

Multimodal Approach for Prognostication after Cardiac Arrest: post hoc analysis of a multicentric cohort

Eugenio Di Bernardini, Mauro Oddo, Claudio Sandroni, Fabio Taccone, Giuseppe Citerio, Jean-Francois Payen, Janneke Horn, Malin Rundgren, Alain Cariou, Cristian Storm, Pascal Stammet, Jacques Creteur, Fabio Silvio Taccone

Erasme Hospital- Brussels, Belgium

Introduction

International Guideline recommended pupillary light reflex (PLR) and/or cortical response (N20) to short-latency somatosensory evoked potentials (SSEPs) at 72 hours after return to spontaneous circulation as the only strong predictors of unfavorable outcome in comatose patients after cardiac arrest. The aim of this study was to compare this algorithm with a multimodal approach including other prognostic tools.

Methods

Post hoc analysis of an international multicenter (n=10; n=456 patients) prognostic study on automated pupillometry in comatose post-CA patients. The primary study endpoint was the accuracy of NPI in predicting 3-month unfavorable neurological outcome (UO), defined as Cerebral Performance Category (CPC) of 3-5 (severe disability, unresponsive wakefulness or death). Patients with findings on PLR, SSEPs, NPI and EEG were included; the highest NSE was also recorded, whenever available. An NPI 50 µg/L value were considered. False positive rate (FPR) for each tool was calculated as: false positive / favorable outcome.

Results

We included 186 patients; 131 (70%) of those had UO. Using the approach of Guidelines, unfavorable outcome at day 3 was observed in 41/44 patients with absent PLR and 63/63 with absent N20; 80/131 (61%) patients with UO were identified. Using the multimodal approach, UO was identified in 15/15 patients with NPI 50 µg/L. This approach identified 107/131 (82%) patients with UO (p=0.002). However, the FPR increased from 5% to 35%.

Conclusions

This study suggests that a multimodal approach, including NPI, EEG, SSEPs and NSE, could identify a higher proportion of patients with UO but with higher FPR.