



FREQUENCY OF THE SYMPTOM OF EXCESSIVE DAYTIME SLEEPINESS IN COPD PATIENTS ASSOCIATED WITH OBSTRUCTIVE SLEEP APNEA-HYPOPNEA SYNDROME

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Abstract:

The high probability of a clinical diagnosis of OSAHS among COPD patients with excessive daytime sleepiness is determined by 4 or more specific signs and is 57.6%. It was noted that with the severity of the symptom of excessive daytime sleepiness, the likelihood of a clinical diagnosis of OSAHS increases (41.2% to 64.2%). A significant and severe degree of the symptom of excessive daytime sleepiness can be regarded as markers of a high probability of having OSAHS.

Keywords: *chronic obstructive pulmonary disease, obstructive sleep apnea-hypopnea syndrome, daytime sleepiness*

RELEVANCE OF THE TOPIC. Chronic obstructive pulmonary disease (COPD) is becoming increasingly important medical and social significance, characterized by trends in high rates of disability and mortality. According to the World Health Organization (WHO) projections, "COPD will become the 5th cause of DALY losses in 2020 worldwide and will enter the top three diseases in terms of mortality, reaching 4.7 million deaths per year, and by 2030 COPD will become one of the leading causes of the growing burden of non-communicable diseases, reflecting trends in increasing morbidity and mortality from diseases associated with tobacco use ¹.

COPD is currently regarded as a disease of the airways and lungs with systemic manifestations (Wouters E. _ F. _ et al., 2002; H. _ Andreassen et al., 2003; W. _ Q. _ Gan et al., 2004; GOLD., 2007; Chuchalin A.G., 2009). The main systemic manifestations of COPD include: reduced nutritional status, skeletal muscle dysfunction, osteoporosis, anemia and cardiovascular effects, neuropsychiatric disorders (anxiety-depressive syndrome, oxygen-dependent cognitive disorders), sleep disorders, polycythemia.

Today, the problem of disturbed breathing during sleep, or sleep apnea, is increasingly attracting the attention of researchers and practitioners.

Obstructive sleep apnea/hypopnea syndrome (OSAHS) is a multifactorial common disease in which the patient suffers from repeated episodes of complete or partial cessation of breathing during sleep due to functional or structural obstructive obstruction of the upper respiratory tract, which leads to intermittent hypoxemia, oxygen desaturation and gross fragmentation of sleep (increase in light sleep, decrease in deep (slow-wave) and rapid eye movement (REM)

sleep), symptoms of snoring, daytime fatigue and sleepiness, neurocognitive and behavioral disorders (Chan, AS et al., 2010; American Thoracic Society, Indications and standards for use of nasal continuous positive airways pressure (CPAP) in sleep apnea syndromes, 1994).

To date, a significant number of studies have been conducted on the prevalence of individual symptoms of SOHS - snoring, daytime sleepiness, etc.

However, the frequency of occurrence of the symptom of excessive daytime sleepiness, as a separate symptom of SOHS in patients with COPD, has not been studied in the region of Uzbekistan, no studies have been conducted on the effect of the symptom of excessive daytime sleepiness in COPD patients on the somatopsychological, clinical and functional status and quality of life of the patient.

PURPOSE OF THE STUDY : to study the frequency and intensity of excessive daytime sleepiness in patients with COPD associated with obstructive sleep apnea/hypopnea syndrome.

MATERIAL AND RESEARCH METHODS. The study included 62 patients with COPD in accordance with the recommendations of GOLD (2016), in whom OSAHS was diagnosed by polysomnography (SLEEP SCREEN device (VIASIS, Germany)). The severity of OSAHS was determined in accordance with the apnea-hypopnea index (AHI). The average age of the patients was 54.5±3.9 years, the duration of the disease (according to the anamnesis) was 18.9±3.5 years. calculation of body mass index (BMI), instrumental studies of respiratory function parameters and assessment of the "flow-volume" curve on the portable device "MicroLab", as well as assessment tests on validated questionnaires:



MRC (Medical Research Council) dyspnoea scale and CAT test (COPD Assessment Test - COPD assessment test).

The control group consisted of 34 COPD patients matched by age, disease duration and functional criteria of the disease (GOLD, 2017).

