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Research Article

CLINICAL PICTURE OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE DEPENDING ON THE PAST CORONAVIRUS INFECTION

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ABSTRACT

This article discusses clinical picture of chronic obstructive pulmonary disease depending on the past coronavirus infection. To solve the tasks set, 2 main research groups were formed. MS was the main classifying feature. Group I consisted of 229 patients (69.4%) with COPD and MS, group II consisted of 101 patients with COPD without MS (30.6%).

KEYWORDS

Chronic obstructive pulmonary disease, metabolic syndrome, coronavirus infection.

INTRODUCTION

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Over the past 10 years, the incidence of chronic bronchopulmonary pathology has increased by 21% in relation to the total incidence, while chronic obstructive pulmonary disease is the most common pathology among respiratory diseases. The combination of chronic obstructive pulmonary disease (COPD) and metabolic syndrome (MS) is a state of mutual aggravation (1,2,3,8,10).

According to the definition of COPD, which is included in the main COPD management document – "Global Initiative for Chronic Obstructive Lung Disease (GOLD), 2014", emphasizes the huge role of concomitant diseases in increasing the severity of COPD, the impact on the quality of life (QoL), prognosis and survival. Among the numerous comorbidities considered are cardiovascular diseases, metabolic syndrome (MS), diabetes mellitus (DM), coronavirus infection (CVI) (4,6,7,9,10).

In the available literature, there are practically no clinical studies performed using a systematic approach to assessing the impact of CVI and MS on clinical and instrumental characteristics and quality of life in COPD patients.

Material and methods. The study included 330 people (245 (74.2%) men and 85 (25.8%) women) diagnosed with stage II and III COPD aged 55 to 74 years, mean age 64.3±8.7 years. To solve the tasks set, 2 main research groups were formed. MS was the main classifying feature. Group I consisted of 229 patients (69.4%) with COPD and MS, group II consisted of 101 patients with COPD without MS (30.6%). MS was diagnosed in accordance with the criteria for diagnosing MS by the International Diabetes Federation (2005), clinical guidelines for the management of patients with MS of the Ministry of Health of the Russian Federation (2013) (2), 229 patients with COPD were selected for the study with MS.

The CAT and mMRC questionnaires were used. Using the mMRC (Modified Medical Research Council Dyspnea Scale) scale, the patient assesses the severity of symptoms. The CAT (COPD Assessment Test) questionnaire, specially designed for patients with COPD/COPD, is more detailed and, from our point of view, more informative for assessing the severity of the patient's condition. However, according to international approaches, it is necessary to take into account the results of both tests (5). The

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study of respiratory function parameters was carried out using a spirometer "Diamant-S" (JSC "Diamant", Russia).

The research materials were subjected to statistical processing using the methods of parametric and non-parametric analysis. Accumulation, correction, systematization of initial information and visualization of the obtained results were carried out in Microsoft Office Excel 2016 spreadsheets. Statistical analysis was carried out using the IBM SPSS Statistics v.23 program (developer - IBM Corporation).

Research results. Comprehensive physical and instrumental examination of COPD patients without MS and COPD patients with MS revealed statistically significant differences in the studied parameters.

Table 1

Characteristics of patients with COPD depending on MS

Indicators	Group I, n=229, COPD (MS+)	r<	II group, n=101, COPD (MS-)	Total, n= 330 COPD
Average age, years	59,4±9,3	0,05	65,2±8,1	64,3±8,7
Smoking experience, pack/years.	211,2±18,4		256,4±14,7	237,4±11,6
Disease duration, years	12,7±3,4	0,05	18,3±2,7	15,4±4,3
The number of exacerbations of the disease, once a year	3,3±0,5		2,1±0,9	2,8±0,4
Number of EMS calls, once a year	5,2±0,1	0,05	3,0±0,8	3,96±0,16
Number of hospitalizations, once a year	2,7±1,1	0,05	1,8±0,4	2,48±0,09
FEV1/FVCL, %				56,51±0,59
FEV1 %				59,63±0,69
SBP max, mm rt st.	167,3±5,7	0,05	146,2±4,8	155,19±1,15
DBP max, mm rt st.	105,4±3,7	0,05	91,4±2,9	95,08±0,52
DBP "operating", mm rt st.	141,3±5,9	0,05	130,4±5,1	134,61±0,94

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SBP "operating", mm rt st.	87,5±3,8		78,6±4,6	82,25±0,92

Table 1 shows that the age of patients with COPD and MS was significantly less than in group II - 59.4±9.3 and 65.2±8.1, respectively ($p<0.05$). The average number of packs of cigarettes per day in Group I was 211.2 compared to 256.4 in group II, and the number of smokers in group I was less. Among patients with COPD, the ratio of persons with a disease duration of 4 to 10 years and persons with a disease duration of more than 10 years was approximately the same: 143 and 158 patients (43.3% and 47.9%), respectively. No patients with COPD duration up to 4 years were identified. The average duration of the disease was 12.7±3.4 years in group I, 18.3±2.7 years in group II ($p<0.05$).

