Introduction:
Intravenous (IV) magnesium has an established role in the treatment of acute asthma attack. It is attractive as a bronchodilator because it is relatively cheap and has minimal side effects. There are few studies evaluating the effect of magnesium on acute exacerbation of COPD and the results of them are contradictory. The aim of this study was to investigate the effect of IV magnesium sulfate in the treatment of patients presenting to the emergency department (ED) with acute exacerbation of COPD.

Methods:
In this randomized controlled trial, adult patients presented to the ED with acute exacerbation of COPD were randomly allocated in 2 groups. Patients in the study group received the standard treatment, plus 2 gram of IV magnesium sulfate and patients in the control group received the standard treatment, plus placebo. The outcomes included admission rate, intubation rate, changes in PEFR, SpO2 and dyspnea severity score. PEFR, SpO2 and dyspnea severity score were documented before the treatment and 20 minutes after administration of MgSO4 or placebo.

Results:
34 patients were included in the study (17 patients in each group), 16 patients were men and 18 patients were women. The study group had significantly more improvement in the dyspnea severity score (P=0.001) and SpO2 (P= 0.004) as compared to the control group. But the difference in the changes in PEFR, intubation rate and admission rate were not clinically significant between 2 groups. (P>0.05)

Conclusion:
Adding magnesium sulfate to the standard treatment in patients with acute exacerbation of COPD leads to more improvement in dyspnea severity score and SpO2 although it does not reduce admission rate and intubation rate.
Small sample size and the dependency of PEFR on patient’s effort are limitations of the present study. Furthermore we did not exclude the patients with the Cor pulmonale which may had an effect on the low response rate to MgSO4.