Statistical processing of the obtained data was carried out using non-parametric and parametric criteria. 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 STATISTICA 13.3 program (developer - StatSoft.Inc). All values in the tables are presented as the arithmetic mean of the variation series \pm error of the mean ($M \pm m$). Values with $p < 0.05$ and $p < 0.01$ were used as a statistical hypothesis (with a confidence level of 95.5% and 99%).

Research Results. Analysis of the results of the unified questionnaire of the Epfort scale in patients with COPD (Table 1) showed that the ability to doze off or even fall asleep in various situations is inherent in exactly a larger number of COPD patients who gave a positive response to the likelihood of a certain situation.

Table 1.
Frequency of positive answers in evaluation situations, (%)

	Estimated situation	n	Probability of drowsiness or falling asleep, %
1	Reading sitting in a chair	82	41.0
2	Watching TV while sitting in a chair	109	54.5
3	Passive sitting in public places (sitting in a theater, in a meeting, etc.)	79	39.5
4	As a passenger in a car driving non-stop for at least an hour on a level road	115	57.5
5	While resting in bed during the day	116	58
6	Sitting and talking to someone	55	27.5
7	Sitting in a quiet environment after dinner without drinking alcohol	103	51.5
8	Driving a car stopped in a traffic jam or at a traffic light	79	39.5

An assessment of the degree of probability of drowsiness or falling asleep, depending on the situation, is reflected in Table 2.

Table 2.
Characteristics of the severity and likelihood of drowsiness or falling asleep

			Probability of drowsiness or falling asleep, %		
			small	moderate	high
1	Reading sitting in a chair	82	20(24.4)	30(36.6)	32(39.0)
2	Watching TV while sitting in a chair	109	31(28.4)	40(36.7)	38(34.9)
3	Passive sitting in public places (sitting in a theater, in a meeting, etc.)	79	25(31.6)	34(43.0)	20(25.3)
4	As a passenger in a car driving non-stop for at least an hour on a level road	115	30(26.1)	46(40.0)	39(33.9)
5	While resting in bed during the day	116	30(25.9)	31(26.7)	55(47.4)
6	Sitting and talking to someone	55	29(52.7)	16(29.1)	10(18.2)
7	Sitting in a quiet environment after dinner without drinking alcohol	103	24(23.3)	36(34.9)	43(41.7)
8	Driving a car stopped in a traffic jam or at a traffic light	79	39(49.4)	21(26.6)	19(24.1)



As can be seen from the presented table, more than 35% of COPD patients have a moderate or high degree of probability of drowsiness or falling asleep, which undoubtedly can serve as a fact that determines the high probability of having COPD.

In the study, we carried out a quantitative assessment of the results of the Efort scale, which allowed us to determine the diagnostic threshold for daytime sleepiness, estimated ≥ 10 points, which is used as a clinical definition of excessive sleepiness,

which is comparable to the severity of the COPD functional class. The results of the study noted that 75.5% (151 out of 200 COPD patients) had a threshold for excessive daytime sleepiness, the frequency and severity of which were determined by the severity of the functional class of the disease: from 12.0% in moderate COPD (COPD II) to 86.8% in extremely severe course of the disease (COPD IV) ($p < 0.01$) (Table 3).

Table 3
The frequency and severity of the symptom of daytime sleepiness to the degree of the course of COPD disease

Cohort COPD	n	Rank of the total score of the Efort scale, score				
		0-7	8-9	10-15	15-20	Over 20
		norm	light	average	significant	strongly pronounced
Medium-heavy	25	15(60.0)	7(28.0)	3(12.0)	-	-
heavy	69	4(5.8)	9(13.0)	11(15.9)	20(29.0)	25(36.2)
Extremely heavy	106	4(3.8)	10(9.4)	20(18.9)	30(28.3)	42 (39.6)
	R	<0.05	<0.05	<0.05		
total	200	23(11.5)	26(13.0)	34(17.0)	50(25.0)	67(33.5)

When evaluating the frequency of occurrence of the symptom of excessive sleepiness in COPD patients, depending on the sex of the examined, a significantly higher frequency ($p < 0.05$) of the occurrence of the symptom among women (88.5%) versus that of men (70.9%) was stated. Details of the severity of the symptom of excessive sleepiness in relation to gender are presented in Table 4.