In patients with COPD, in order to assess the severity of the course of the disease, such indicators as "the number of exacerbations during the last 12 months", "the number of emergency calls for the last 12 months", "the number of hospitalizations during the last 12 months" were considered. Thus, the number of exacerbations of the disease, emergency calls and hospitalizations over the past 12 months was significantly higher in patients with COPD and MS 3.3±0.5, 5.2±0.1 and 2.7±1.1 versus 2.1 ±0.9, 3.0±0.8 and 1.8±0.4, respectively (Table 1).

Mean systolic and diastolic blood pressure in patients with COPD and MS was also significantly higher compared to patients with COPD without MS - 167.3±5.7, 105.4±3.7 and 146.2±4.8, 91, 4±2.9 respectively.

Table 2

Characteristics of patients with COPD depending on the presence of a history of coronavirus infection

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Indicators	I-A subgroup	r<	I-B subgroup	II-A subgroup	r<	II-B subgroup
Average age, years	58,7±5,2	0,05	63,4±6,1	64,1±7,3	0,05	67,2±5,8
Smoking experience, pack/years.	205,8±11,6	0,05	225,1±153	245,4±12,4	0,05	273,3±11,9
Disease duration, years	9,6±1,1		14,3±0,9	15,4±2,1	0,05	21,7±1,8
The number of exacerbations of the disease, once a year	2,9±0,3	0,05	3,5±0,1	1,9±0,8	0,05	2,6±0,2
Number of EMS calls, once a year	4,1±0,2		4,6±0,1	2,8±0,3		3,4±0,1
Number of hospitalizations, once a year	2,5±0,4		3,1±0,2	1,6±0,3		2,2±0,1
FEV1/FVCL, %						
FEV1 %						
SBP max, mm rt st.	148,3±6,8	0,005	176,4±5,1	136,2±4,6	0,05	152,4±3,8
DBP max, mm rt st.	96,2±4,3	0,05	110,6±2,4	85,6±2,6		94,3±1,4
DBP "operating", mm rt st.	124,3±5,9	0,05	148,5±3,2	116,5±4,1	0,05	138,4±3,5
SBP "operating", mm rt st.	80,4±4,7	0,05	93,1±2,2	71,3±5,2	0,05	83,7±3,7

As for the differences in subgroups, the results are shown in Table 2. From the table, we can conclude that in patients with COPD and MS against the background of a coronavirus infection (I-B subgroup), such indicators as - Average age, years; Smoking experience, pack/years; The duration of the disease, years, was higher compared with the I-A subgroup and amounted to

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63.4; 225.1; 14.3 vs 58.7; 205.8; 9.6 respectively. In the second group, patients with a history of COVID-19 also had higher rates in subgroup II-B compared with subgroup II-A 67.2±5.8; 273.3±11.9; 21.7±1.8 versus 64.1±7.3; 245.4±12.4; 15.4±2.1, respectively.

The average values of the indicators "the number of exacerbations during the last 12 months", "the number of calls to the EMS teams during the last 12 months", "the number of hospitalizations during the last 12 months" in subgroup I-A were slightly lower than the same indicators compared to I- In the subgroup with a significance of $p<0.05$ in terms of "The number of exacerbations of the disease, once a year", these indicators were 2.9±0.3; 4.1±0.2; 2.5±0.4 versus 3.5±0.1; 4.6±0.1; 3.1±0.2, respectively (Table 2).

The clinical picture in the examined patients was characterized by shortness of breath, of varying severity, productive or dry cough, weakness. According to Table 3, it can be seen that in group I, the indicators "Shortness of breath at rest", "Shortness of breath that occurs during exercise", "Cough unproductive","Cough with sputum difficult to separate", "Sputum of mucopurulent nature", "Purulent sputum" were higher compared with group II and amounted to 32.3%, 54.6%, 55.5%, 34.1%, 57 .6%, 31.9% versus 26.7%, 55.4%, 48.5%, 35.6%, 53.5%, 24.8% respectively.

