The Effects of Surgical Site Infiltrate of Liposomal Bupivacaine along with Bupivacaine in Postoperative Opioid Use and Pain Score in Patients Undergoing Major Hip Surgeries

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INTRODUCTION:
The purpose of this study was to compare in-hospital postoperative pain scores and opioid medication use [morphine milligram equivalents (MME)] with three different strategies: 1) patient-controlled analgesia (PCA) with no local anesthetic; 2) PCA with local infiltration of Bupivacaine HCl (B); 3) PCA with local infiltration of Liposomal Bupivacaine (LB) and B.
METHODS:
We retrospectively studied 96 patients (116 hips) that underwent a Bernese periacetabular osteotomy (PAO) or triple innominate osteotomy (TIO) between 08/2013 and 04/2022. We excluded patients with cerebral palsy or cognitive disorders. In group 2, 0.25% B was dosed at 2.5mg/kg. In group 3, LB was dosed at 4.0mg/kg with an additional 1.5mg/kg 0.25% B. All patients were monitored by our anesthesia pain service. VAS pain scores and opioid use (MME) were recorded every 6 to 8 hours per postoperative day. Daily median pain scores and daily MME were compared between the three groups using a Generalized Estimating Equation with subject factor (to account for bilaterality) and ordinal logistic response for pain scores and linear response for MME data. At postoperative day (POD) 4, 78% of the study cohort was discharged, therefore data analysis was truncated to POD 0-3.
RESULTS:
There were 28 hips in group 1 (only PCA), 30 hips in group 2 (PCA and B), and 58 hips in group 3 (PCA and LB + B). Daily median postoperative pain scores were not different between the 3 groups (Group 1: 3.0, 2: 3.1, and 3: 3.5; p=0.21). Average daily MME was found to be significantly less in Group 3 compared to Groups 1 and 2 (1: 23.4 mg, 2: 24.7 mg, 3: 17.5 mg; p=0.03). Pairwise comparisons showed a significant difference between Groups 1 and 3 (p=0.02) and between Group 2 and 3 (p=0.04), with no significant difference between Groups 1 and 2 (p=0.70). Average length of hospital stay was 4.5, 4.5, and 4.1 days for Groups 1-3 respectively, (p=0.13).
DISCUSSION AND CONCLUSION:
The use of multimodal analgesia and opioid-sparing adjuncts throughout the perioperative period should be considered for enhanced recovery after major hip surgery. Local wound infiltration of Liposomal Bupivacaine in combination with Bupivacaine HCl was associated with significantly less opioid use (average daily MME) yet comparable VAS pain scores compared to PCA alone or PCA with Bupivacaine infiltration. These benefits were seen in patients throughout their hospital course with an average hospital stay of 4 days.