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A Randomized Controlled Trial of Intravenous Magnesium Sulphate as an Adjunct to Standard Therapy in Acute Severe Asthma

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Abstract:

Though intravenous (IV) Magnesium Sulphate (MgSO₄) has additive effect to beta-2 agonists, its additive benefit in face of combination therapy with beta-2-agonists and ipratropium (standard therapy of severe acute exacerbation of asthma) remains unaddressed. The aim of this investigation was to evaluate the role of IV MgSO₄ when used as an adjunct to standard therapy of severe exacerbations of asthma.

Randomized, single blinded, placebo-controlled study was carried out in Emergency Department (ED). Patients aged 18-60 years presenting with acute asthma and FEV₁ < 30 % predicted (pred.) were included. All patients received IV Hydrocortisone on arrival.

In group1 (controls), patients were nebulised with salbutamol and ipratropium thrice at 20 minutes interval and were given 2g IV MgSO₄ at 30 minutes. In group2 patients were nebulised similarly, but were given IV normal saline at 30 minutes for blinding. FEV₁ was evaluated at baseline and at 30 minutes intervals. The primary efficacy end point was FEV₁%pred. at 120 mins and pooled discharge rate (derived from comparing proportion of groups attaining PEFR >60% pred. and relief in dyspnea at 30, 60, 90, 120 minutes). Both groups of 30 patients each, were matched with respect to demographic and pulmonary parameters (Baseline FEV₁% :22.0+5.1% in group2 vs.22.07+5.2% in group1, p=0.87).At 120 minutes, there was a higher mean FEV₁ %pred (62.84+4.73% vs. 56.7+4.5%) and %improvement from baseline of (40.7+9.2%vs34.77+7.3%), in group 2 as compared to group1 (Mean Difference= 6.07%, C.I.1.87-10.62., p<0.01).The pooled discharge rate in group2 with respect to group1 was positive and significant (log rank.=6.8, p<0.05). Thus IV MgSO₄ improves pulmonary function and discharge rates, when used as an adjunct to standard therapy in severe acute asthma.

Magnesium sulfate as an adjunct to standard therapy in patients with severe exacerbation of asthma could cause improvement in pulmonary function and decrease in hospital admission.

Keywords:

Acute severe asthma . Magnesium sulfate . Treatment

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