

Pulse Oximeter Perfusion Index as a Predictor for the Effect of Pediatric Epidural Block.
Uemura A., Yagihara M., Miyabe M. *Anesthesiology*. 2006;105:A1354.

Introduction

Pediatric epidural block becomes routine for the management of pain during perioperative period. However it is difficult to evaluate the effect of pediatric epidural block non-invasively. Since the pulse oximeter perfusion index (PI) has been suggested to reflect the peripheral perfusion, it is hypothesized that the pulse oximeter PI might predict the effect of epidural block. Therefore we examined if the changes in PI reflects the effect of epidural block.

Method

Obtaining institutional approval ethics committee and written informed consent, a prospective study was operated with 50 children. They were planned to receive inguinal herniorrhaphy. After arrival at operating room, patients were monitored electrocardiography, non-invasive blood pressure, and 4 pulse oximeters (Masimo SET Radical U.S.A four limb each). Anesthesia was induced with nitrous oxide-oxygen-sevoflurane via mask. Forty patients were received one-shot lumbar epidural block. Epidural space (L2/3) was identified with drip infusion method and 0.2% ropivacaine (0.7ml/kg) was administered. PI was recorded with Physiolog® (Masimo Corp. U.S.A). Non-invasive blood pressure, heart rate, endtidal CO₂, endtidal Sevo% and respiratory rate were also recorded. Ten patients were not performed epidural block and administered acetoaminophen suppository.

Result

114 min after one shot lumbar epidural injection, PI values of both lower limb were significantly increased compared with both upper limb ($P < 0.05$) <Figure>. Failed epidural block (elevated heart rate, respiratory rate and movement after incision) showed low PI of lower limb. Without epidural block group, PI also remained low in every limb.

Conclusion

Failed epidural block or without epidural block did not affect the PI values. The pulse oximeter PI reflects the peripheral perfusion and changed by epidural block, PI value can be used as a prediction for the effect of epidural block. As we use pulse oximeter routinely in every patients during operation, PI value is useful, objective, and non-invasive method to evaluate the effect of epidural block in pediatric patients.

Figure 1

changes of PI value (lower limb VS upper limb)