Reliability was observed according to the indicators – "Shortness of breath at rest", "Cough with sputum difficult to separate", "Sputum of a mucopurulent nature", "Sputum of a purulent nature".

Such indicators as "Temperature increase: "to the upper limit of normothermia", "to subfebrile", "to febrile"; "Weakness", "Cyanosis", "Weakened vesicular respiration", "Significant increase in the number of respiratory movements", "Edema in the lower extremities", "Accentage of the 2nd tone in the area of the pulmonary artery" also had a significantly higher representation in group I compared to group II 56.3%, 30.1%, 13.5%, 48.9%, 24.9%, 51.5%, 27.9%, 24.5%, 44.5% vs. 68.3%, 20.8%, 10.9%, 46.5%, 31.7%, 48.5%, 28.7%, 18.8%, 37.6% respectively.

Table 3.

Clinical characteristics of COPD patients depending on the presence of MS

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Sign	COPD (MS+)		r<	COPD (MS-)	
	abc.	%		abc.	%
Shortness of breath at rest	74	32,3%	0,05	27	26,7%
Shortness of breath on exertion	229	100,0%		101	100,0%
Cough unproductive	127	55,5%		49	48,5%
Cough with difficult expectoration	78	34,1%	0,05	36	35,6%
Mucopurulent sputum	132	57,6%	0,05	54	53,5%
Purulent sputum	73	31,9%	0,005	25	24,8%
Temperature rise:					
up to the upper limit of normothermia	129	56,3%	0,05	69	68,3%
to subfebrile	69	30,1%	0,05	21	20,8%
to febrile	31	13,5%		11	10,9%
Weakness	112	48,9%	0,05	47	46,5%
Cyanosis	57	24,9%		32	31,7%
Decreased vesicular respiration	118	51,5%	0,05	49	48,5%
A significant increase in the number of respiratory movements	64	27,9%	0,05	29	28,7%
Edema in the lower extremities	56	24,5%	0,05	19	18,8%
Emphasis of the 2nd tone in the zone of the pulmonary artery	102	44,5%	0,05	38	37,6%

Table 4 presents the clinical picture in patients with COPD by subgroups, depending on their history of coronavirus infection. The table shows that in patients with a history of coronavirus infection and with and without MS, the proportion of patients with severe manifestations of COPD was more significant compared to patients without a history of coronavirus infection.

Table 4

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Clinical characteristics of COPD patients depending on the presence of a history of coronavirus infection

Sign	I-A subgroup		r<	I-B subgroup		II-A subgroup		r<	II-B subgroup	
	abc.	%		abc.	%	abc.	%		abc.	%
Shortness of breath at rest	17	22,7 %	0,005	57	37,0%	10	21,3%	0,005	17	31,5%
Shortness of breath on exertion	75	100, 0%		154	100,0%	47	100,0%		54	100,0 %
Cough unproductive	34	45,3 %	0,005	93	60,4%	20	42,6%	0,005	29	53,7%
Cough with difficult expectoration	20	26,7 %		58	37,7%	15	31,9%		21	38,9%
Mucopurulent sputum	34	45,3 %	0,005	98	63,6%	22	46,8%	0,005	32	59,3%
Purulent sputum	20	26,7 %	0,05	53	34,4%	10	21,3%		15	27,8%
Temperature rise:										
up to the upper limit of normothermia	33	44,0 %	0,005	96	62,3%	30	63,8%	0,005	39	72,2%
to subfebrile	17	22,7 %	0,05	52	33,8%	9	19,1%		12	22,2%
to febrile	7	9,3 %	0,005	24	15,6%	4	8,5%		7	13,0%
Weakness	27	36,0 %	0,005	85	55,2%	21	44,7%		26	48,1%
Cyanosis	15	20,0 %	0,005	42	27,3%	13	27,7%		19	35,2%
Decreased vesicular respiration	34	45,3 %	0,005	84	54,5%	20	42,6%	0,005	29	53,7%
A significant increase in the number of respiratory movements	19	25,3 %	0,005	45	29,2%	12	25,5%		17	31,5%

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Edema in the lower extremities	15	20,0 %		41	26,6%	9	19,1%		10	18,5%
Emphasis of the 2nd tone in the zone of the pulmonary artery	30	40,0 %	0,005	72	46,8%	17	36,2%		21	38,9%

In the I-A subgroup, the indicators “Dyspnea at rest”, “Dyspnea that occurs during physical exertion”, “Unproductive cough”, “Cough with sputum difficult to separate”, “Sputum of mucopurulent nature”, “Purulent sputum” were lower than in I-B 22.7%, 50.7%, 45.3%, 26.7%, 45.3%, 26.7% versus 37.0%, 56.5%, 60.4%, 37 .7%, 63.6%, 34.4% respectively. Significant differences were observed in terms of “Shortness of breath at rest”, “Unproductive cough”, “Sputum of a mucopurulent nature”, “Sputum of a purulent nature”.

