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# Clinical Characteristics of Chronic Obstructive Pulmonary Disease

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COPD (Chronic Obstructive Pulmonary Disease) is a major cause of morbidity and mortality among the population nowadays that leads to considerable economic and social losses. The study revealed that there was a clear tendency among men to the age increasing depending on the disease stage; tobacco smoking dominated among the risk factors that led to the development of COPD. Having analyzed the clinical features of the course of COPD in the groups under study, we found that the frequency of exacerbations progressively increased according to severity, and pathology exacerbation trigger were hypothermia and various respiratory diseases.

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*Keyword:* Chronic Obstructive Pulmonary Disease.

### 1. Introduction

Chronic obstructive pulmonary disease – is an independent nosological form, characterized by a progressive increase of irreversible obstruction as a result of chronic inflammation, which is based on the morphological changes of all structures of the lung tissue with the overlay of cardiovascular system and respiratory muscles into the pathological process [1, 2]. The pathological process begins in bronchial mucosa: in response to the external pathogens the secretory apparatus functions are violated (mucus hypersecretion, bronchial secretions qualitative changes), infection joins, the cascade of reactions develops, leading to the bronchi, bronchioles and surrounding alveoli affect [3, 4, 9].

Remodelling of the respiratory tract is observed under the chronic inflammatory and obstructive disease of the bronchial-pulmonary system. According to P.K. Jeffery, fibrous changes are of the decisive importance in the respiratory tract restructuring [7, 8]. In our view, the opinion of P.J. Barnes [1] that the chronic damage and the

defective renovation of the surface epithelium may lead to the stable activation of the chronic inflammatory process with subsequent chronic secretion of a number of proinflammatory cytokines and hemotoxic factors that further manage the chronic inflammation and remodelling is acceptable.

Chronic obstructive pulmonary disease (COPD) is classified in order of gravity; the classification is based on two criteria: clinical, which takes into account the basic clinical symptoms – cough, phlegm and shortness of breath; and functional, which takes note of the irreversible respiratory obstruction degree (decrease of FEV<sub>1</sub> less than 80% from appropriate after the bronchodilator inhalation in combination with the reduced ratio of FEV<sub>1</sub>/VC less than 70 %) [5, 6].

**Aim of the research:** to study the peculiarities of the division of the patients with COPD according to the socio-demographic indicators, to the lifestyle peculiarities, to the clinical features, depending on the COPD stage.

## 2. Materials and methods

We have studied the peculiarities of the division of patients with COPD according to socio-demographic indicators, to the lifestyle peculiarities, to the clinical features of the disease, as well as performed detailed clinical and laboratory and instrumental examination of 134 patients with chronic obstructive pulmonary disease. All the examined persons at the time of recruitment were undergoing in-treatment in pulmonary department, occupational pathology unit and differential-diagnosis department of the regional physiology center (the city of Ivano-Frankivsk), due to the exacerbation of the chronic obstructive pulmonary disease. Complete physical examination was conducted to all the patients with COPD in accordance with the

requirements of the III<sup>rd</sup> level of providing expert pulmonological care in medical preventive institutions: general clinical and laboratory and instrumental studies, including respiratory function and chest X-ray studies.

Functional study of the external respiration apparatus included spirometry, which was carried out with the help of the "Cardio +" device (SPE "Metekol", the city of Nizhyn). Appropriate values of spirometric indicators were calculated according to the tables of R. Clement *et al.* [1986]. Revealed impairments were defined as an obstructive, restrictive and mixed. To identify and assess bronchodilator reversibility pharmacological tests were conducted with  $\beta_2$ -antagonist short-acting salbutamol according to the standard technique GOLD (2006-2008) [2, 7].

