The Role of Liposomal Bupivacaine in Multimodal Pain Management in Adolescent Idiopathic Scoliosis Patients Undergoing Posterior Spinal Fusion

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INTRODUCTION: Optimal postoperative pain control for adolescent idiopathic scoliosis (AIS) patients undergoing posterior spinal fusion (PSF) remains a challenge. Multimodal pain management protocols have been developed aimed at providing adequate analgesia while decreasing opioid consumption. Liposomal bupivacaine (LB) has recently been approved for pediatric patients however, its use in AIS patients is understudied. The goal of this study was to evaluate the effect of intraoperative liposomal bupivacaine infiltration in adolescent idiopathic scoliosis patients by analyzing postoperative opioid consumption, ambulation, and length of stay (LOS).

METHODS: A total of 119 consecutive patients with AIS who underwent PSF were included. All patients received a standardized multimodal pain management protocol. Patients were divided into two groups: patients who received LB as an erector spinae block in addition to the standard postoperative pain management protocol (Group A), and patients who received only the standard postoperative pain protocol (Group B). Oral morphine equivalents, IV opioid and valium consumption, pain scores (VAS), nausea/vomiting, ambulation distance, and LOS were assessed.

RESULTS: Group A experienced significantly lower total opioid consumption compared to Group B (44.5mg vs. 70.2mg). Morphine use was lower in Group A on POD0, and oxycodone use was lower in Group A on POD1 and POD2. There was a higher proportion of patients who used only oral opioids in Group A (81% vs. 41%). Of patients requiring any IV opioids, 79% did not receive LB. A significantly higher proportion of LB patients were discharged on POD2 (55% vs. 27%); and, consequently, LOS was shorter for Group A. Group A demonstrated further ambulation postoperatively. There were no differences in VAS pain scores, valium requirements, or nausea/vomiting.

DISCUSSION AND CONCLUSION: LB was associated with decreased total opioid use, improved ambulation, and shorter length of stay in AIS patients undergoing PSF. Including LB in multimodal pain management protocols proved effective in reducing opioid use while increasing mobilization in the immediate postoperative period.