Clinical symptoms such as “Temperature increase: “to the upper limit of normothermia”, “to subfebrile”, “to febrile”; “Weakness”, “Cyanosis”, “Weakened vesicular breathing”, “Significant increase in the number of respiratory movements”, “Edema in the lower extremities”, "Accent of the 2nd tone in the area of the pulmonary artery" also had a significantly higher representation in the I-B subgroup compared to the I-A subgroup 44.0%, 22.7%, 9.3%, 36.0%, 20.0 %, 45.3%, 25.3%, 20.0%, 40.0% vs. 62.3%, 33.8%, 15.6%, 55.2%, 27.3%, 54.5 %, 29.2%, 26.6%, 46.8% respectively (Table 4, Fig. 1).

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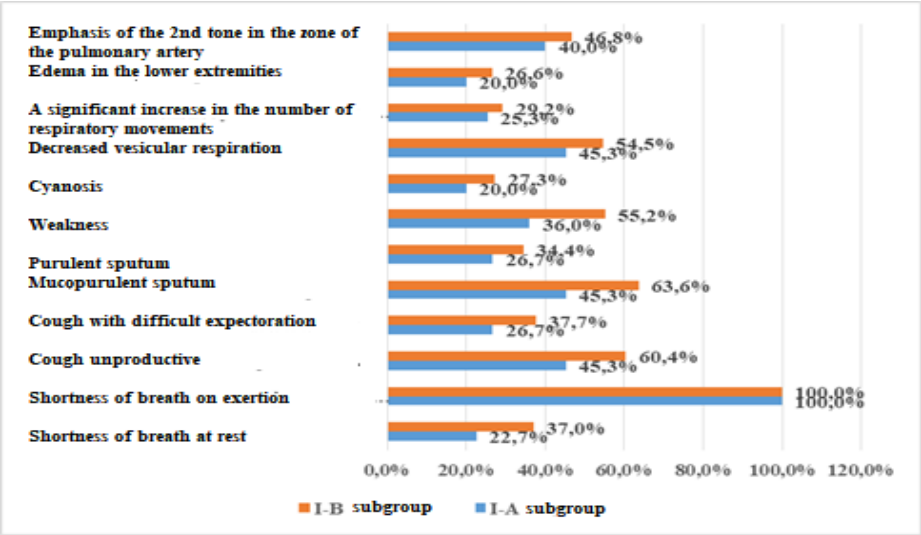

Figure 1. Clinical characteristics of COPD patients of group I, depending on the history of coronavirus infection

In the II-B subgroup, such indicators as "Dyspnea at rest", "Dyspnea that occurs during physical exertion", "Unproductive cough", "Cough with sputum difficult to separate", "Sputum of mucopurulent nature", "Purulent sputum", "Weakness", "Cyanosis", "Weakened vesicular respiration", "Significant increase in the number of respiratory movements", "Edema in the lower extremities", "Accentage of the 2nd tone in the area of the pulmonary artery" were higher compared with II-A subgroup 21.3%, 51.1%, 42.6%, 31.9%, 46.8%, 1.3%, 44.7%, 27.7%, 42.6%, 25.5%, 19.1%, 36.2% vs. 31.5%, 59.3%, 53.7%, 38.9%, 59.3%, 27.8%, 48.1%, 35.2%, 53.7%, 31.5%, 18.5%, 38.9% respectively (v.4 and fig.2).

