



Cardiorespiratory Disorders in Patients Chronic Obstructive Pulmonary Disease

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Abstract: Clinical and functional study was carried out in pulmonology department of multidisciplinary clinic of TMA in 44 patients with chronic obstructive pulmonary disease aged 40 to 72 years. The average duration of the disease was 20,2 years. Analysis of clinical course of COPD showed that with the degree of the disease there was not only an increase in the intensity of clinical manifestations, but also aggravation of cardio-respiratory disturbances, characterized by heart rhythm disturbances (69,2%), shift of the electric axis to the right(30,7%), presence of P-pulmonale (92,3%).

Keywords: chronic obstructive pulmonary disease, external respiratory function, chronic respiratory failure.

Introduction. Chronic obstructive pulmonary disease (COPD) is the third leading cause of death worldwide, causing 3.23 million deaths in 2019 [5]. Chronic obstructive pulmonary disease, which includes chronic bronchitis and emphysema, is a long-term lung disease that makes it hard to breathe [1].

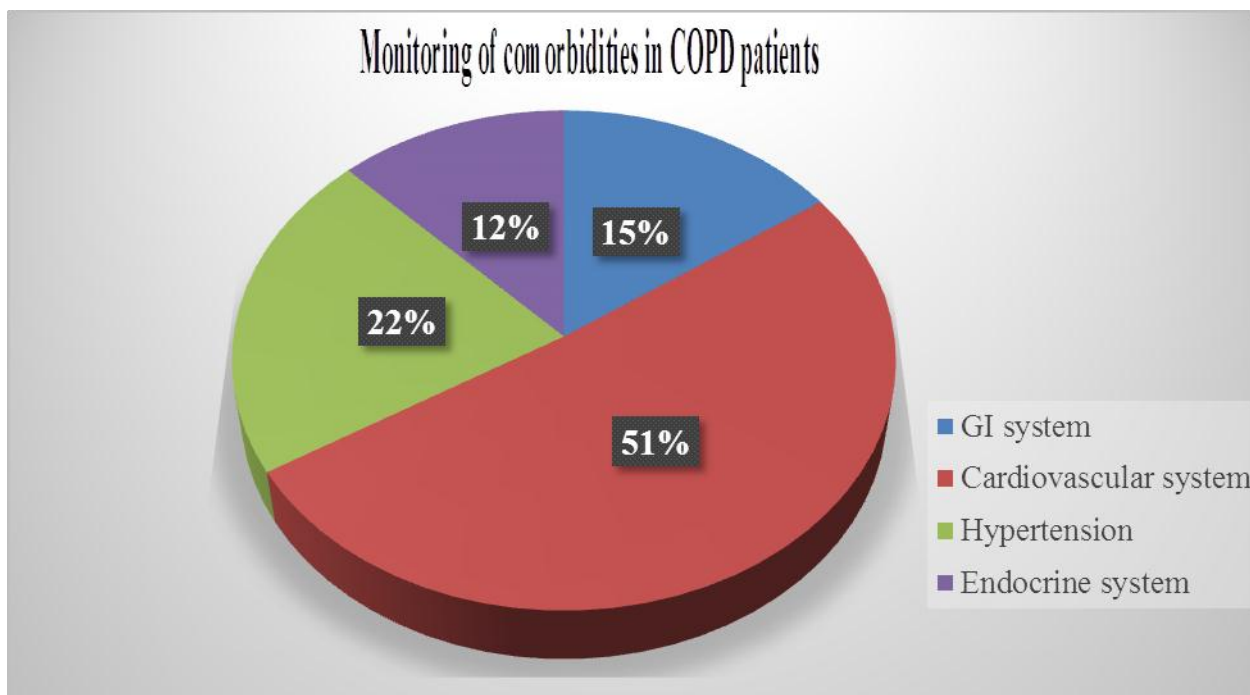
Chronic obstructive pulmonary disease is a global health issue with cigarette smoking being an important risk factor. COPD affects pulmonary blood vessels, right ventricle, as well as left ventricle leading to the development of pulmonary hypertension (PH), cor-pulmonale (COR-P), right and left ventricular dysfunction. Echocardiography provides a rapid, noninvasive, portable, and accurate method to evaluate cardiac functions. Early diagnoses and intervention for cardiac comorbidities would reduce mortalities.

