

Reliable prediction of poor outcome in postanoxic coma using EEG in a four-channel frontotemporal montage

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EEG background patterns in the first 24h after cardiac arrest (CA) are highly valuable for prognostication in postanoxic coma. However, limited resources in many hospitals hamper widespread implementation of continuous EEG monitoring.

In the present study, the reliability of EEG in a four-electrode frontotemporal montage for prediction of poor outcome was investigated.

Continuous EEG registrations of 154 consecutive cardiac arrest patients were available from a multicenter prospective cohort study. Five-minute EEG epochs at 12 and 24h after CA were reviewed by three blinded experts in both a 9-channel full-head (standard) montage and a four-channel frontotemporal (FT) montage (T3-Fp1, Fp1-Fp2, Fp2-T4, T3-T4). EEG background patterns were scored according to the American Clinical Neurophysiology Society nomenclature. Poor outcome was defined as a best Cerebral Performance Category score of 3-5 at six months after CA. Interrater agreement was determined using the intraclass correlation coefficient (ICC).

152 Patients had EEG available at 24h after CA, of which 74 (49%) had poor outcome. Suppression, burst-suppression with identical bursts, or low voltage EEG was present in 25 patients and predicted poor outcome at 24h with 100% specificity (95%-CI 95-100%) in both montages. Sensitivity was 34% (95%-CI 23-46%) for the standard montage and 31% (95%-CI 21-43%) for the FT montage.

ICC for scoring EEG background pattern was 0.94 for both montages.

EEG with only four electrodes in a frontotemporal montage seems reliable for prognostication after cardiac arrest. These results suggest the possibility to reduce the number of EEG electrodes without compromising accuracy of prognostication after cardiac arrest.