THERAPY

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CHRONIC OBSTRUCTIVE PULMONARY DISEASE: ROLE OF URGENT ASPECTS OF DIAGNOSIS AND PROGNOSIS.

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Abstract. *Currently, chronic obstructive pulmonary disease (COPD) is one of the leading pathologies, leading to the quick disability of patients and a significant reduction in quality of life. Wadeley risk factors such as age, Smoking history, previously transferred diseases of the respiratory system, the harmful factors of production and living conditions. In this work the study of the relationship between factors such as Smoking history, change of body mass index, indicators of pulmonary function tests, as well as subjective evaluation tests.*
Key words: *chronic obstructive pulmonary disease, CAT scale, mMRC, 6-minute walk test, alpha 1-antitrypsin.*

Chronic obstructive pulmonary disease (COPD) is the fourth leading cause of death in the world, after cardiovascular system disorders, infections, such as HIV-AIDS, and cancer. According to statistics, chronic obstructive pulmonary disease affects about 6% of the Ukrainian population. The development of COPD is slow, that is why this disease is often diagnosed first only in the age of 40 years and older [1, 2]. COPD is defined as an inflammation of airways characterized by persistent airflow limitations. This diagnosis now encompasses such known terms as "chronic bronchitis" and "lung emphysema". The proportion of COPD among the leading causes of death is progressively increasing. At the same time, the awareness of this problem in the society is low, and the funding allocation for COPD research studies is on the 13th place only. Only one-half of all patients with COPD have clinical diagnosis. The economic burden of this disease is enormous: according to the data available in 2011, COPD is responsible for one fifth of all cases of disability, with an

average age of retirement in the affected population reduced by 11 years [3-5]. At present, COPD is responsible for medical, social and economic losses in the entire global community, and these losses are probably even more pronounced in Ukraine.

Typical symptoms of the disease include coughing with production of mucus/sputum/phlegm and regular breathing problems (dyspnoea). The main feature of the disease is that a "simple" cough eventually progresses to acute and chronic respiratory failure, and dyspnoea starts to cause significant discomfort. As a result, one-third of patients with COPD develop apnoea, i.e. cessation of breathing during sleep [6−7].

The COPD Assessment Test was recently developed to assess health status in patients with COPD. However, little was known about its application to patients with interstitial lung disease, so we examined the relationship between the COPD Assessment Test score and respiratory impairment including the clinical picture in subjects with interstitial lung disease

It should be remembered, that genetic predisposition is also an important causative factor of COPD. This is supported by the fact that not all long-term smokers develop COPD [11-13]. However, smoking accelerates the onset of disease. Dyspnoea develops by the age of 40 in smokers and 10-15 years later in people who do not smoke [12−14].

Study object and methods. Our study group included 30 patients with COPD hospitalized in the Pulmonology unit of the Kharkiv Regional Hospital at the Department of Propedeutics of Internal Medicine No.2 and Nursing Care of the Kharkiv National Medical University. The control group consisted of 12 apparently healthy volunteers. The comparison group consisted of 10 subjects with chronic bronchitis and bronchial asthma. COPD was defined according to the order of the Ministry of Health of Ukraine No.555, corresponding to the diagnosis code J44 in ICD-10 according to statistical reports, and according to the 2011 Global Initiative for Chronic Obstructive Lung Disease (GOLD). General examination included measurements of anthropometric data such as height, weight, waist circumference, and calculated body mass index (BMI). Smoking duration was expressed in a number

of pack-years calculated by the formula (number of cigarettes × smoking duration/ 20).

A survey of patients with COPD (CAT scale, mMRC), and the 6-minute walk test (6MWT) were performed.

When studying the respiratory function, the most accessible and informative indicators to assess the severity of airway obstruction, severity and stage of progression of COPD, is forced expiratory volume during the first second (FEV1), forced vital capacity of the lungs (FVC) and the FEV_1/FVC ratio. According to the current recommendations, a diagnostic criteria for COPD is considered to be decrease of FEV_1 <80% of the norm, combined with FEV_1/FVC ratio <70%, indicating a non-fully reversible bronchial obstruction.