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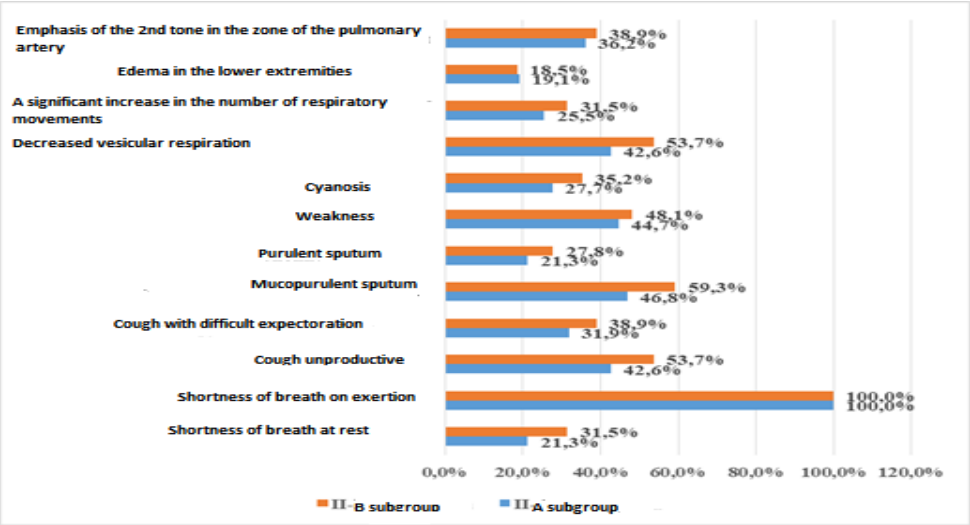

Figure 2. Clinical characteristics of patients with COPD group II depending on the presence of a history of coronavirus infection.

The severity of the main clinical symptoms (shortness of breath, cough, sputum, weakness) was assessed according to the developed scoring scale from 0 to 3 points. Shortness of breath: not disturbing - 0 points, with significant physical exertion -1 point, with slight physical exertion - 2 points, at rest - 3 points. Cough: not disturbing - 0 points, rare - 1 point, episodes during the day - 2 points, almost constant - 3 points. Sputum: no - 0 points, mucous - 1 point, mucopurulent - 2 points, purulent - 3 points. Weakness: not worried - 0 points, insignificant - 1 point, severe - 2 points. The main clinical manifestations of the disease are presented in Table 5.

In almost all patients, the main complaint was dyspnea on exertion. Most patients (87.9%) complained of coughing. The scores for symptoms such as shortness of breath, cough, sputum and weakness are presented in Table 5 and Fig. 3.

Table 5.

The main clinical manifestations of the disease, points

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Groups, subgroups	n	Shortness of breath, points	Cough, points	Sputum, points	Weakness, points
I-A subgroup	1	2,3±0,3	2,1±0,7	1,8±0,4	1,9±0,6
I-B subgroup	2	2,5±0,3	2,3±0,2	2,1±0,4	2,2±0,1
I group	3	2,4±0,2	2,2±0,1	1,9±0,3	2,1±0,2
II-A subgroup	4	2,0±0,3	1,6±0,9	1,5±0,5	1,6±0,7
II-B subgroup	5	2,3±0,3	1,9±0,9	1,8±0,8	1,8±0,6
II group	6	2,2±0,2	1,7±0,4	1,6±0,3	1,7±0,2
reliability of indicators:					
r1-2<				0,05	0,05
r4-5<		0,05	0,05	0,05	
r3-6<		0,05	0,05	0,05	0,05

Table 5 and Figure 3 show that the level of dyspnea in group I was higher compared to group II (2.4±0.2 points versus 2.2±0.2, respectively), which indicates that in the group of patients with COPD and MS suffered from more severe dyspnea. The same situation was observed in terms of score indicators of such symptoms as cough, sputum and weakness in patients of group I, these indicators were significantly higher compared to group II - 2.2±0.1; 1.9±0.3; 2.1±0.2 versus 1.7±0.4; 1.6±0.3; 1.7±0.2, respectively. In subgroups, it was found that patients who recovered from coronavirus had worse scores for four main symptoms - shortness of breath, cough, sputum, and weakness. So in the I-B subgroup, compared with the I-A subgroup, these indicators had the following values: 2.5±0.3; 2.3±0.2; 2.1±0.4; 2.2±0.1 versus 2.3±0.3; 2.1±0.7; 1.8±0.4; 1.9±0.6, respectively. Significant differences were in the symptoms of “sputum” and “weakness” - $p < 0.05$.