Chronic obstructive pulmonary disease is one of the main causes of morbidity and mortality worldwide and is an important social and medical problem. Prevention and treatment of COPD is the main task of health care. 200 million people worldwide suffer from COPD and COPD from respiratory diseases. More than 100,000 people suffer and it is not only a medical, socio-economic, but also a general humanitarian problem. 2.25 million per year from COPD in the world a person will die (4.2% of all deaths) [3]. This disease is currently the leading cause of disability and the 3th leading cause of death. In Uzbekistan, respiratory diseases take the first place in terms of number. Over the past 10 years, the incidence rate of nonspecific lung diseases has increased 2.5 times, and the number of hospitalized patients with pulmonological diseases has exceeded the number of patients with cardiovascular and endocrine diseases [2]. Nowadays the relationship between the severity of chronic obstructive pulmonary diseases and the subjective and objective symptoms is of great importance in the early diagnosis and treatment tactics of the disease.

Chronic obstructive pulmonary disease occurs in older individuals due to persistent inhalation of noxious particles, commonly from cigarette smoking, people with asthma, genetics, occupational exposure to dusts and chemicals, exposure to fumes from burning fuel. The pulmonary disease includes airway inflammation and remodelling, with variable alveolar destruction (emphysema) and breathing difficulty and discomfort due to chronic bronchitis. In the pathogenesis of COPD a chronic inflammatory process is formed in the interstitial tissue and alveoli of the bronchial mucosa. Neutrophils play an important role in this process. They increase basically. They secrete prostaglandins, leukotrienes, cytokines and other substances, resulting in chronic inflammation and hyperplasia of the bronchial mucosa. Inflammation of large, medium, small caliber bronchi is the main cause of bronchoobstructive syndrome [4]. So COPD patients suffer with dyspnoea, cough and sputum production and may experience sudden worsenings (exacerbations) that are often caused by respiratory tract infections. In addition, COPD is associated with a high prevalence of comorbidities.

Purpose of the research: Assessment of cardiorespiratory changes in patients with chronic obstructive pulmonary disease. And assessment of the clinical course of the disease in COPD patients according to severity.

Materials and methods: Clinical and functional examinations were conducted in 44 patients with COPD. 25 of them were men and 19 were women. 25 % of patients aged 40-50, 52,2% of patients aged 51-60, 15,9% of patients aged 61-70. 11 of patients were moderately severe (II degree), 20 of patients were severe condition (III degree), 13 of patients were very severe condition (IV degree). During the research, the average survival of the patients was 20.2 years. Maximum speed of expiration rate was assessed in patients using a peak expiratory flow (PEF). Cardiorespiratory changes were assessed using electrocardiography. We determined the level of disease severity in patients COPD through CAT.



1-picture. Monitoring of comorbidities in COPD patients (%).

Results: According to the result of CAT 11 of 44 patients were at the second level, 20 were at the third level, 13 were at the fourth level of severity (*1-table*).

