

Clinical effects of cerebral near-infrared spectroscopy monitoring (NIRS) and guide intervention versus standard usual care in Comatose patients.

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Argomento: MONITORAGGIO NEUROLOGICO

Background: Comatose patients with cerebral deoxygenation is associated with various adverse systemic outcomes and increase disability and mortality. We hypothesized, by

using the brain as an index organ, with interventions to improve cerebral oxygenation would have systemic benefits in intensive care unit.

Methods: This study is an interventional study. Data from all 60 patients were randomized to either intra and post-operative cerebral regional oxygen saturation (rSO₂)

monitoring by induced increasing cardiac output, mean arterial pressure, adjust ventilator to hypoventilation (keep PaCO₂ 40-45 mmHg) (avoid in patients with brain herniation) and increase FiO₂ (intervention, n = 30), or underwent blinded rSO₂ monitoring (control, n = 30). Predefined clinical outcomes were assessed by a blinded observer. Both group were retrieved during June 1st ,2018 to January 31st ,2022 comparing NIRS group with standard usual care. Data collection comprised of patients' demographic data, treatment process and outcomes of treatment assess by modify Rankin scale (mRS) at 1 year follow up.

Results: Compared to standard usual care, NIRS group had significantly more good clinical outcome at 1 year follow up and no difference in ICU length of stay, ventilator and vasopressor free day. There was a significant (r = 0.459, p<0.001) positive correlation between rSO₂ and ICU length of stay in patients requiring >3 days with NIRS guide-intervention. CO ≤ 2 L/min and mean arterial pressure ≤ 65 mmHg were significantly associated with in hospital mortality (Hazard ratio 87.45,8.43, p = 0.024, 0.001 respectively). Outcomes of treatment; mortality rate (mRS = 6), NIRS group was significantly lower than usual care (60% vs 63.3%, p = 0.048).

Conclusion: Monitoring cerebral rSO₂ in comatose patients avoids profound cerebral desaturation and is associated with significantly more incidences of good clinical outcome at 1 year follow up and decrease mortality.

Correlation between rso₂ mean and Hospital length of stay

Y-axis : rso₂ mean

X-axis : Hospital length of stay and ICU length of stay

	Hospital length of stay		ICU length of stay	
	<i>r</i>	<i>p</i> -value	<i>r</i>	<i>p</i> -value
rso ₂ mean	0.169	0.197	0.459	<0.001*

Pearson Correlation

