

Pulse Oximeter Perfusion Index as an Early Indicator of Sympathectomy after Epidural Anesthesia.

Ginosar Y., Weiniger C.F., Meroz Y., Kurz V., Bdolah-Abram T., Babchenko A., Nitzan M., Davidson E.M. *Acta Anaesthesiol Scand.* 2009 Sep;53(8):1018-26.

Background

The pulse oximeter perfusion index (PI) has been used to indicate sympathectomy-induced vasodilatation. We hypothesized that pulse oximeter PI provides an earlier and clearer indication of sympathectomy following epidural anesthesia than skin temperature and arterial pressure.

Methods

Forty patients received lumbar epidural catheters. Patients were randomized to receive either 10 ml 0.5% bupivacaine or 10 ml 0.25% bupivacaine. PI in the toe, mean arterial pressure (MAP) and toe temperature were all assessed at baseline and at 5, 10 and 20 min following epidural anesthesia. The effect of epidural anesthesia over time was assessed by repeated measures analysis of variance. Additionally, we defined clinically evident sympathectomy criteria (a 100% increase in the PI, a 15% decrease in MAP and a 1 degrees C increase in toe temperature). The numbers of patients demonstrating these changes for each test were compared using the McNemar test for each time point.

Results

Twenty-nine subjects had photoplethysmography signals that met a priori signal quality criteria for analysis. By 20 min, PI increased by 326%, compared with a 10% decrease and a 3% increase in MAP and toe temperature, respectively. For PI 15/29, 26/29 and 29/29 of the subjects met the sympathectomy criteria at 5, 10 and 20 min, respectively, compared with 4/29, 6/29 and 18/29 for MAP changes and 3/29, 8/29 and 14/29 for toe temperature changes.

Conclusion

PI was an earlier, clearer and more sensitive indicator of the development of epidural-induced sympathectomy than either skin temperature or MAP.