Comparison of Analgesic Effects of Epidural Infusion of Fentanyl and Fentanyl-bupivacaine in Spine Surgery: A Randomized Clinical Trial Study

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Abstract

Background & Aim: Although most patients experience severe pain after major spinal fixation surgery, little attention has been paid to control it with a multi-modal approach. The aim of this study is to select appropriate method of pain management after spinal surgery.

Methods & Materials/Patients: This study was a randomized clinically controlled trial in candidates of spondylolisthesis and spinal fixation surgery under general anesthesia. 90 patients were divided into three groups, as follows: 1) Intervention group of epidural fentanyl (F): patient-controlled analgesia (PCA) pump infused 100 µg of fentanyl and 98cc of normal saline at the rate of 3-5 ml/h in the epidural space via an epidural catheter placed by surgeon 2) Intervention group of epidural fentanyl-bupivacaine (FB): PCA pump infused 100 µg of fentanyl and bupivacaine 0.125% at the rate of 3-5 ml/h in the epidural space. 3) IV morphine group (M): No medication was received epidurally. In case of visual analog scale (VAS) score more than four, one mg of IV morphine bolus was administered to patient. The blood pressure, heart rate, respiratory rate and pain severity were recorded at the moment of patient’s transfer from recovery room to the ward and compared in
three groups every six hours for 24 hours. The results of this study were analyzed by statistical tests including repeated measures ANOVA, Kruskal-Wallis, Fisher’s exact test and SPSS software 16. P values less than 0.05 were considered statistically significant.

**Results:** The results of the study showed that VAS score in fentanyl-bupivacaine group was significantly lower than that in the two other groups during the first 18 hours. However, VAS score in all groups decreased at 24th hour postoperatively (less than three) suggesting that there was no statistically significant difference between the three groups. In this study, no serious and severe complications were observed except for a few cases of nausea in the control group.

**Conclusion:** Epidural analgesia with fentanyl-bupivacaine is a safe and effective way to postoperative pain management in listhesis and spinal surgeries.

**Keywords:** analgesia, epidural, Listhesis, Fentanyl, Bupivacaine