

## Esmolol versus dexmedetomidine in scoliosis surgery: Study on intraoperative blood loss and hemodynamic changes

**Osama A. Ibraheim**

King Saud University, Saudi Arabia

**Background:** Surgical correction of scoliosis carries significant blood loss and needs for blood transfusion with its inherent risks and cost. The aim of this double-blind, randomized, controlled study was to compare the effects of esmolol or dexmedetomidine on intraoperative blood loss, anesthetics consumption, intra operative hemodynamic and effects on spinal cord monitoring in patients undergoing scoliosis surgery.

**Methods:** After obtaining institute review board approval and written informed consent, 60 adolescents (ASA physical status I-II), 14-18 years of age scheduled for posterior spinal fusion scoliosis surgery were enrolled in the study. Using computer generator software patients were randomly allocated to receive either saline as a control (group C), esmolol (Group E) or dexmedetomidine (Group D).

**Results:** There was a significant reduction in blood loss in patients who received esmolol and dexmedetomidine compared to control it was as follow; in control group  $782 \pm 86.4$  ml ( $P \leq 0.001$ ), esmolol group  $667 \pm 145.2$  ml ( $P \leq 0.001$ ) and dexmedetomidine group  $465 \pm 115.3$  ml ( $P \leq 0.001$ ). Mean intraoperative total fentanyl and propofol consumption in the esmolol group was significantly higher than in the dexmedetomidine group, this was especially dramatic for the dexmedetomidine group where the propofol consumption was twice less  $P \leq 0.001$ . There was no significant effect seen in SSEPs (amplitude or latency) but there was isolated decrease in motor evoked potential (MEP) amplitude which was within acceptable range that was seen in 6 patients receiving dexmedetomidine at a dose of  $0.7 \mu\text{g/Kg/H}$ .

**Conclusion:** Both esmolol and dexmedetomidine, added to anesthetic regimen, provided an effective and well-tolerated method to reduce the amount of blood loss in patients undergoing scoliosis surgery. Dexmedetomidine, was associated with prolonged extubation and recovery times.

**Key words:** Esmolol, dexmedetomidine, scoliosis, blood loss

oibraheim@yahoo.com