

**A1686** ASA 2010

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## **Non-Invasive Cerebral Oxygen Saturation during Beach Chair Positioning in Healthy Volunteers**

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**Introduction:** Most recently introduced cerebral oximeter relying on Near Infrared Spectroscopy (NIRS) (Fore Sight technology) uses 4 wavelengths to determine absolute cerebral oxygen saturation (SctO<sub>2</sub>) at the microvascular level. Very few data are currently available on normal SctO<sub>2</sub> values in healthy volunteers, especially during changes in body positioning (f.i. beach chair positioning). Previous reports revealed a high incidence of cerebral desaturation (SctO<sub>2</sub> below 55%) in anesthetized patients positioned in beach chair. In the present study, we wanted to assess normal SctO<sub>2</sub> values in healthy (awake) volunteers in supine and in beach chair positioning.

**Material and Methods:** With IRB approval and written informed consent, 48 adult (18-30yrs) ASA I volunteers were monitored by bilateral frontal SctO<sub>2</sub> monitoring (SctO<sub>2</sub>/2sec). Additional monitoring included pulse rate (/min), pulse oximetry (SpO<sub>2</sub>/min) and noninvasive blood pressure monitoring (/3min). In all volunteers, SctO<sub>2</sub> monitoring was started in supine position and after 15min, position was changed to beach chair (for another 15min).

**Results:** In supine position, mean SctO<sub>2</sub> was 72.45%, with SD 4.7184% and range between 65% and 83%. After 15min, volunteers were positioned in beach chair position, which resulted in an immediate decrease in mSctO<sub>2</sub> towards 69.486% with SD 3.957% and range between 61% and 78%. This implies a mean decrease of 3.363% (SD 2.87%; range 0-16%) induced by changing body position towards beach chair. In all, but one volunteer, SctO<sub>2</sub> values returned to baseline values (before beach chair positioning) and this within a mean of 182sec (32-306sec). We did not observed any significant change in hemodynamic parameters (pulse rate, blood pressure) nor in respiratory parameters (peripheral O<sub>2</sub> saturation) related to changes in body positioning (beach chair).

**Conclusion:** Normal absolute cerebral oxygen saturation values in healthy volunteers are reported between 65% and 83%. Change to beach chair positioning induces a short-lasting decrease in cerebral oxygen saturation by a mean of 3.363%. In no volunteer, any SctO<sub>2</sub> value below the critical threshold of 55% was observed.

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