**Table 1:** Division of patients with COPD according to socio-demographic indicators

Indicators	Quantity of patients, n = 134							
	I <sup>st</sup> stage, n = 34		II <sup>nd</sup> stage, n = 35		III <sup>rd</sup> stage, n = 35		IV <sup>th</sup> stage, n = 30	
	Men	Women	Men	Women	Men	Women	Men	Women
Quantity, abs./ %	25/ 73,5	9/ 26,4	23/ 65,7	12/ 34,2	22/ 62,8	13/ 37,1	16/ 53,3	14/ 46,6
Average age, years	44,3 ± ±1,1	44,2±±1, 4	53,5±±0, 9	57,1±±1, 3	61,3±±1, 0	60,0±±1, 7	66,9±±1, 6	58,9±±1, 3
Education, abs./ %:								
primary	-	-	1/ 2,8	-	-	-	-	-
incomplete secondary	-	-	1/ 2,8	-	-	1/ 2,8	-	-
secondary	-	-	3/ 8,6	6/ 17,1	9/ 25,7	3/ 8,6	1/ 3,3	1/ 3,3
professional	17/ 50,0	4/ 11,8	12/ 34,3	4/ 11,4	10/ 28,6	5/ 14,3	12/ 40,0	13/ 43,3
higher	8/ 23,5	5/ 14,7	6/ 17,1	2/ 5,7	3/ 8,6	4/ 11,4	1/ 3,3	2/ 6,6
Marital status, abs./ %:								
single	5/ 14,7	4/ 11,7	5/ 14,2	3/ 8,5	3/ 8,5	1/ 2,8	1/ 3,3	-
married	20/ 58,8	5/ 14,7	18/ 51,4	9/ 25,7	19/ 54,2	12/ 34,2	13/ 43,3	16/ 53,3

### 3. Research results and discussion

Concerning the histories of diseases clinical analysis, so among the 134 patients with COPD, were 34 cases with the I<sup>st</sup> stage of disease, 35 - with the II<sup>nd</sup> stage, 35 - with the III<sup>rd</sup> stage, 30 - with the IV<sup>th</sup> stage. Exclusionary criteria for the research were verified diagnosis of pneumonia, specific and lung cancer etc. We studied the peculiarities of the division of the patients with COPD according to socio-demographic indicators.

In the structure of investigated cases men dominated – 84 patients (62,7%), women – 50 (37,3%). The patients' age varied from 32 to 79 years. The average men's age was (56,5±1.2) years, women's – (55,1±1,4) years. We observed the clear tendency among men to the age increasing, depending on the stage of the disease (Table 1). The dominating majority of patients were persons with secondary and professional education – 100 cases (76,6%); with higher education – 31 patient (23,1%),

incomplete secondary and primary education – 3 cases (2,2%). 112 persons indicated the marital status, which amounts 83,6% (Table 1).

The results of the patients' division according to their lifestyle peculiarities showed that the lion's share of patients has in past medical history such COPD risk factor as smoking. Among the existing risk factors that provoked the appearance of chronic obstructive pulmonary disease in the study group patients dominated tobacco smoking. So, 91 patients (67,9%) indicated the fact of smoking, among them: 41 (45,1%) – ex-smokers, 50 (54,9%) – smoke now. Smoking indexes are 41.9 pack/years for men and 26.4 pack/years for women.

It should be mentioned that only 37 patients (27,6%) denied drinking, 90 persons (67,2%) indicated the fact of moderate amounts of alcohol drinking and 7 persons (5,2%) – indicated the fact of excessive drinking (Table 2).

**Table 2:** Division of patients with COPD according to their lifestyle peculiarities

Indicators		I <sup>st</sup> stage, n = 34		II <sup>nd</sup> stage, n = 35		III <sup>rd</sup> stage, n = 35		IV <sup>th</sup> stage, n = 30	
		M	W	M	W	M	W	M	W
Smoking, abs./ %	do not smoke	2/ 5,8	4/ 11,7	4/ 11,4	10/ 28,5	4/ 11,4	13/ 37,1	-	6/ 20,0
	gave up smoking	6/ 17,6	2/ 5,8	11/ 31,4	1/ 2,8	10/ 28,5	-	5/ 16,6	6/ 20,0
	smoke now	17/ 50,0	3/ 8,8	8/ 22,8	1/ 2,8	8/ 22,8	-	9/ 30,0	4/ 13,3
Alcohol consumption, abs./ %	do not drink alcohol	5/ 14,7	2/ 5,8	1/ 2,8	8/ 22,8	1/ 2,8	9/ 25,7	1/ 3,3	10/ 33,3
	drink moderate amount of alcohol	18/ 52,9	7/ 20,5	22/ 62,8	4/ 11,4	18/ 51,4	4/ 11,4	11/ 36,6	6/ 20,0
	alcohol abuse	2/ 5,8	-	-	-	3/ 8,5	-	2/ 6,6	-
Smokers' index (pack/years)		38,5	23,6	43,2	25	45	-	40,9	30,5

