**Investigating the effect of ketamine nebulizer on improving the symptoms of COPD exacerbation patients**

**Introduction:** Chronic Obstructive Pulmonary Disease (COPD) is a common respiratory disease and many patients experience exacerbation of its symptoms (COPD Exacerbation), which sometimes even require emergency measures and hospitalization. Considering that ketamine nebulizer is a treatment option in improving the symptoms of asthma attack, it seems that it can improve the symptoms and prevent the intubation of the patient in COPD Exacerbation patients who are resistant to the first line of treatment. There is a difference of opinion in these patients. For this reason, we decided to study the effect of ketamine nebulizer on COPD exacerbation in this research.

**Method:** This study is a double-blind clinical trial and 80 patients with COPD (proved with spirometry results) with moderate or severe exacerbation of symptoms (according to the GOLD classification criteria) were referred to the emergency room of Shahid Rahnamon and Shahid Sadoughi hospitals in Yazd in 1400 and 1401 referred (taking into account the inclusion and exclusion criteria) were included in the study and were divided into two groups of 40 intervention and placebo with a random number table. First, both groups were prescribed the main treatment with a standard dose (albuterol and Atrovent nebulizer and intravenous injection of methylprednisolone and oxygen with venturi mask). Then group A received placebo nebulizer (saline) and group B received ketamine nebulizer with a dose of 0.5 mg/Kg and a maximum of 25 mg. After 20 minutes, if the symptoms did not improve, the above method was repeated again, and if none of them responded, intravenous aminophylline as rescue treatment and finally non-invasive ventilation (NIV) or intubation was performed. The patients' information was recorded into a checklist and analyzed by SPSS software using T-test, Chi-Square and repeated measurements.

**Results:** Group A consisted of (67.5%) 27 men and (32.5%) 13 women, and group B consists of (62.5%) 25 men and (37.5%) 15 women, and the average age of patients in groups A and B were 55.08 +\_4.98 and 54.80+\_ 4.90, respectively have been reported. According to the collected data, the demographic characteristics of age, sex, occupation, underlying cause of the disease, smoking, hookah, and drug use, frequency distribution of oxygen consumption at home, and the rate of hospitalization in the last year were close to each other in both groups. And there was no significant difference. 45 patients (A20, B 25) needed a second dose of medicine, and finally 41 of the studied patients (51.3%) were hospitalized (A 18, B 23) and only 5 cases (A 2(5%), B 3(7.5%)) needed NIV, which had no significant difference (P-Value> 0.05) and none of the patients were intubated. Heart rate, respiratory rate, blood pressure, PS O2, severity of dyspnea at 0, 20, 40, 60, 90 and 120 minutes, Pco2 in VBG at 0 and 40 minutes and peek expiratory flow rate (PEFR) at 0, 60 and 240 minutes were measured and T-test, Chi-Square test were compared between the two groups, none of them had significant differences, but with the repeated measurement test over time, among them, the mean score of dyspnea severity, Pco2 in VBG and PEFR were significant (P-Value<0.05 ).

**Conclusion:** The present study showed that ketamine nebulizer in combination with standard treatment without causing side effects can have a significant effect on increasing the percentage of PEFR, reducing the severity of dyspnea and a faster drop of Pco2 in VBG during the time of hospitalization in the emergency room, but in terms of Hospitalization rate of patients and the need for intubation and NIV have not been affected.

**Keywords:** COPD treatment, COPD exacerbation, ketamine nebulizer, emergency room

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