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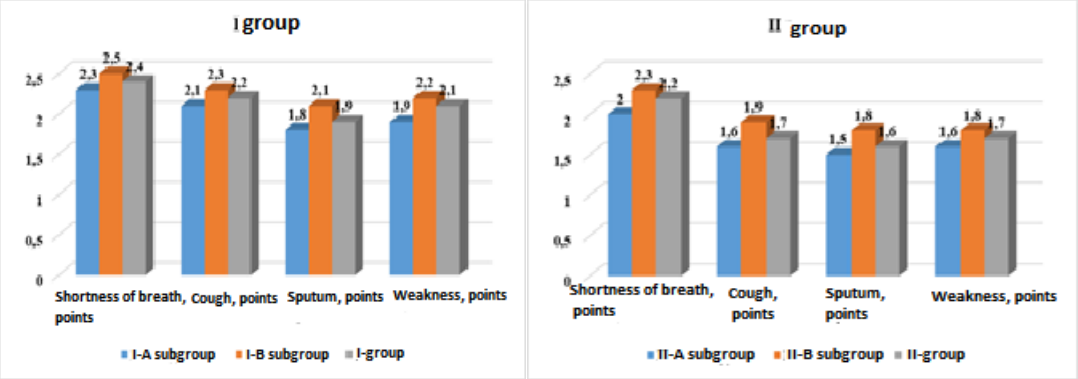

Figure 3. Main clinical manifestations of the disease, points

In the II-B subgroup, higher scores of the above symptoms were also observed compared to the II-A subgroup, they amounted to: 2.3±0.3; 1.9±0.9; 1.8±0.8; 1.8±0.6 versus 2.2±0.2; 1.7±0.4; 1.6±0.3; 1.7±0.2, respectively. Significant differences were in symptoms - shortness of breath, cough, sputum (Table 5 and Fig. 3).

Table 6

Assessment of the severity of dyspnea on the mMRC scale, points.

Groups, subgroups	n	CAT scale, points
I-A subgroup	1	1,69 ± 0,86
I-B subgroup	2	1,85 ±0,72
I group	3	1,72±0,47
II-A subgroup	4	1,21±0,45
II-B subgroup	5	1,52±0,68
II group	6	1,43±0,61
reliability of indicators:		

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r1-2<		0,05
r4-5<		0,05
r3-6<		0,05

To assess the risk group, it is necessary to know the number of exacerbations over the past 12 months, as well as the results of the CAT (COPD Assessment Test) and MMRC (Modified Medical Research Council Dyspnea Scale) questionnaires. Evaluation of the severity of dyspnea and its impact on the health status of patients made it possible to determine a greater degree of limitation of physical activity in patients with COPD and MS compared with COPD patients without MS.

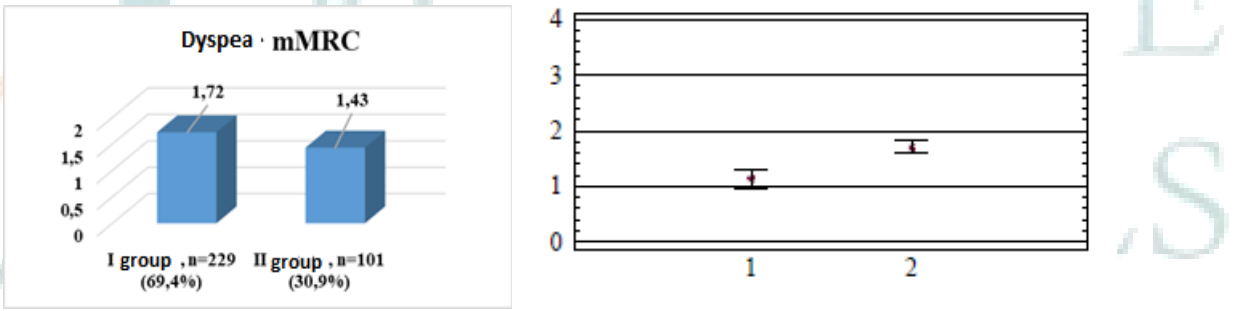

Fig.4. Mean values of dyspnea severity on the mMRC scale and their 95% confidence intervals in patients with COPD without MS (2) and in patients with COPD and MS (1).

According to the mMRC scale, the severity of dyspnea in group I was significantly higher compared to group II and amounted to 1.72±0.47 and 1.43±0.61 points, respectively (F=13.81; p=0.0001) (Table 6, Fig. 4).

Table 7

Results of the CAT questionnaire to assess the severity of the patient's condition, points

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Groups, subgroups	n	CAT scale, points
I-A subgroup	1	22,7± 2,6
I-B subgroup	2	25,3±1,2
I group	3	24,1±2,6
II-A subgroup	4	18,5±3,5
II-B subgroup	5	20,8±2,4
II group	6	19,2±3,1
reliability of indicators:		
r1-2<		0,05
r4-5<		0,05
r3-6<		0,05

In relation to patients with a history of coronavirus infection (CVI), according to the mMRC scale in group I, the level of dyspnea was significantly higher -1.72±0.47 points - compared with group II -1.43±0.61 points ($p<0.05$).

