

The peripartum hemodynamic profile of healthy women delivering with spinal anesthesia and prophylactic phenylephrine drip measured by noninvasive cardiac output monitoring

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Background and Goal of Study

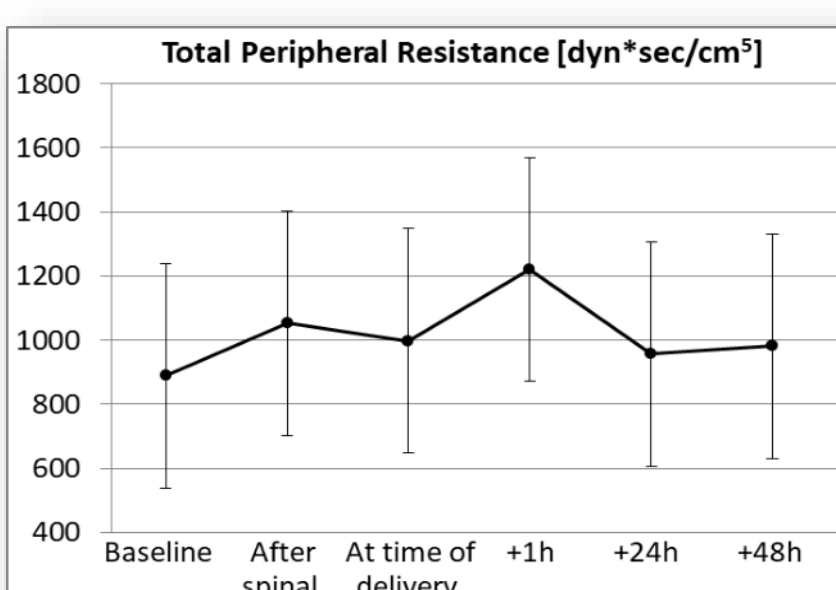
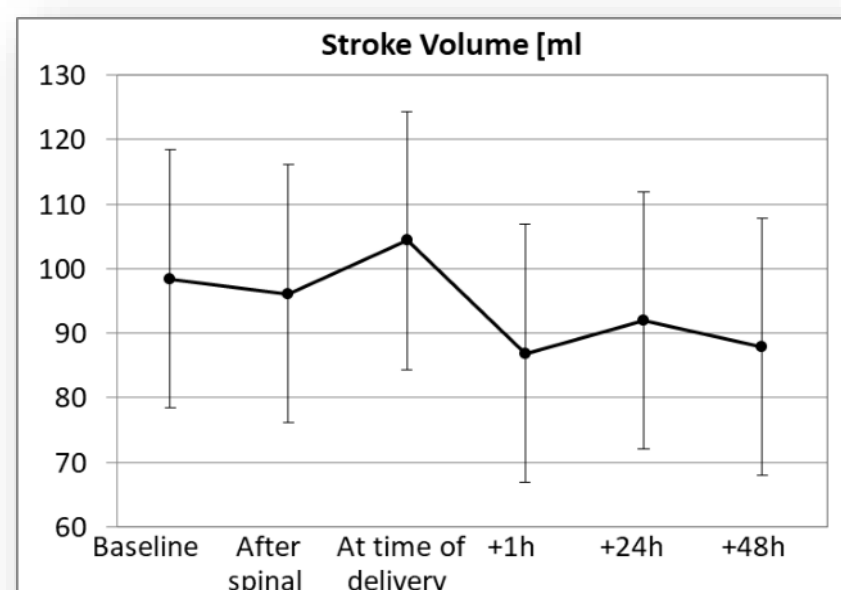
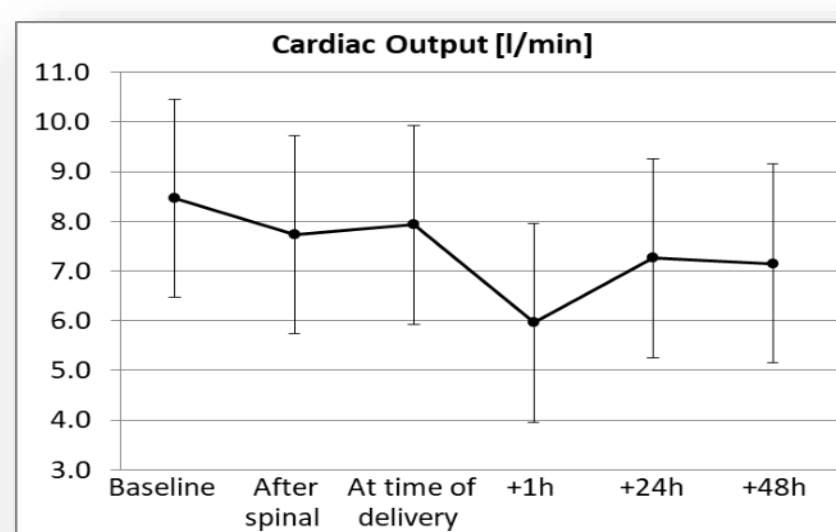
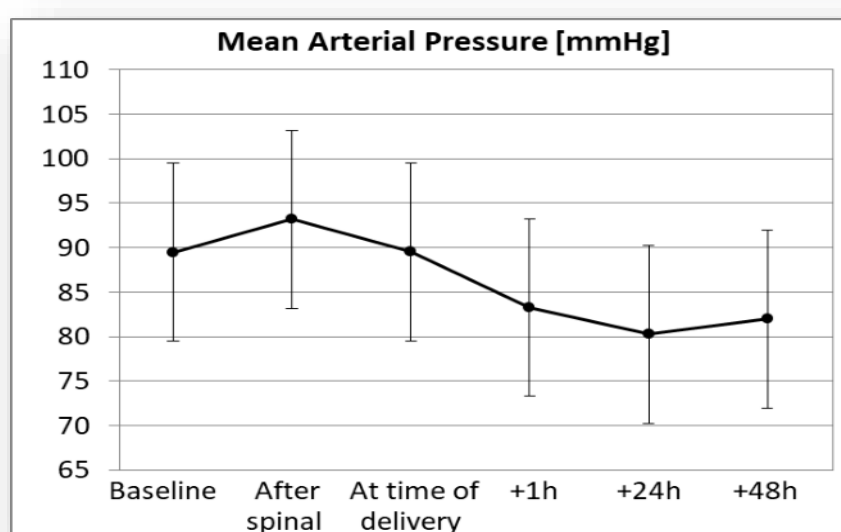
Spinal anesthesia is considered gold standard anesthetic technique for cesarean deliveries (CD) but is associated with a high rate of hypotension. The recent international consensus recommends continuous prophylactic phenylephrine infusion (PPI) administered throughout CD to prevent hypotension. In recent years, numerous non-invasive devices have become available for to measure cardiac output (CO) and to calculate total peripheral resistance (TPR). The whole-body bio-impedance based device (NICAS) is a noninvasive device previously validated. Therefore, in this study we aim we aimed to identify maternal hemodynamic changes both intraoperatively and postoperatively with the use of this machine in healthy singleton parturients undergoing CD deliveries with spinal anesthesia and PPI.

