Comparison of fentanyl and dexmedetomidine added to bupivacaine for unilateral spinal anesthesia in lower limb surgeries: a randomized trial

Karim Nasseri1,Naseh Taher-Baneh1, Negin Ghadamie1, Farzad Sarshivi1,Reza Sahraie2,Kamal ghaderi1,Musa Shirmohammadi1,Bijan Nouri3

1. Kurdistan University of Medical Sciences, Faculty of Medicine, Department of Anesthesiology, Sanandaj, Iran.

2. Kurdistan University of Medical Sciences, Faculty of Medicine, Department of orthopedic, Sanandaj, Iran.

3. Kurdistan University of Medical Sciences, Faculty of Medicine, Department of Biostatic and Epidemiology, Sanandaj, Iran

Abstract

Background and objectives

One of the disadvantages of unilateral spinal anesthesia is the short duration of post-operative analgesia, which addressed by adding adjuvants to local anesthetics. The aim of current study was to compare the effects of adding dexmedetomidine, fentanyl, or saline to bupivacaine on the properties of unilateral spinal anesthesia in patients undergoing calf surgery.

Methods

In this double-blind clinical trial, 90 patients who underwent elective calf surgery randomly divided into three groups. The spinal anesthetic rate in each of the three groups was 1 mL bupivacaine 0.5% (5 mg). In groups BD, BF and BS, 5 µg of dexmedetomidine, 25 µg of fentanyl and 0.5 mL saline added, respectively. The duration of the motor and sensory blocks in both limbs and the rate of pain during 24 h after surgery were calculated. Hemodynamic changes also measured during anesthesia for up to 90 min.

Results

The duration of both of motor and sensory block was significantly longer in dependent limb in the BF (96 and 169 min) and BD (92 and 166 min) groups than the BS (84 and 157 min) group. Visual Analog Scale was significantly lower in the two groups of BF (1.4) and BD (1.3), within 24 h after surgery, than the BS (1.6) group.

Conclusions

The addition of fentanyl and dexmedetomidine to bupivacaine in unilateral spinal anesthesia can increase the duration of the motor and sensory block in dependent limb and prolong the duration of postoperative pain. However, fentanyl is more effective than dexmedetomidine.

Keywords

Bupivacaine; Dexmedetomidine; Fentanyl; Unilateral spinal anesthesia