473908 - INTER-HEMISPHERIC CEREBRAL SATURATION DIFFERENCES DURING THORACIC SURGERY WITH LATERAL HEAD POSITIONING

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Introduction: Absolute cerebral oximetry (FORE-SIGHT™, CASMED, USA) is a novel method of measuring cerebral oxygen saturation (SctO₂); it detects SctO₂ without the need for pre-induction baseline measurement. One study showed little bilateral differences in FORE-SIGHT SctO₂ measurements for cardiac patients with no known carotid disease (1). However, these results were obtained from subjects in supine position. The aim of the present study is to assess inter-hemispheric SctO₂ gradients in patients undergoing thoracic surgery in the lateral position.

Methods: Local REB approval was obtained for this study. In 29 consecutive patients, SctO₂ was continuously measured during lung resection in the lateral position using the FORE-SIGHT 2-channel absolute oximeter. Data points were discarded if one of the signals was unstable or not available. Data were analyzed in SAS and compared between the two hemispheres; comparisons were made between upper or lower hemisphere according to the side of surgery.

Results: A total of 29 patients (lateral position L/R = 9/20) and 941 5-min blocks were collected. After exclusion of 43 periods with no or unstable signal in one hemisphere, 898 5-min periods were included in the final analysis. 22% of data were prior to SLV, 59% during SLV periods and 9% after SLV ventilation. SctO₂ of the upper hemisphere was higher in 56% of cases, equal in 18% and lower than the lower hemisphere in 26%. On average, SctO₂ in the upper hemisphere was 1.3% higher than the lower hemisphere (95% CI of the mean 1.06 - 1.49, $P < 0.0001$). When SctO₂ was low, there was no significant difference. With higher values of SctO₂, the upper hemisphere shows significantly higher SctO₂ than the lower. The inter-hemispheric SctO₂ difference increased by $0.038 \pm 0.017\%$ for each 1% increase in SctO₂ ($p < 0.03$).

Discussion: The lower hemisphere has generally a lower SctO₂. Impaired venous return gradient and higher cerebral venous blood volume may explain these differences.

References: MacLeod D, et al, Bilateral Differences in Cerebral Tissue Oxygen Saturation Monitored Using an Absolute Cerebral Oximeter in Cardiac Patients, Outcomes-The Key West Meeting 2007.

Distribution

Delta saturation

Proportion