

Hemodynamic changes associated with spinal anesthesia for cesarean delivery in severe preeclampsia

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Background: Hemodynamic responses to spinal anesthesia (SA) for cesarean delivery in patients with severe preeclampsia are poorly understood. This study used a beat-by-beat monitor of cardiac output (CO) to characterize the response to SA. The hypothesis was that CO would decrease from baseline values by less than 20%.

Methods: Fifteen patients with severe preeclampsia consented to an observational study. The monitor employed used pulse wave form analysis to estimate nominal stroke volume. Calibration was by lithium dilution. CO and systemic vascular resistance were derived from the measured stroke volume, heart rate, and mean arterial pressure. In addition, the hemodynamic effects of phenylephrine, the response to delivery and oxytocin, and hemodynamics during recovery from SA were recorded. Hemodynamic values were averaged for defined time intervals before, during, and after SA.

Results: Cardiac output remained stable from induction of SA until the time of request for analgesia. Mean arterial pressure and systemic vascular resistance decreased significantly from the time of adoption of the supine position until the end of surgery. After oxytocin administration, systemic vascular resistance decreased and heart rate and CO increased. Phenylephrine, 50 mug, increased mean arterial pressure to above target values and did not significantly change CO. At the time of recovery from SA, there were no clinically relevant changes from baseline hemodynamic values.

Conclusions: Spinal anesthesia in severe preeclampsia was associated with clinically insignificant changes in CO. Phenylephrine restored mean arterial pressure but did not increase maternal CO. Oxytocin caused transient marked hypotension, tachycardia, and increases in CO.