THE ROLE OF NON-INVASIVE VENTILATION IN REDUCING MORTALITY IN EXACERBATIONS OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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Abstract. Chronic obstructive pulmonary disease (COPD) is a significant global health issue that is characterized by airflow constriction and breathing difficulties. Chronic obstructive pulmonary disease and cardiovascular diseases are among the most common diseases among people. The development of coronary heart disease in COPD is to some extent natural, especially in the presence of other risk factors for coronary artery disease. The risk group consists of patients with a severe course of the disease, in whom coronary artery disease can be asymptomatic or mild.

Keywords: chronic obstructive pulmonary disease, arterial hypertension, respiratory failure, oxygen hemoglobin hyperventilation

Actually. Exacerbation of chronic obstructive pulmonary disease (COPD) remains one of the leading causes of hospitalization and mortality among patients with chronic respiratory diseases. Chronic obstructive pulmonary disease is a leading cause of global morbidity and mortality, and about 15% of adults in industrialised countries have chronic obstructive pulmonary disease when defined by spirometry[1]. Mild exacerbations are common, and the development of hospital at home services for acute exacerbations has improved the treatment options for managing mild exacerbations safely in the community. These account for over a third of the overall healthcare costs associated with treating chronic obstructive pulmonary disease in the United Kingdom. Exacerbations are not only expensive but can impair lung function and quality of life and are associated with further readmissions[2-3]. The development of acute hypercapnic respiratory failure significantly worsens the prognosis and requires immediate intervention. A series of randomised trials of non-invasive ventilation in acute exacerbations of chronic obstructive pulmonary disease has been performed, but in different ward settings. In the intensive care unit, non-invasive ventilation has shown significant reductions in tracheal intubation rates but not in overall mortality[4]. The issue of including all patients unable to tolerate non-invasive ventilation or those requiring immediate tracheal intubation is important. Many of the randomised trials have excluded patients who were deemed severe enough at the outset to require immediate intubation and ventilation[5].

Purpose of the study: To evaluate the impact of non-invasive ventilation (NIV) on clinical outcomes and mortality in patients with exacerbation of COPD.

Materials and methods: An analysis of international clinical guidelines (GOLD, ERS/ATS), as well as data from randomized controlled trials and meta-analyses on the use of NIV in acute hypercapnic respiratory failure was conducted.

Results: The use of NIV improves alveolar ventilation, reduces $PaCO_2$ levels, and corrects respiratory acidosis. Respiratory muscle work is reduced, and patients experience rapid clinical improvement.

Early use of NIV significantly reduces the incidence of tracheal intubation and the risk of ventilator-associated complications. According to several studies, the use of NIV reduces hospital mortality by 30–50% and helps shorten the length of stay in intensive care units. The

effectiveness of NIV largely depends on the timely initiation of therapy, proper patient selection, and adequate monitoring. The greatest effect is achieved when used in the early stages of respiratory failure. Delayed administration can lead to progression of the condition and the need for invasive ventilation.

Conclusions: Noninvasive ventilation is a key method of respiratory support during COPD exacerbations, reducing mortality, decreasing the frequency of intubation, and improving the prognosis. It is recommended as first-line therapy in the absence of contraindications. Data from good quality randomised controlled trials show that NIV is beneficial as a first-line intervention in conjunction with usual care for reducing the likelihood of mortality and endotracheal intubation in patients admitted with acute hypercapnic respiratory failure secondary to an acute exacerbation of chronic obstructive pulmonary disease (COPD).

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