Low-Dose CSE for Cesarean Section: Effective use in Daily Clinical Practice

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Michelle A. Walters, M.B., B.S.; Marc Van de Velde, M.D., Ph.D.
University Hospitals Leuven

Introduction: Advantages of low-dose combined spinal-epidural (CSE) for cesarean section (CS) include hemodynamic stability and reduced nausea and vomiting. Despite this it remains underused for fear of increased maternal discomfort and potential for litigation. The technique is often reserved for patients with cardiovascular morbidity. We performed a prospective case series to investigate the feasibility of using low-dose CSE for CS in everyday practice.

Methods: Duty residents performed 100 low-dose CSEs. Procedure was protocol guided and carried out sitting with a 500 mL co-load containing 200 µg phenylephrine. Bupivacaine 1.5 mL and sufentanil 0.5 mL were combined and 0.1 mL per 10 cm of the patient’s height given intrathecally. After CSE placement the patient was placed in Trendelenburg position with left tilt until reaching an adequate sensory block. Non-invasive blood pressure (BP) was recorded every 2 minutes. Patients were monitored for hypotension, nausea, discomfort and motor recovery. Epidural top-up was advised should uterine closure not be completed 45 minutes after spinal injection.

Results: There were 69 elective and 31 unplanned CS. Mean ±SD dose of intrathecal bupivacaine was 6.27 ±0.27 mg. Time from spinal injection till delivery and spinal injection till end of surgery was 27 ±7 minutes and 57 ±13 minutes respectively. A sensory block to cold up to T3 before surgery was present in 84%. No detectable block to touch was found in 69%. In 8% there was discomfort prior to delivery requiring epidural top-up but no further intervention. Half of these 8% did not have a block to cold to T3 before surgery. Discomfort after delivery was reported in 18% and successfully treated with epidural top-up or remifentanil infusion. The onset of pain after delivery was 49 ±10 minutes after spinal injection however no patient in this group had received a preemptive epidural top-up. No conversion to general anesthesia was necessary. Subsequently 77% of mothers rated their anesthesia excellent, 17% good and 2% satisfactory.

Hypotension was recorded in 35% and mean decrease in systolic BP was 18 ±5%. Total dose of phenylephrine used was 336 ±179 µg. Mean neonatal umbilical artery pH was 7.32 ±0.06. Nausea was present in 8% and vomiting in 1%. At end of surgery 50% had weak hip flexion and full knee flexion enabling them to assist with transfer.

Conclusions: Low-dose CSE is suitable for use in daily practice and provides effective anesthesia with hemodynamic stability, minimal vasopressor use, less nausea and faster motor recovery. A block to cold to T3 is essential before surgery and, as duration of effective anesthesia is shorter, preemptive epidural supplementation may be necessary. If this guidance is followed the incidence of intraoperative discomfort is comparable to when using conventional doses of bupivacaine.

References: