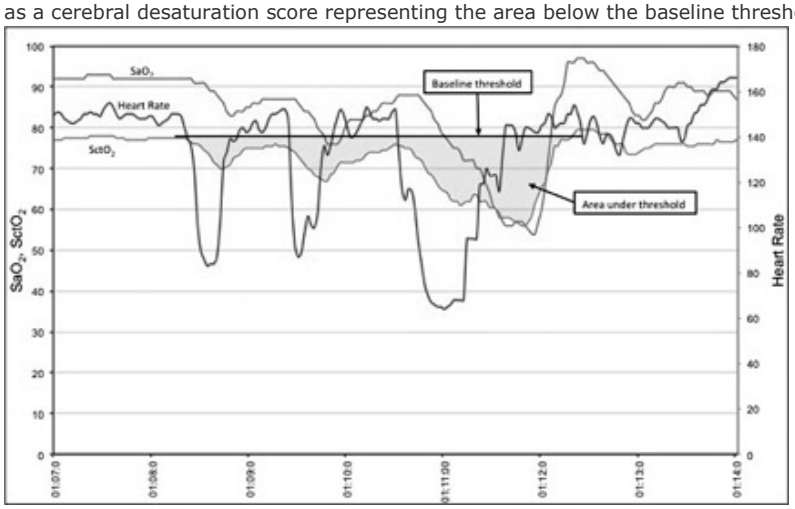
[1165.2] Influence of Arterial Oxygen Saturation Target Range on Cerebral Oxygenation in Infants with Severe Apnea of Prematurity

Manuel B. Schmid, Susanne Lenhof, Reinhard J. Hopfner, Helmut D. Hummler, Hans W. Fuchs. Division of Neonatology and Pediatric Critical Care, University Medical Center Ulm, Germany.

BACKGROUND: Apnea of prematurity (AOP) is a common problem in low birthweight infants. There is evidence that a higher arterial oxygen saturation (SpO2, by pulsoxymetry) target may reduce the incidence and severity of apneic spells and desaturations. Additionally, little is known about influence of SpO2 target on cerebral oxygenation in preterm infants.
OBJECTIVE: To evaluate whether a higher SpO2 target is associated with reduced incidence and severity of cerebral tissue oxygen desaturations.
DESIGN/METHODS: In 16 preterm infants with severe AOP, the influence of the SpO2 target was tested in a randomized cross-over design. SpO2 target was set to 80-92% for 4 hours and 85-96% for another 4 hours. On a subsequent day, the target sequence was reversed. We simultaneously recorded cerebral tissue oxygen saturation (SctO2), fractional tissue oxygen extraction, SpO2 and heart rate. SctO2 was measured by absolute near infrared spectroscopy with a laser sensor utilizing 4 different wavelengths (FORE-SIGHT, Casmed). The primary outcome measure was the cumulative SctO2 desaturation (defined as a cerebral desaturation score representing the area below the baseline threshold before onset of the apneic spell).



RESULTS: During low SpO2 target range cumulative SctO2 desaturation scores were significantly higher (median score 27383 vs. 18103, p= 0.011), median number of events were higher (31 vs. 19.5, p= 0.001) and more time was spent with SpO2 below 80% (57.2 minutes vs. 34.0 minutes, p= 0.006) and 75% (22.7 minutes vs. 13.9 minutes, p= 0.018), respectively. Total time of hyperoxia (defined as SaO2 ≥ 97% and ≥ 99%, respectively, nor total time with cerebral tissue oxygen saturation ≤ 65%, ≤ 60%, and ≤ 55%, respectively), differed significantly between both target ranges.
CONCLUSIONS: A lower SpO2 target opposed to a higher target was associated with more SpO2 and SctO2 desaturations in preterm infants with severe AOP. However, total time with low SctO2 was similar.

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