

Multicenter prospective study on predictors of short-term outcome in disorders of consciousness

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Study question

What are the predictors of short-term clinical outcomes in patients with prolonged disorders of consciousness (DoC) due to acquired severe brain injury?

What is known and what this paper adds

Previous studies have identified single variables, such as the characteristics of somatosensory evoked potentials (SEPs), as potential predictors of outcomes in patients with prolonged DoC (i.e., DoC with durations >28 days). This investigation's results elucidate the value of multimodal assessments for predicting outcomes.

Methods

For this prospective observational study, the investigators enrolled 147 adults (70.1% male; mean age, 49.4 years; 95% confidence interval [CI], 46.1–52.6 years) who entered forms of DoC (vegetative state/unresponsive wakefulness syndrome [VS/UWS] for 71; minimally conscious state [MCS] for 76) with anoxic, traumatic, or vascular etiologies. These patients received treatment through 12 specialized centers in North America, Europe, and Asia during 2017. Enrollment occurred ≤3 months after brain injury. At 6 months, clinicians assessed the patients to detect improvements (i.e., a patient in MCS at baseline emerging from MCS or a patient in VS/UWS at baseline entering MCS or regaining full consciousness). These improvements were the primary outcomes. The investigators used regression models to identify associations between baseline demographic, anamnestic, clinical, and neurophysiologic features and 6-month improvements.

Table Predictors of improved diagnoses at 6 months

Predictor	β	Odds ratio (95% confidence interval)
Age, per y	-1.91	0.14 (0.04–0.53)
Time postinjury, per d	-2.26	0.10 (0.02–0.39)
CRS-R, per point	2.20	9.10 (1.17–70.30)
EEG reactivity to eye-opening	2.30	10.04 (1.07–94.10)

Results and study limitations

At 6 months, clinical diagnoses had improved for 72 patients, including 27 in the VS/UWS group and 45 in the MCS group. The predictors of improvement were younger ages, shorter postinjury times, higher Coma Recovery Scale–Revised (CRS-R) scores, and the presence of EEG reactivity to eye-opening. Interestingly, EEG background activity features and the SEP cortical component, which predicted outcomes in earlier studies, were not prognostically informative in multivariate analysis. The present study's limitations include not having enough patients for separate analyses of the VS/UWS and MCS groups and not having neurophysiology data for all patients. The international nature of the study sample favors generalizability.

Study funding and competing interests

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