

Analgesic Efficacy of Intravenous Magnesium Infusion: a meta-analysis

Abstract Type: Clinical Investigation

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Objective: Intravenous magnesium has been administered as an adjunct agent (typically as an intraoperative bolus and infusion) for postoperative analgesia. However, how intravenous magnesium may affect analgesia or other opioid-related side effects. We have performed a systematic review to further examine this issue.

Method: This study qualified for exemption from the Johns Hopkins IRB. Systematic literature searches of the National Library of Medicine's PubMed and EMBASE databases were conducted using terms related to postoperative use of IV magnesium. Only randomized controlled trials comparing perioperative IV magnesium infusion were considered. Data on pertinent study characteristics and relevant outcomes were extracted from accepted articles. There was no restriction on language for inclusion. Meta-analysis was performed using the Review Manager 4.2.10 (The Cochrane Collaboration, 2004). A random effects model was used.

Results: The literature searches yielded 14 articles which met all inclusion criteria. There were a total of 412 subjects in the magnesium group and 412 in the no magnesium group. We found that use of perioperative IV magnesium was associated with a decreased VAS pain scores at 4-6 hours [weighted mean difference (WMD) = -0.69 (95% confidence interval [CI]: -1.15, -0.23), $p = 0.003$], 12 hours [WMD = -0.67 (95% CI: -1.01, -0.32), $p = 0.001$], and 24 hours postoperatively [WMD = -0.43 (95% CI: -0.79, -0.06), $p = 0.02$]. We found that use of perioperative IV magnesium was not associated with a decrease in postoperative nausea and vomiting (odds ratio = 0.62, 95% CI: 0.37, 1.03, $p = 0.06$)

Conclusions: Our pooled analysis examining the analgesic efficacy of perioperative IV magnesium infusion revealed that IV magnesium was associated with a decrease in visual analog pain scores at 4-6, 12 and 24 hours after surgery. When compare to the no magnesium group, the use of IV magnesium was not associated with any changes in odds of postoperative nausea and vomiting. The results should be interpreted with caution and certainly further examination with larger RCT is warranted as the overall number of subjects is relatively small.

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