Table 4
Frequency and severity of daytime sleepiness symptom in relation to gender

Cohort COPD	n	Rank of the total score of the Efort scale, score				
		0-7	8-9	10-15	15-20	Over 20
		norm	light	average	significant	strongly pronounced
men	148	21(14.2)	22(14.9)	22(14.9)	36(24.3)	47(31.8)
women	52	2(3.8)	4(7.7)	12(23.1)	14(26.9)	20 (38.5)
	R	<0.05	<0.05	<0.05	<0.05	<0.05
total	200	23(11.5)	26(13.0)	34(17.0)	50(25.0)	67(33.5)

In a study in COPD patients with excessive excessive sleepiness, a survey was conducted for the primary detection of OSAHS and the assessment of correlative conditions accompanying the symptoms of daytime sleepiness (Table 5).

Table 5
The frequency of states that determine the probability of SOAGS

	Estimated situation	n	%
1	Weight gain over 3-5 years	95	63.0
2	Excessive daytime sleepiness and falling asleep in certain situational states	151	100
3	Loud nocturnal snoring, which people close to the patient complain about	146	96.7
4	Sleep apnea that people close to the patient complain about	138	91.4
5	The phenomena of nocturnal polyuria, frequent nocturnal waking, nocturnal heartburn	106	70.2
6	Morning headaches or feeling of unrefreshing sleep in the morning	120	79.5



7	Blood pressure changes or heart problems	94	62.2
8	Changes in potency or other sexual disorders	89	58.9

From the presented data, it can be noted that in patients with COPD in a state of excessive daytime sleepiness, the top 5 include: loud nocturnal snoring, which people close to the patient complain about (96.7%) , pauses in breathing during sleep, which are noted by people close to the patient people (91.4%), morning headaches or feelings of not refreshing sleep in the morning (79.5%), nocturnal polyuria and

frequent nocturnal waking (70.2%), weight gain over 3-5 years (63.0%).

Considering the assessment of the clinical diagnosis of OSAHS within the framework of interpretation : 0-1 sign as absence, 1-3 signs - a disorder is unlikely, 4 or more signs are a highly likely disorder, the reliability of a highly probable disorder with the presence of more than 4 signs in 57.6% was established. individuals, ($p < 0.01$)

) (Table.

Table 6

Probability of OSAHS disorder in individuals with varying degrees of intensity of the symptom of excessive daytime sleepiness

Rank of the total score of the Epfort scale, score	n	Probability of OSAHS disorder, score		P
		Availability 1-3 signs	Availability 4 and more signs	
		unlikely disorder,%	highly likely disorder,%	
Average intensity (10-15 points)	34	20(58.8±8.4)	14(41.2±8.4)	>0 , 0 5
Significant intensity (15-20 points)	50	20(40.0±6.9)	30(60.0±6.9)	<0.01
Strongly pronounced intensity (more than 20 points)	67	24(35.8±5.8)	43(64.2±5.8)	<0.01
R		<0.05	<0.05	
total	151	64(42.3±4.0)	87(57.6±4.0)	<0.01

It was noted that with a significant and severe degree of the symptom of excessive daytime sleepiness, the percentage of the probability of having OSAHS increases.

CONCLUSION _ As a result of the study , it was found that 75.5% of COPD patients had a state of excessive daytime sleepiness, the frequency and severity of which was determined by the severity of the functional class of the disease from 12.0% of cases with moderate COPD II to 86.8% of cases with COPD IV extremely severe course of the disease. A significantly higher frequency of the symptom of excessive daytime sleepiness was found among women - 88.5% versus 70.9% in men. In patients with COPD in a state of excessive daytime sleepiness, the top 5 include: loud nighttime snoring, which people close to the patient complain about (96.7%) , pauses in breathing during sleep, which people close to the patient note (91.4%) , morning headaches or sensations of not refreshing sleep in the morning (79.5%), manifestations of nocturnal polyuria and frequent nocturnal waking (70.2%), an increase in body weight over 3-5 years (63.0%).

The high probability of a clinical diagnosis of OSAHS among COPD patients with excessive daytime

sleepiness is determined by 4 or more specific signs and is 57.6%. It was noted that with the severity of the symptom of excessive daytime sleepiness, the likelihood of a clinical diagnosis of OSAHS increases (41.2% to 64.2%). A significant and severe degree of the symptom of excessive daytime sleepiness can be regarded as markers of a high probability of having OSAHS.

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