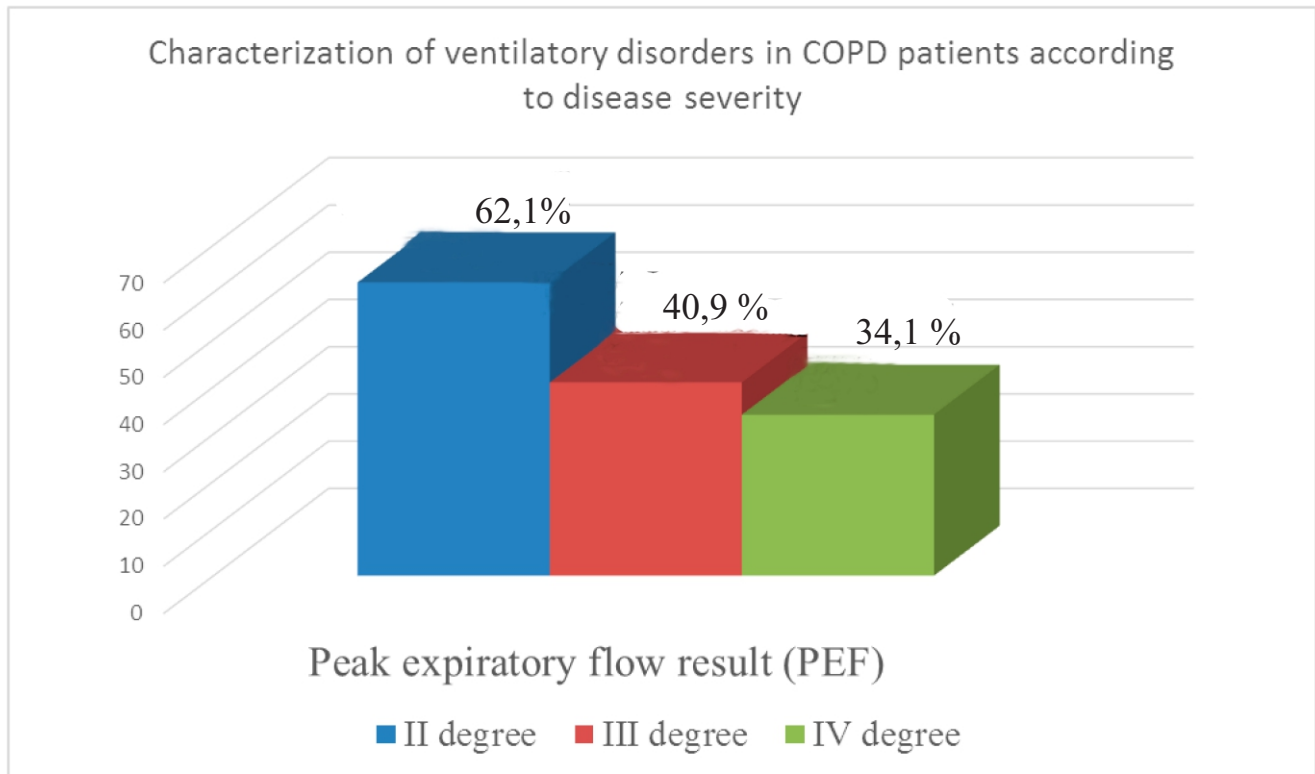
1-table. COPD assessment test results

Severity degree	The number of COPD patients	Gained ball
II degree	11	11 until 20
III degree	20	21 until 30
IV degree	13	31 until 40

2-table. Clinical changes in patients COPD

Severity degree	n	Cough	Sputum	Weakness	Fatigue	Sweating
II degree	11	8±0,05	7±0,05	5±0,05	7±0,05	6±0,07
III degree	20	18±0,05	14±0,05	20±0,05	20±0,05	20±0,10
IV degree	13	13±0,03	13±0,03	13±0,03	13±0,03	13±0,06

According to the clinical examinations COPD causes cough, sputum, sweating, weakness, fatigue at different levels. As the clinical level of the disease increases the frequency of symptoms increases (2-table).

