

# THE EFFECT OF MAGNESIUM SULPHATE ON THE TOTAL ANESTHETIC AND ANALGESIC REQUIREMENTS IN NEUROSURGERY

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**Background:** Anesthesia for neurosurgery requires balancing deep and effective anesthesia as well as postoperative analgesia versus the risks of delayed recovery and postoperative respiratory depression. This randomized, placebo-controlled, double-blind study was designed to evaluate the effect of magnesium sulfate on the total anesthetic and analgesic consumption using the clinical parameters in addition to the bispectral index (BIS) and neuromuscular monitoring using train-of-four (TOF).

**Patients and Methods:** This study included 60 adult male and female patients, ASA physical status I and II, and undergoing neurosurgical procedures. Patients were randomly allocated into 2 equal groups. Patients in group I (magnesium group) received magnesium sulfate (20 mg/kg) as bolus dose over 5 minutes before induction of anesthesia, followed by 10 mg/kg/h as infusion. While, patients in group II (control group) received saline with the same bolus and infusion rates. All patients were induced by fentanyl (2 $\mu$ g/kg), propofol (1.5-2 mg/kg) and rocuronium in a dose of (0.6 mg/kg) to facilitate tracheal intubation. This was followed by continuous infusion of propofol (6-10 mg/kg/h) and fentanyl (1-2  $\mu$ g/kg/h).

**Results:** Results showed that total consumptions of fentanyl, propofol and rocuronium were significantly less ( $P < 0.05$ ) in magnesium group when compared to control group. Recovery time was significantly shorter ( $P < 0.05$ ) in magnesium group. Postoperative pain score as well as total analgesic requirement of morphine was significantly lower ( $P < 0.05$ ) in magnesium group compared to control group.

**Conclusion:** Magnesium sulfate reduces the total anesthetic and analgesic requirements as well as post-operative pain.