Pulse Oxymeter Perfusion Index as a Predictor for the Effect of Pediatric Epidural Block

Uemura A, Yagihara M, Miyabe M. *Anesthesiology* 2006; 105: A1354.

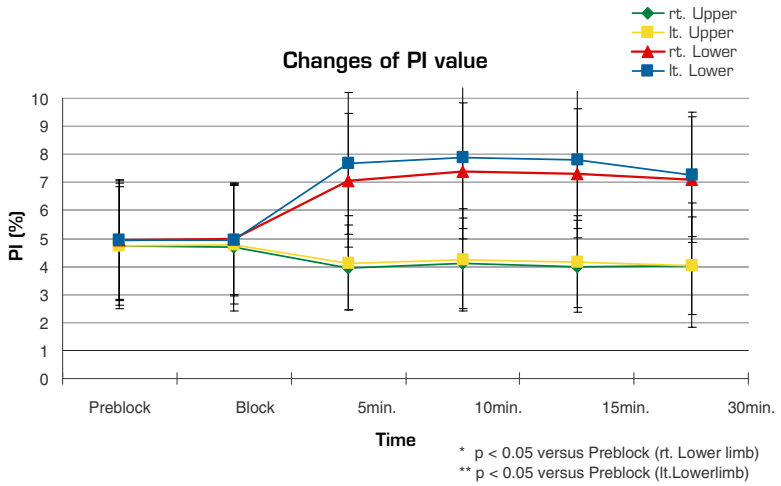
Introduction

Epidural block is a common method of pain management during surgery. It can be difficult to non-invasively evaluate the success of the block, however, especially in pediatric patients. In this study, Uemura and coworkers assessed a method for predicting the effectiveness of an epidural block in pediatric patients by the use of perfusion index (PI), a feature available on the Masimo SET pulse oximeter.

Methods

Fifty children who were scheduled to receive inguinal herniorrhaphy surgery were monitored with four Masimo SET Radical pulse oximeters, one on each limb. PI was recorded with PhysioLog® (Masimo Corp) for later analysis. Non-invasive blood pressure, heart rate, endtidal CO_2, endtidal Sevo%, respiratory rate and ECG were also recorded during the procedure. Anesthesia was induced with nitrous oxide-oxygen-sevoflurane via mask. Forty of the patients received a one shot lumbar epidural block with 0.2% ropivacaine (0.7ml/kg). Epidural space (L2/3) was identified with the drip infusion method. The ten patients who did not receive the epidural block were administered acetaminophen via suppository.

Results



Four minutes after receiving the one shot lumbar epidural injection, the average PI values of both lower limbs of the patients were significantly increased compared to both upper limbs ($P<0.05$). The patients that had symptoms of a failed epidural block (elevated heart rate, respiratory rate and movement after incision) showed a lower average PI of the lower limbs. The ten patients that did not receive the epidural block showed a low average PI in all limbs.

Author's Conclusions

"The pulse oximeter PI reflects the peripheral perfusion and is changed by epidural block; [therefore] PI value can be used as a prediction for the effect of epidural block. As we use pulse oximetry routinely in every patient during operations, PI value is useful, objective, and non-invasive method to evaluate the effect of epidural block in pediatric patients."