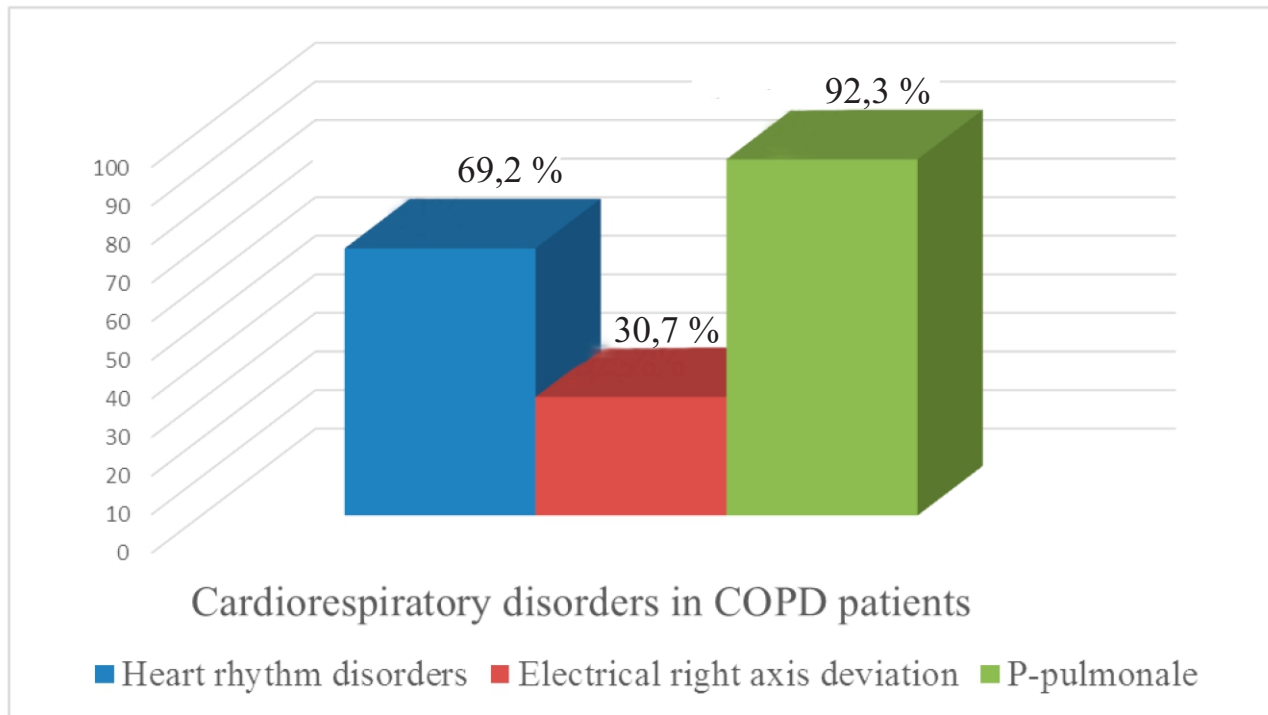


2-picture. Peak expiratory flow result(PEF)

3-table. Characterization of electrocardiographic changes by severity in COPD patients

	II degree	III degree	IV degree
Heart rhythm disorders	6=54,5%	12=60%	9=69,2%
Shift of the electric axis to the right	2=18,2%	5=25%	4=30,7%
Right ventricular hypertrophy	2=18,2%	13=65%	10=76,9%
P- pulmonale	2=18,2%	12=60%	12=92,3%
Bundle branch block of the right leg	2=18,2%	7=35%	10=76,9%
Dystrophic changes in the myocardium	8=72,7%	19=95%	12=92,3%

The level of cardiorespiratory disorders also increased, in which heart rhythm disorders (76.6%), right ventricular hypertrophy (36.2%), P-pulmonale (55.3%) were observed.



3-picture. Cardiorespiratory disorders in COPD patients

Conclusion: Analysis of clinical course of COPD showed that with the degree of the disease there was not only an increase in the intensity of clinical manifestations, but also aggravation of cardiorespiratory disturbances, characterized by heart rhythm disturbances (69,2%), electrical right axis deviation(30,7%), presence of P-pulmonale (92,3%).

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