Time course changes in perfusion index and pleth variability index during electroconvulsive therapy

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BACKGROUND: Electroconvulsive therapy (ECT) is a widely acceptable therapy for psychiatric symptoms. ECT provokes abrupt hemodynamic changes, and sometimes induces serious cardiac complications. In this study, we examined the time course of changes in perfusion index (PI) and pleth variability index (PVI) during ECT using Radical-7 (Masimo Corp., USA).

METHODS: Fifteen patients with psychiatric disease treated with ECT were enrolled in this study. The study was performed at three or four treatment points for 10-12 treatments. Anesthesia was induced by propofol 0.8-1.0 mg x kg(-1), and suxamethonium 0.8-1.0 mg x kg(-1). Thereafter patients were ventilated by facial mask with 100% oxygen, and ECT was performed. All patients were monitored using hemodynamic variables, PI and PVI. Variables including PI and PVI were measured before and 5 minutes after ECT. Anti-hypertensive agents were administered if necessary.

RESULTS: Heart rate transiently increased after ECT. PI transiently decreased during ECT, but returned to baseline value 1 minute after ECT. PI was unchanged during the study period (awake state: PI 3.6 +/- 1.4, during ECT 1.6 +/- 0.9*, one minute after ECT 1.9 +/- 1.7,*: $P < 0.05$ compared with awake state).

CONCLUSIONS: This finding suggests that tissue perfusion was transiently impaired during ECT.