Thus, the main group included 19 men (72%) and 11 women (28%), with average age of 64.4 ± 4.6 years (men 65.9 ± 3.9, women 63.2 ± 3.6, respectively). The control group included 8 men (68%) and 4 women (32%) with average age of 67.2 ± 3.7 years (men 68.3 ± 3.6, women 65.1 ± 2.8, respectively). Patients in the main group had group B and D. Among them, COPD – group B was diagnosed in 15 patients and group D in 15 patients. Almost all patients complained about coughing with scarce sputum expectoration and dyspnoea of varying degrees of severity.

We analysed the data concerning smoking duration, body mass index (BMI), respiratory function, 6MWT, mMRC and CAT (Table 1). The Patients of the main group were further divided into 2 subgroups (COPD –B and COPD - D).

Analysis of the data obtained showed that compared to the respective parameters of the control group, statistically significant differences were obtained for the following parameters: smoking duration in patients with II and III Stage COPD was significantly higher than in the control group, BMI and respiratory function values in patients of the subgroup 2 were significantly lower compared with the control, while exercise tolerance in patients of the subgroups 1 and 2 were equally lower than in the control. When assessing dyspnoea according to the mMRC scale, it was observed that it was almost equally severe in both subgroups, irrespective of the disease stage and gender of patients. The CAT test results indicated significant

differences in patients with COPD - B where the average score was significantly lower than in the control group.

Table 1.

Smoking duration, BMI, respiratory function, 6MWT, mMRC, CAT

Parameters	Main group		Control group
	subgroup 1 (n=15)	subgroup 2 (n=15)	(n=12)
Smoking duration (pack-years)	25.1±2.4*	37.7±2.9*	5.9±4.7
	Men−38.4±2.9 Women−24.4±2.8		
BMI (kg⁄m^2)	25.1±1.7	20.6±3.1*	25.6±1.8
	Men−22.9±2.6 Women−27.1±1.4		
PFT (% of the norm)	FEV_1−74.6±1.5 VC−85.7±2.4	FEV_1−54.6±2.9* VC−59.6±1.8*	FEV_1−85.4±0.6 VC−93.5±2.7
6MWT	247.3±24.4* Men−252.4±22.5 Women−223.6±10.1	147.9±15.4* Men−137.2±11.6 Women−155.9±15.7	349.2±13.8 Men−374.5±20.6 Women−179.9±12.3
mMRC	Stage II −6 patients (40%) Stage III −9 patients (60%)	Stage II −4 patients (15%) Stage III −11 patients (85%)	----
CAT (score)	Men−13±3* Women−19±2*	Men−26±9 Women−28±2	Men−31±2 Women−36±2

*−$p<0.05$ *vs.* Control

Conclusions: Long-term smoking duration and the trend to decrease in IMT in the patients with COPD may be suggested as predictors of the disease progression as defined by a decline in respiratory function, exercise tolerance and progression of symptoms of pulmonary disease. The CAT scores were categorized into low, medium, high, and very high impact, and users of the CAT proposed descriptive scenarios, as the clinical picture of COPD and possible management considerations, according to the impact of COPD

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Резюме. В даний час хронічне обструктивне захворювання легень (ХОЗЛ) є однією з провідних патологій, що ведуть до швидкої інвалідизації пацієнтів і значного зниження якості життя. Виділяють такі фактори ризику, як вік, стаж тютюнопаління, перенесені захворювання дихальної системи в анамнезі, шкідливі фактори виробництва та умов проживання. В даній роботі проведено дослідження взаємозв'язку між такими факторами, як стаж тютюнопаління,

зміна індексу маси тіла, показниками функції зовнішнього дихання, а також суб'єктивними оцінними тестами.
Ключові слова: хронічна обструктивна хвороба легень, САТ масштаб, mMRC, 6-хвилинний тест ходьби, альфа-1-антитрипсину.

Резюме. В настоящее время хроническое обструктивное заболевание легких (ХОЗЛ) является одним из лидирующих патологий, ведущих к быстрой инвалидизации пациентов и значительному снижению качества жизни. Ваделяют такие факторы риска, как возраст, стаж курения, ранее перенесенные заболевания дыхательной системы, вредные факторы производства и условий проживания. В данной работе проведено исследование взаимосвязи между такими факторами, как стаж курения, изменение индекса массы тела, показателями функции внешнего дыхания, а также оценочными субъективными тестами.
Ключевые слова: хроническое обструктивное заболевание легких, mMRC, 6-минутный тест ходьбы, альфа-1-антитрипсин.

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