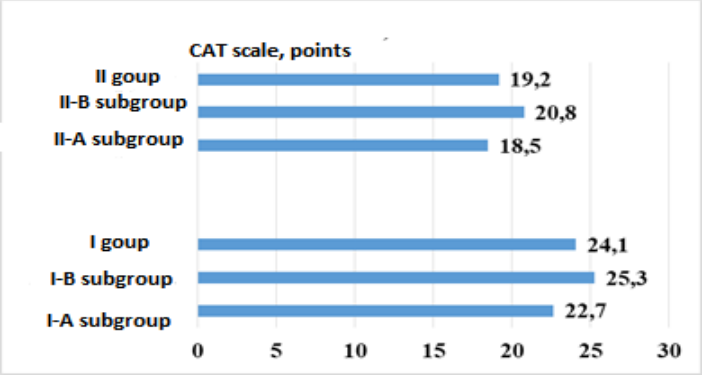

Figure 5. Results of the CAT questionnaire to assess the severity of the patient's condition, points.

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The subgroups had the following indicators: In subgroup I-A, the level of dyspnea on the mMRC scale was 1.69±0.86 points, which is significantly higher than the same indicator in subgroup I-B - 1.85±0.72 points. In subgroup II-A, the level of dyspnea on the mMRC scale was 1.21±0.45 points, which is significantly higher than the same indicator in subgroup II-B - 1.52±0.68 points (Table 6 and Fig. 5).

The results of the questionnaire in CAT scores were significantly higher in the group of patients with COPD and MS (group I), this indicator was 24.1±2.6 points, in the group of patients with COPD without MS (group II) - 19.2±3.1 points , i.e. by 4.9 points (p=0.05) (Table 7, Fig. 5). In subgroups A and B in both groups, this indicator also had significant differences within the groups (Table 8; Fig. 5).

The level of SpO2 in group II was 97.1±1.3%, which was higher than the level of SpO2 in group I - 95.8±1.2%. Saturation level indicators are presented in Table 8 and Figure 6.

Table 8

The level of saturation in patients with COPD depending on the presence of MS and CVI in history

Groups, subgroups	n	Saturation level SpO2,%
I-A subgroup	1	95,9±2,1
I-B subgroup	2	96,1± 1,5
I group	3	95,8±1,2
II-A subgroup	4	96,8±1,4
II-B subgroup	5	97,1±0,9
II group	6	97,0±1,3
reliability of indicators:		
r1-2<		
r4-5<		
r3-6<		0,05

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In the subgroups, it was noted that no significant differences were found. So, in I-A and I-B subgroups, the saturation level fluctuated within the following limits 95.1±2.1; 96.3 ± 1.5, respectively. In II-A and II-B subgroups, saturation was 96.7±1.4; 97.5±0.9, respectively. There were no significant differences between subgroups within the same group. (Table 8 and Fig. 6)

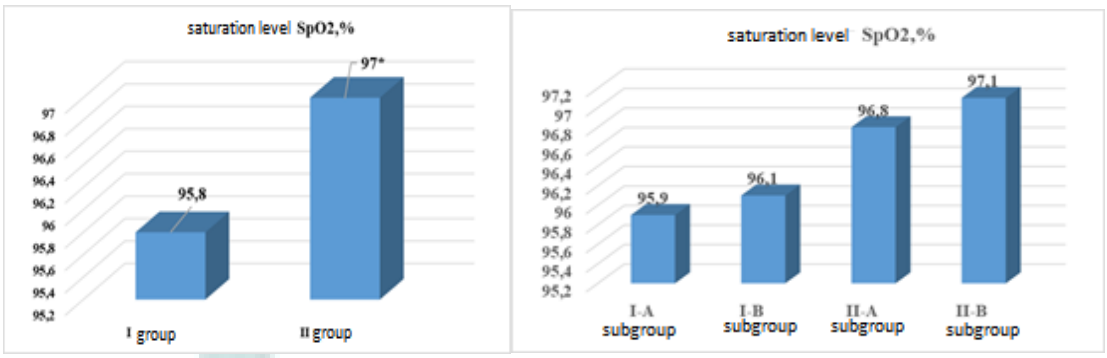

Figure 6. Saturation level in COPD patients depending on the presence of MS and CVI in anamnesis (8-significance of indicators p<0.05).

