Effects of three different dose regimens of magnesium on propofol requirements, haemodynamic variables and postoperative pain relief in gynaecological surgery.

Seyhan TO, Tugrul M, Sungur MO, Kayacan S, Telci L, Pembeci K, Akpir K.

Department of Anaesthesiology, Istanbul Medical Faculty, Istanbul University, Turkey.

BACKGROUND: In this double-blind, randomized, placebo-controlled study we compared the effects of three different dose regimens of magnesium on intraoperative propofol and atracurium requirements, and postoperative morphine consumption in patients undergoing gynaecological surgery.

METHODS: Eighty women were allocated to four equal groups. The control group received normal saline; magnesium groups received 40 mg kg\(^{-1}\) of magnesium before induction of anaesthesia, followed by i.v. infusion of normal saline, magnesium 10 mg kg\(^{-1}\) h\(^{-1}\) or magnesium 20 mg kg\(^{-1}\) h\(^{-1}\) for the next 4 h. Propofol infusion was targeted to keep bispectral index values between 45 and 55. Postoperative analgesia was achieved using PCA with morphine.

RESULTS: Magnesium groups required significantly less propofol [mean (sd) 121.5 (13.3), 102.2 (8.0) and 101.3 (9.7) microg kg\(^{-1}\) min\(^{-1}\) respectively] than the control group (140.7 (16.5) microg kg\(^{-1}\) min\(^{-1}\)). Atracurium use was significantly higher in the control group than magnesium groups [0.4 (0.06) vs 0.34 (0.06), 0.35 (0.04), 0.34 (0.06) mg kg\(^{-1}\) h\(^{-1}\) respectively]. Morphine consumption was significantly higher in control group than magnesium groups on the first postoperative day [0.88 (0.14) vs 0.73 (0.17), 0.59 (0.23), 0.53 (0.21) mg kg\(^{-1}\) respectively]. The heart rate was lower in magnesium groups and 20 mg kg\(^{-1}\) h\(^{-1}\) infusion group demonstrated the lowest values.

CONCLUSION: Magnesium 40 mg kg\(^{-1}\) bolus followed by 10 mg kg\(^{-1}\) h\(^{-1}\) infusion leads to significant reductions in intraoperative propofol, atracurium and postoperative morphine consumption. Increasing magnesium dosage did not offer any advantages, but induced haemodynamic consequences.

PMID: 16311277