471857 - UP-DOWN DETERMINATION OF THE ED90 OF PHENYLEPHRINE FOR SPINAL INDUCED HYPOTENSION IN PARTURIENTS UNDERGOING CESAREAN DELIVERY

Ronald George, MD FRCPC¹, Dolores McKeen, MD MSc FRCPC¹, Ashraf Habib, MB ChB MSc FRCA²

1. Department of Women's & Obstetric Anesthesia, IWK Health Centre, Halifax, NS, Canada

2. Division of Women's Anesthesia and Critical Care, Duke University Medical Center, Vancouver, BC, Canada

Introduction: Hypotension occurs commonly following spinal anesthesia for cesarean delivery (CD) with a reported incidence of up to 80% (1). This study is designed to determine the ED90 of a single dose of phenylephrine for the treatment of spinal induced hypotension in parturients presenting for an elective CD.

Methods: With REB approval, non-laboring, adult, term gestation, ASA I-II parturients presenting for CD with spinal anesthesia were recruited. Parturients with BMI>45kg/m², height<152cm, hypertensive disease of pregnancy, severe maternal cardiac disease, and diabetes type I were excluded. We measured blood pressure three times (Q2minutes), prior to going to the operating room (OR) with the subject supine with left uterine displacement, using an appropriately sized blood pressure cuff. The anesthetic technique was standardized. Spinal anesthesia was administered at L3-L5 in the sitting position with 12mg bupivacaine, 15mcg fentanyl, and 100mcg morphine. Subjects were then immediately laid supine with left uterine displacement. Each subject received an intravenous coload of crystalloid (~ 15 - 20 ml/kg). Blood pressure was measured every 1-minute for 10 minutes after placing the spinal anesthetic, then every 2.5 minutes for the remainder duration of surgery. If the systolic blood pressure (SBP) decreased >20% of baseline or <90mmHg, a predetermined dose of phenylephrine was administered. If the SBP returned to within 20% of baseline within 1 minute of administration of phenylephrine, this was considered a success (positive response). We started with an initial dose of phenylephrine of 100 mcg. The subsequent dose is based upon the response of the preceding subject in an up-and-down method (UDM) with a biased coin design (BCD) (2). To determine the ED90 with the BCD if no response is observed (i.e. negative response) in the previous subject, the dose is stepped up in the next subject. If a positive response is observed, the next subject is randomly assigned with probability of 0.10 to the next lower dose and with probability 0.90 to the same dose using a blinded computer algorithm. The dosing changes are in increments of 20mcg. The anesthesia provider was blinded to the dose of phenylephrine as is the subject. If no hypotension occurs in the study period the subject is withdrawn, her data removed and not analyzed, and the chosen dose assigned to the next enrolled subject. Secondary outcomes include the need for additional vasopressors, glycopyrolate to treat bradycardia (<50 bpm), and the presence of hypertension (SBP>20% of baseline) following administration of phenylephrine.

Results: Twelve subjects have been successfully recruited. The mean age and BMI is

32.6±6.2 years and 31.6±2.8 kg/m² respectively. The median parity and gestational age is 1 and 39 weeks. Four subjects did not experience hypotension. Eight subjects have been administered phenylephrine. Seven were successes while one was a treatment failure. No subjects needed treatment of hypertension or bradycardia, and no adverse events occurred.

Discussion: No unblinding or interim analyses has been completed. Complete results will be available before the 2008 Canadian Anesthesiologists' Society meeting in Halifax.

References: 1. Br J Anaesth 2006;96:95-9. 2. Anesthesiology 2007;107:144-52.