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Cerebral Desaturations in Thoracic Surgery: Possible Positive Correlation with Cognitive Dysfunction

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Introduction: Cerebral desaturations have been predominantly described in cardiac surgery; however, a recent study found that cerebral desaturations of more than 20% occurred in 70% of patients undergoing thoracic surgery with single-lung ventilation (SLV) (1). This study investigates the possible correlation of these desaturations with postoperative cognitive dysfunction.

Methods: After approval of Ethics committee and written consent, 100 patients undergoing thoracic surgery with SLV of more than 1 h are included in this pilot study. Absolute cerebral oximetry (SctO₂, Foresight, CASMED, USA), applied before the beginning of surgery, was used to monitor cerebral saturation in addition to standard monitoring (invasive blood pressure, ECG, peripheral oxygen saturation and bispectral index – BIS - monitoring). Anesthesia was administered in routine fashion (TEA, fentanyl < 5 µg/kg, sevoflurane titrated to BIS of 40 – 50 in 100% oxygen). Blood gas analysis was performed every 15 min, bilateral SctO₂ was recorded every 5 s. The Mini-Mental-State-Index (MMSI) was determined immediately before surgery, 2h and 24h after surgery. Data presented as mean (SD), correlation between the cerebral desaturations and clinical parameters as well as MMSI was performed using Pearson's test, P<0.05.

Results: Preliminary results of 22 patients are presented. Patient and surgery data are shown in figure 1. [figure1]Test results of the MMSI decreased 2h after surgery significantly but recovered to preoperative values within 24h. There was a significant negative correlation between cerebral desaturations during SLV and MMSI test results 2h after surgery.[figure2]There was no significant correlation between measured standard clinical parameters, including peripheral oxygen saturation or PaO₂ and MMSI results.

Conclusion: There is a significant decrease of cognitive function after thoracic surgery with SLV which is of short duration and recovers within 24h after surgery. This cognitive dysfunction seems to correlate with cerebral desaturations during SLV.

(1) Br J Anaesth. 2008 Dec;101(6):870-5.

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Figure 1

	All patients (n=22)
Age, yrs	63 [58,73 ; 34,76]
Male sex	10
A SA grade	II (0,50)
Surgery	
lobectomy	14
Wedge resection	5
Pneumonectomy	3
Surgery length, min	172 [139,195 ; 65,275]
SLV length, min	143 [91,168 ; 15,215]

Figure 2



