

A Dose Response Relationship of Intrathecal Morphine Effectiveness in Post-Cesarean Patients Under Spinal Anesthesia at a Tertiary Hospital

Dianne Mary Cel L. Reyes, MD; Glenn D. Marinas, MD; Olivia C. Flores, MD

University of the East Ramon Magsaysay Memorial Medical Center Inc

Aurora Blvd, Quezon City, 1113, Philippines

BACKGROUND: A trade-off between intrathecal opioid analgesia and side effects exists. This study was conducted to determine the lowest dose of intrathecal morphine that will provide adequate analgesia with the least side effects among post-cesarean patients.

METHODS: Sixty term parturients for cesarean delivery under spinal anesthesia were randomized into three treatment groups to receive 50mcg, 100mcg or 150mcg of intrathecal morphine with a standard multimodal pain regimen and intravenous tramadol as needed. Pain scores, intravenous tramadol demands, and incidence of adverse effects (nausea, vomiting, and pruritus) were recorded during the first 24 hours' post-spinal anesthesia. One-way ANOVA with paired comparisons was used to determine significant differences in pain scores between groups. Chi square test or Fishers exact were utilized to compare the need for rescue analgesics and the incidence of side effects between groups. A p-value <0.05 was considered significant.

Data Extraction And Analysis: Data Extraction and Analysis Information about patients, type and dose of local anesthetic, and opioid used for spinal anesthesia and analgesia, study end points, adverse effects, and observation periods were taken from each report. When possible, retrieved data were analyzed quantitatively. We used a metaanalysis to calculate the weighted number needed to treat (NNT) or number needed to harm (NNH) with 95% confidence intervals (CIs), counting the dichotomous outcome for all the individuals across all included studies, i.e., a fixed-effects model. NNH refers to the number of patients needed to treat to harm one individual.^{4,7,8} A significant difference between NNT or NNH was assumed when CIs did not overlap. This is a conservative criterion because it involves the comparison of an improbable extreme for one estimate with an equally improbable extreme for the other.² When one bound of the CI was ∞ , this indicated that the CI included no benefit or harm of the intrathecal opioid over placebo/control.

RESULTS: Analgesia. Pain scores and intravenous tramadol demands were highest for the 50 mcg dose across treatment groups ($p<0.03$). The pain scores of the 100 vs 150 mcg group were comparable ($p>0.05$), and no tramadol doses were needed for both groups. Side effects. No significant difference was seen on the incidence of nausea and vomiting across groups ($p>0.05$). The incidence of pruritus was highest in the 150 mcg dose across groups, while the 50 vs 100 mcg group had comparable results.

CONCLUSION: In combination with multimodal analgesia regimen, a dose of 100 mcg of intrathecal morphine provided adequate post-cesarean analgesia with the least side effects.

Dianne Mary Cel L. Reyes, MD has obtained her Bachelor of Science in Nursing degree from University of the East Ramon Magsaysay Memorial Medical Center (UERMMMC) in 2011 and Doctor of Medicine degree from the same institution in 2015. She is currently finishing her 3rd year Anesthesiology and Pain Medicine Residency Training at UERMMMC. She has recently won 3rd place for oral presentation of research from the the Philippine Society of Anesthesiologists and the International Symposium for Ultrasound Regional Anesthesia Biennial Congress last November 2019.