

Pre-Anesthetic PVI (Pleth Variability Index) Predicts Hypotension after Spinal Anesthesia during Cesarean Section

Yokose M., Mihara T., Goto T. *Eur J Anaesthesiol.* 2013; 30 (Supplement 51)

Background and Goal of Study

During cesarean section, spinal anesthesia-induced hypotension may exert severe adverse effects for mothers and new borns. If hypotension can be predicted before induction of spinal anesthesia, anesthesiologists can take preventive measures such as administration of vasopressors and/or intravenous colloids. However no easy and convenient indexes to predict hypotension before spinal anesthesia have been reported. Pleth variability index (PVI) is a non-invasive and convenient dynamic indicator of fluid responsiveness, and preload in mechanically and spontaneous ventilated patients. Thus we hypothesized that pre-anesthetic PVI would predict hypotension following spinal anesthesia. The aim of this prospective observational study was to test this hypothesis during cesarean section.

Materials and Methods

We enrolled women after 37 weeks of pregnancy who were to undergo elective cesarean delivery under combined spinal and epidural anesthesia. Pre-anesthetic PVI was measured for 5 min while the patient was lying supine. Then, epidural catheter was placed at the Th12 /L1 intervertebral space, and spinal anesthesia was induced at the L3/4 or L4/5 intervertebral space with 0.5% hyperbaric bupivacaine (10mg) and fentanyl (10mcg) with the patient in a right lateral position. Hypotension was defined as the systolic blood pressure (SBP) below 80 mmHg after spinal anesthesia, and was treated immediately with ephedrine 8mg. The ability of pre-anesthetic PVI to predict hypotension was examined generating the receiver operating characteristic (ROC) curve, and sensitivity and specificity were calculated. Values with $P < 0.05$ were considered statistically significant, and all parametric data are expressed as mean $\pm$ standard deviation (SD).

Results and Discussion

50 patients were enrolled in this study. Hypotension occurred in 27 patients. Pre-anesthetic PVI of patients who developed hypotension and who did not were $20.3 \pm 6.3\%$, and $16.8 \pm 5.3\%$, respectively ($P = 0.044$). A threshold PVI value of $>19\%$ was a weak significant predictor of hypotension (sensitivity 61%, specificity 59%, area under the ROC curve 0.65, 95%CI 0.50-0.80)

Conclusion

Pre-anesthetic PVI predicts hypotension after spinal anesthesia during caesarean section.