A preliminary prognostication for good neurological outcome in the patient with post-cardiac arrest care: How to reduce an inappropriate withdrawal of life-sustaining therapy in early stage?

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Argomento: Clinical Abstract

Background / Introduction : Withdrawal of life-sustaining therapy because of perceived poor neurological outcome (WLST-N) is highly associated with attributable mortality. The incidence of early WLST-N (i.e., within 72 h after ROSC) has been reported to be considerably high.

Objectives: This study aimed to investigate strategiesfor predicting good outcomes in the early stage of post-cardiac arrest care using prognostic tests that are available until 24 h after the return of spontaneous circulation (ROSC) and free from sedation effects.

Method / Description: Based on prospectively gathered data, a retrospective analysis was performed on 138 out-of-hospital cardiac arrest patients who underwent prognostic tests, including the gray–white matter ratio (GWR), Glasgow Coma Scale motor score (GCS-M) before the administration of sedatives, and neuron-specific enolase (NSE) at 24 h. Those prognostic tests were investigated for the prognostic performance as single predictor and combination strategies of them. The prognostic performance was analyzed as the specificity and sensitivity of the primary outcome, which was defined as a good outcome (Cerebral Performance Category 1 or 2).

Results / Outcomes: Of the total cohort, 55 (44.0%) patients had good outcomes. NSE showed the highest prognostic performance among the others and was associated with specificities and sensitivities of > 70% and > 98%, respectively, in combination strategies. NSE contributed the most to the decision tree, while GWR made little contribution. In the low NSE cohort (≤ 32.1 ng/mL), GCS-M of ≥ 4 identified good outcomes without any misclassification. Overall accuracy for the good outcome was 81.8%.

Conclusion: The combination of NSE and GCS-M was strongly associated with improved prognostic performance, and good outcomes were identified without misclassification. Even in the early stage, they may help in identifying whether a comatose patient has a chance of neurological recovery later.
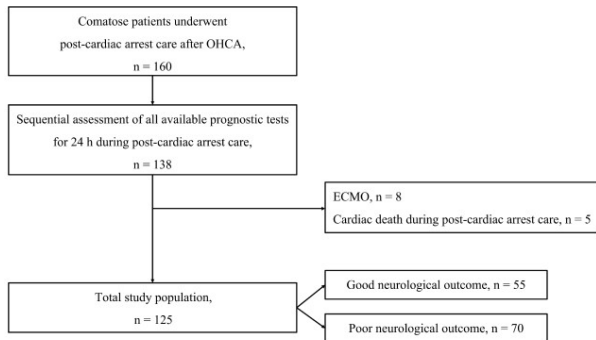
Figure 1. Flow diagram of included patients.

Abbreviations: OHCA, out-of-hospital cardiac arrest;

ECMO, extracorporeal membrane oxygenation
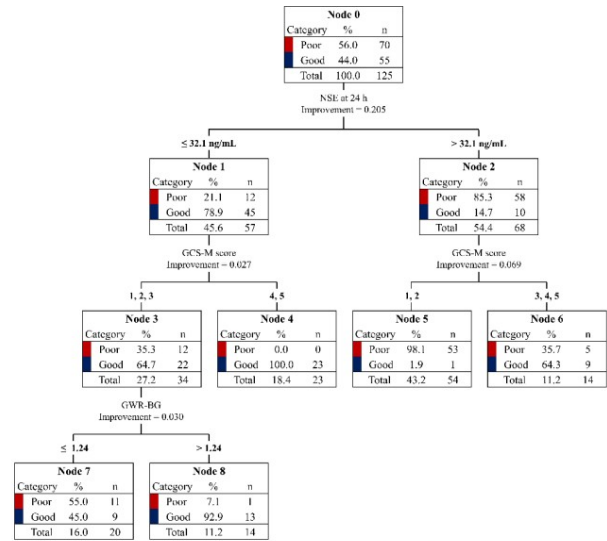
Figure 2. Classification and regression-tree analysis for prediction of good

and poor neurological outcome.

Abbreviations: NSE, neuro-specific enolase; GCS-M, Glasgow Coma Scale motor score; GWR-BG, gray and white matter ratio at basal ganglia level