According to the integral risk assessment of the course of COPD, it was found that patients of group I have a fairly large share in the high-risk group - risks of C and D compared with group II - 24.6% and 16.2% versus 13.9% and 8.9 % respectively (p<0.005) (Table 9).

Table 9

Integral risk assessment of COPD course depending on MS and CVI

Groups, subgroups	n	Patient category			
		A	B	C	D
		Low risk, fewer symptoms	Low risk, more symptoms	High risk, fewer symptoms	High risk, more symptoms
I-A subgroup	1	42,7%	28,0%	20,0%	9,3%
I-B subgroup	2	21,4%	31,8%	27,3%	19,5%

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I group	3	28,4%	30,6%	24,9%	16,2%
II-A subgroup	4	63,8%	23,4%	6,4%	6,4%
II-B subgroup	5	37,0%	31,5%	20,4%	11,1%
II group	6	49,5%	27,7%	13,9%	8,9%
reliability of indicators:					
r1-2<		0,005		0,005	0,005
r4-5<		0,005	0,005	0,005	0,005
r3-6<		0,005	0,05	0,005	0,005

Subgroups with CVI in the anamnesis of each group also had significant differences in the calculation of the risks of severe COPD. Table 9 shows that both in groups I and II in A-subgroups there is a larger percentage of patients in risks of C and D-categories, compared with subgroups-B (the percentage was calculated in relation to the number of patients within groups and subgroups).

CONCLUSION

Thus, COPD patients with concomitant MS are characterized by a statistically significantly more severe course of the underlying disease with frequent exacerbations, emergency calls, hospitalizations, and severe clinical symptoms of the disease. Also, it should be noted that in patients with COPD and MS, there is a significant proportion of patients in high-risk categories (C and D) of COPD severity according to the integral scale. In the subgroup of patients with CVI, these indicators are more pronounced.

REFERENCES

1. Vakhlamov V. A. Rationale for the use of new methods for studying the metabolic syndrome in the diagnosis and treatment of patients with broncho-obstructive diseases / V. A. Vakhlamov, A. V. Tyurikova // Modern technologies in medicine. – 2015. – T. 7, № 4. – P. 127–134.
2. Kytikova O. Yu. Chronic obstructive pulmonary disease and obesity / O. Yu. Kytikova // Scientific almanac.– 2017. – № 2–3 (28). – P. 355–356.
3. Obesity and metabolic disorders in patients with chronic obstructive pulmonary disease: possibilities of

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phenotyping / E. I. Samorukova, Yu. V. Malinicheva, V. S. Zadionchenko [et al.] // Pulmonology. – 2014. – № 5. – P. 32–38.

4. Risk factors for adverse outcomes in patients with chronic obstructive pulmonary disease and chronic heart failure / N. A. Karoli, A. V. Borodkin, N. A. Kosheleva, A. P. Rebrov // Cardiology. – 2018. – T. 58, № S9. – P. 39–47.
5. Faletrova S. V. Clinical and functional features of chronic obstructive pulmonary disease in patients with obesity / S. V. Faletrova, L. V. Korshunova, E. S. Belskikh // Science of the Young (Eruditio Juvenium). – 2018. – V. 6, № 3. – P. 439–447.
6. Chronic obstructive pulmonary disease: monograph / edited by A. G. Chuchalin. - Moscow: Publishing house “Atmosfera”, 2008. – P. 568.
7. Chuchalin A. G. Chronic obstructive pulmonary disease and concomitant diseases / A. G. Chuchalin // Therapeutic archive.– 2013. – № 8. – P. 43–48.
8. Bernardo I. S. Targeting oxidant-dependent mechanisms for the treatment of COPD and its comorbidities / I. S. Bernardo, S. Bozinovski, R. Vlagos // Pharmacology & Therapeutics. – 2015. – Vol. 155. – P. 60–79.
9. Bonsaksen T. Trajectories of physical and mental health among persons with morbid obesity and persons with COPD: a longitudinal comparative study / T. Bonsaksen, M. S. Fagermoen, A. Lerdal // Journal of Multidisciplinary Healthcare. – 2016. – Vol. 9. – P. 191–200.
10. Comorbidity distribution, clinical expression and survival in COPD patients with different body mass index / M. J. Divo, C. Cabrera, C. Casanova [et al.] // Chronic Obstructive Pulmonary Diseases. – 2014. – Vol. 1, № 2. – P. 229–238.