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## Efficacy of intravenous magnesium sulfate in the treatment of acute migraine attacks.

Demirkaya S<sup>1</sup>, Vural O, Dora B, Topçuoğlu MA.

### Author information

### Abstract

**OBJECTIVE:** To study the efficacy and tolerability of 1 g of intravenous magnesium sulfate as acute treatment of moderate or severe migraine attacks.

**BACKGROUND:** Migraine is a common disorder in which not only the pain but also the accompanying symptoms such as nausea and vomiting reduce activity and productivity of sufferers. Many drugs used for the treatment of acute migraine attacks have many side effects, are not well tolerated, are ineffective in some patients, or cannot be used during pregnancy or in patients with ischemic heart disease. Magnesium deficiency has been proposed to play a role in the pathophysiology of migraine, and recently treatment of migraine with magnesium has gained considerable interest.

**METHODS:** This was a randomized, single-blind, placebo-controlled trial including 30 patients with moderate or severe migraine attacks. Fifteen patients received 1 g intravenous magnesium sulfate given over 15 minutes. The next 15 patients received 10 mL of 0.9% saline intravenously. Those in the placebo group with persisting complaints of pain or nausea and vomiting after 30 minutes also received 1 g magnesium sulfate intravenously over 15 minutes. The patients were assessed immediately after treatment, and then 30 minutes and 2 hours later. Intensity of pain, accompanying symptoms, and side effects were noted.

**RESULTS:** All patients in the treatment group responded to treatment with magnesium sulfate. The pain disappeared in 13 patients (86.6%); it was diminished in 2 patients (13.4%); and in all 15 patients (100%), accompanying symptoms disappeared. In the placebo group, a decrease in pain severity but persisting nausea, irritability, and photophobia were noted in 1 patient (6.6%). Accompanying symptoms disappeared in 3 patients (20%) 30 minutes after placebo administration. All patients initially receiving placebo were subsequently given magnesium sulfate. All of these patients responded to magnesium sulfate. In 14 patients (93.3%), the attack ended; in 1 patient (6.6%), pain intensity decreased; and in all 15 patients (100%), accompanying symptoms disappeared. Both the response rate (100% for magnesium sulfate and 7% for placebo) and the pain-free rate (87% for magnesium sulfate and 0% for placebo) showed that magnesium sulfate was superior to placebo. Twenty-six patients (86.6%) had mild side effects which did not necessitate discontinuing treatment during magnesium sulfate administration.

**CONCLUSION:** Our results show that 1 g intravenous magnesium sulfate is an efficient, safe, and well-tolerated drug in the treatment of migraine attacks. It is possible that magnesium sulfate could be used in a broader spectrum of patients than other drugs commonly used for attack treatment. In view of these results, the effect of magnesium sulfate in acute migraine should be examined in large-scale studies.

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