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A Randomized Clinical Trial of Nebulized Magnesium Sulfate in Addition to Albuterol in the Treatment of Acute Mild-To-Moderate Asthma Exacerbations in Adults

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PMID: 12023699 DOI: [10.1067/mem.2002.123300](https://doi.org/10.1067/mem.2002.123300)

Abstract

Study objective: We sought to compare the efficacy and safety of nebulized magnesium sulfate (MgSO₄) plus albuterol with that of albuterol alone in adult patients with mild-to-moderate acute asthma exacerbations.

Methods: Patients were randomized to receive nebulized MgSO₄ (384 mg in 6 mL of sterile water) or an equal volume of placebo (normal saline solution) in a double-blind fashion after each dose of nebulized albuterol administered (2.5 mg/3 mL) every 20 minutes for the first hour of the study. Spirometry was performed at baseline and every 20 minutes for 2 hours. Monitoring for safety included vital signs, pulse oximetry, and serum magnesium levels. Improvement in percent predicted forced expiratory volume in 1 second was chosen as a primary efficacy end point.

Results: Among 74 patients enrolled, 37 were randomized to each of 2 study groups. There were no statistically or clinically significant differences between the 2 study groups in percent predicted forced expiratory volume in 1 second at any point during the trial or overall. There were no significant differences in vital signs, pulse oximetry, or serum magnesium levels at any point during the study.

Conclusion: The combination of nebulized MgSO₄ and albuterol provides no benefit in addition to that provided by therapy with albuterol in adult patients with mild-to-moderate asthma exacerbations. The efficacy of nebulized MgSO₄ in patients with severe asthma exacerbations remains unknown.

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