

## Verification of dyspnea according to external respiratory function in patients with bronchial asthma

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**Abstract.** Due to the widespread and rapid rate of damage to the bronchopulmonary system, bronchial asthma (BA) will always remain the most urgent task of medicine. This study was conducted to determine the type of dyspnea, for verification of which the method of assessing the functional state of external respiration-Spirography-was used. A survey of 93 patients with AD, whose age ranged from 31 to 63 years, was conducted. In 71 (76.3%) patients with severe BA, and in 15 (16.1%) and 7 (7.6%) patients with moderate and mild BA, respectively. The basis for determining the violation of the ventilation function of the lungs for obstructive BA with a mild and moderate course, as well as a mixed type in severe BA, was the data of indicators of the external respiratory function (FVD).

**Key words:** bronchial asthma, external respiration function, vital lung capacity, spirography, Tiffno index, maximum velocity volume, peak volume expiratory velocity.

**Introduction.** Bronchial asthma (BA), which is a social and economic medical problem, is an object of study of modern therapeutic sciences. The main error of this problem lies in late diagnosis, non-compliance with the rules of

dispensary registration with insufficient control of the course of the disease [3]. In turn, the cycle of ineffective conservative therapy begins with late confirmation and diagnosis in 3 out of five patients with BA[8]. In percentage terms, more than 40% of patients with BA seek emergency care due to an extraordinary change in the remission period, exacerbation of the disease, more than half of patients already have limited physical activity, and almost every second patient wakes up at night at least once a month due to extraordinary paroxysms of BA[ 1,3]. A significant role in the late diagnosis of BA is played by such objective difficulties as the presence of a large group of heterogeneous diseases with similar clinical symptoms, as well as comorbid and polymorbid conditions that lead to erroneous and incorrect choice of basic therapy[4].

The time and intensity of the manifestation during the change of remission-exacerbation, at the same time, and variable airway obstruction in BA exacerbate the process of diagnosis and therapy at the same time [4,6,7].

The social aspect of the relevance of BA is the increase in the incidence and prevalence of

this disease among all groups of the population with due disabilities, different sources vary the coverage in the range from 5 to 10 %, but there are also data on the prevalence of up to 18%.

All over the world, as in Uzbekistan, there is an impressive growing trend towards an increase in the incidence of BA and its more severe course [3]. The World Health Organization estimates that 235 million people suffer from BA. This once again shows that BA has an equal impact on the health of the population in both high-and low-and middle-income countries [4,7]. The diagnostic value of BA is to identify reversible bronchial obstruction and signs of bronchial hyperreactivity. In AD, a transient labile change in the speed parameters of spirometry, especially the volume of forced exhalation for 1 second, and the peak expiratory velocity due to bronchial hyperreactivity are recorded. During the period of remission-exacerbation, an increase in the residual volume of the lungs is also recorded[6].

**Objective:** To verify the severity of AD. To conduct a comparative analysis of the established severity and determine the characteristic feature of its course.

**Materials and methods:** The study group consisted of 93 patients with AD. Whereas, the control group consisted of 10 healthy volunteers. The research was conducted in the therapeutic department of the Samarkand branch of the Republican Scientific Center for Emergency Medical Care. The age category of patients ranged from 31 to 63 years , the average indicator of which was  $45.2 \pm 0.33$  years, of which 58 (62.4%) were men, 35 (37.6%) were women. The duration of the disease in 51

(54.8%) patients was more than 15 years, in 25 (26.8%) patients - 10-15 years, and in 17 (18.4%) patients-less than 10 years. The diagnosis of AD was verified according to the WHO international classification (X revision, ICD-10) and in accordance with the GINA diagnostic criteria (The Global Initiative for Asthma). Verification of obstructive and restrictive changes in the bronchi was carried out by the method of functional diagnostics-Spirometry. The studies were conducted under conditions of relative rest, in a sitting position.

**Results and discussions:** The following parameters were measured: vital capacity of the lungs (VEL, L), FEZHL (L), FEV 1/FVC, peak volume expiratory velocity (PIC) and maximum volume velocities after exhalation of 25, 50 and 75% FVC (MOS50, MOS75). Together with the above-mentioned general clinical and laboratory methods of examination, the parameters of the external respiratory function (FVD) were also studied using the SpirosiftSP-5000 device. The analysis of indicators for determining the vital capacity of the lungs, maximum lung ventilation (MVL), respiratory rate (BH), forced expiratory volume in 1 second (FEV1), revealed the presence and severity of bronchial patency disorders, as well as restrictive disorders. The following FVD indicators were taken into account: FVC, FEV1, TI, PSV, MOS25, MOS50, MOS75, MOS25-75. An acute bronchodilation test was also performed according to the generally accepted method. According to the results of clinical and instrumental studies, all patients revealed: expiratory shortness of breath, dry wheezing, increasing on exhalation, which in turn were heard both during auscultation and at a distance, box percussion sound during percussion. And the results of the

analysis of indicators of external respiration revealed that the patients with bronchial asthma heavy currents, compared with the control group and patients with medium-severe BA, there was a significant decrease in vital capacity (VC, and 2.01 1.71 times, respectively), forced expiratory volume in 1 second (FEV1, 1.79 and 1.76 times, respectively), the Tiffno index (TI, 1.24 and 1.31-fold, respectively), peak expiratory flow (PSV, 1.92, and 2.02-fold, respectively), the maximum amount of speed (MOC25 =1,14-1.81 times respectively), the volume of velocity in the middle bronchi (MOS50-1.1-1.74 times, respectively), the volume of velocity in the large bronchi (OS75=2.28-2.50 times). The duration of the disease shows a weak correlation with a decrease in the Tiffno index, a pronounced correlation with a decrease in the peak expiratory rate. And the prescription of the disease was determined by the indicator of the maximum volume of the speed. The severity of the course of AD and its nature, as well as the prognosis in comorbid and polymorbid conditions, became unfavorable, in particular in chronic diseases of the cardiovascular system. Also, a decrease in the indicators of VEL, FEV1, which indicated an increase in the degree of bronchial obstruction, had a directly proportional correlation with the duration of the course of the disease. The presence of complications of AD, and their aggravation of the course of both the AD itself and its complications, also had a directly proportional correlation.

**Conclusion:** Studies of the parameters of the analysis of FVD revealed the presence of a violation of the ventilation function of the bronchopulmonary system according to the

obstructive type in BA with both a mild and moderate course. According to the same study, it was found that in patients with severe AD, a mixed type of violation of the ventilation function was detected, based on the addition of a restrictive component. A number of identified complications of AD, such as emphysema, pneumosclerosis, respiratory and pulmonary-heart failure with their severe course, served as an indicator of the minimum 10-year-old occurrence of the disease.

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