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Abstract Preview

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Category: **Neuro-intensive care and emergency medicine:**
Trauma (including brain trauma)

Title: **MONITORING OF ABSOLUTE CEREBRAL OXYGEN SATURATION (FORE-SIGHT TECHNOLOGY) DURING CRANIOTOMY FOR ACUTE INTRACEREBRAL BLEEDING**

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Text: Cerebral oximetry, based on NIRS, measures regional cerebral tissue oxygen saturation (SctO₂) non-invasively at the microvascular level. The FORE-SIGHT absolute cerebral oximeter, a recently introduced monitoring device, uses 4 precise wavelengths to determine absolute SctO₂. In the present study, we want to report on the changes in absolute SctO₂ occurring during craniotomy for acute intracerebral hematoma.

Thirteen pts suffering from acute intracerebral bleeding and scheduled for urgent craniotomy were included. All pts presented with reduced consciousness (GCS < 8) and with signs of increased intracranial pressure (referring to CT imaging). Pts received systemic stabilization (intubation, ventilation, hemodynamic monitoring and support) and were transferred as soon as possible from the emergency department into the operating theatre (OR) for urgent removal of the intracerebral bleeding. As soon as pt arrived in the OR, bilateral SctO₂ monitoring was started (sensors applied bilaterally over patient's forehead).

Pts arrived in the OR after a mean of 1.3hrs after hospital admission. Five pts suffered from acute intracerebral bleeding, while 4 pts presented with acute subdural hematoma and 4 pts presented with acute epidural hematoma. In 2 of 13 pts, excessive ambient light interfered with SctO₂ monitoring and no SctO₂ data could be obtained. In the other 11 pts, SctO₂ values ipsilateral to the intracerebral bleeding, were significantly lower than contralateral SctO₂ values. In 2 pts, ipsilateral SctO₂ values below 55% were observed. One of these pts suffered from epidural hematoma, the other pt presented with a subdural hematoma. Bone removal resulted in a significant increase in ipsilateral SctO₂ in 2 pts. Opening of the dura resulted in a significant increase in ipsilateral SctO₂ in 7 pts, while in 2 pts (with intracerebral bleeding) a significant increase in ipsilateral SctO₂ occurred after effective removal of the bleeding. In no pts, any significant change in contralateral SctO₂ values was observed during the whole procedure. In all pts, ipsilateral SctO₂ values increased further during procedure and ipsilateral SctO₂ values were higher than 80% in all pts at postoperative transfer to the ICU department.

Non-invasive monitoring of absolute cerebral oxygen saturation at the microvascular level might offer new opportunities for the management of pts suffering from acute intracerebral bleeding. Information obtained during urgent craniotomy might guide further neuro-critical care management.

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