Materials and Methods

After IRB approval and signed informed consent, healthy term women undergoing spinal anesthesia for singleton CD were enrolled. The following data were collected - CO, mean arterial pressure (MAP), stroke volume (SV) and TPR. Measurements were measured at 5 time points: 1) before arrival in OR, 2) after spinal anesthesia with pi 3) after delivery of baby and beginning of oxytocin infusion 4) in post anesthesia care room 5) 24 hours postoperatively and 6) 48 hours postoperatively. All parturients received standardized spinal solution consisting of 12 mg hyperbaric, 20 mcg fentanyl and 100 mcg preservative-free morphine. PPI was titrated to preserve blood pressure to 20% of baseline and stopped at the end of surgery. Oxytocin was administered as a continuous infusion (20 units/ 1000cc Ringer lactate) at a rate of 100cc/hr.

Results

One hundred thirty seven women completed the study. Average age was 34.9 ± 5.7 and average BMI was 30.1 ± 5.1 . One hour after delivery in the PACU, there were significant decreases in stroke volume, heart rate, blood pressure and CO with a concomitant increase in TPR. Within 48 hours the TPR decreased and CO and stroke volume increased and TPR decreased.



Conclusions

- Significant hemodynamic changes were seen at all time points both intraoperatively and postoperatively with the most significant changes occurring one hour postoperatively.
- Further studies need to be performed to discover hemodynamic changes of spinal anesthesia and PPI in different parturient populations.