Having analyzed the clinical features of the course of COPD in groups under study, we revealed the following (Table 3): working environment of the patients under study determine occurrence and frequency of risk factors that provoke the emergence of chronic

obstructive pulmonary disease in each case, however, the most frequent preceding the background of the disease exacerbation in 103 (76,82%) patients were hypothermia and various respiratory diseases.

The severity of the symptoms ranged from 2.7 points in patients with the I<sup>st</sup> stage to 7.9 points at the IV<sup>th</sup> stage. Disease duration is from 3 to 46 years: the average index for men is (18,2±1,6) years, and for women – (15,8±1,7) years. The characteristic feature of the COPD course was the frequency of exacerbations, which progressively increased according to the severity of the disease: from one - two exacerbations per year at the I<sup>st</sup> stage, up to three per year at the IV<sup>th</sup> stage. The frequency of hospitalization and use of antibiotic

therapy at the I<sup>st</sup>-II<sup>nd</sup> stages were 1-2 times per year and 2-3 times per year at the IV<sup>th</sup> stage. In addition, both in men and women were observed acute respiratory viral infections 2-3 times a year (Table 3).

In the groups under study 61 (45,5%) patient systematically receive recommended medicines, and episodically – 73 patients (54,5%). As concomitant pathology we noted the presence of arterial hypertension in 55.9% cases, osteoporosis – in 21.6% (Table 3).

**Table 3:** Division of patients with COPD according to the character of disease

Indicators		I <sup>st</sup> stage, n = 34		II <sup>nd</sup> stage, n = 35		III <sup>rd</sup> stage, n = 35		IV <sup>th</sup> stage, n = 30	
		M	W	M	W	M	W	M	W
Severity of the symptoms (points)		3,2	2,7	7,2	6,3	7,9	6,1	7,9	6,9
Duration of the disease (years)		8,3	9,6	16,6	18,4	20,4	17	27,8	18,2
Respiratory failure		I	0-I	II	II	III	III	III	III
Frequency of exacerbations (per year)		2	1-2	2	1-2	2-3	2	3	3
Exacerbations that require hospitalisation (per year)		1	1	2	1-2	2	1-2	3	2-3
Exacerbations that require antibiotic therapy usage (per year)		1	1	2	1-2	2	1-2	2	2
ARVI morbidity rate (per year)		2,5	2,5	2	1-2	2	2	2-3	2-3
Therapy regularity : abs./ %	systematically	12/ 35,2	9/ 26,4	12/ 34,2	7/ 20,0	5/ 14,2	5/ 14,2	1/ 3,3	10/ 33,3
	episodically	13/ 38,2	-	11/ 31,4	5/ 14,2	17/ 48,5	8/ 22,8	13/ 43,3	6/ 20,0
AH: abs./ %	n/a	9/ 26,0	2/ 5,8	12/ 34,2	11/ 31,4	14/ 40,0	8/ 22,8	2/ 6,6	1/ 3,3
	presents	13/ 38,2	7/ 20,5	11/ 31,4	4/ 11,4	8/ 22,8	5/ 14,2	12/ 40,0	15/ 50,0
Osteoporosis: abs./ %	n/a	22/ 64,7	2/ 5,8	23/ 65,7	11/ 31,4	22/ 62,8	13/ 37,1	9/ 30,0	3/ 10,0
	presents	3/ 8,8	7/ 20,5	-	1/ 2,8	-	-	5/ 16,6	13/ 43,3

#### 4. Conclusions

The study revealed that there was a clear tendency among men to the age increasing depending on the disease stage; tobacco smoking dominated among the risk factors that led to the development of COPD. Having analyzed the clinical features of the course of COPD in the groups under study, we found that the frequency of exacerbations progressively increased

according to severity, and pathology exacerbation trigger were hypothermia and various respiratory diseases.

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