 0.004). Laboratory abnormalities, particularly elevated CRP, hyponatremia, liver dysfunction, and elevated LDH, correlated with poorer outcomes across multiple clinical scales (p < 0.05). Patients without a prior epilepsy diagnosis had significantly better prognoses (p=0.023). Additionally, recent stroke was associated with a higher degree of residual disability at discharge (0.002). Additionally, a survival analysis on the duration of hospitalization identified potential predictors and showed that patients with epilepsy tend to have fewer days in the hospital.



DISCUSSION: Our findings suggest that both blood biomarkers and structured EEG interpretation using the AAN criteria may serve as useful prognostic tools in SE. A known history of epilepsy was associated with better outcomes, possibly due to earlier recognition and more prompt treatment. Integrating clinical history with EEG structured reporting and biochemical assessments could enhance early risk stratification and management strategies.