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Study Of Psychoemotional Status And Life Quality Of Patients With Bronchial Asthma In Combination Of Arterial Hypertension, Effects Of Complex Therapy

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Abstract : ***The study included 41 patients aged 36 to 64 years, suffering from BA, in whom the disease was complicated by pulmonary hypertension (PH). Patients were divided into 2 groups. The 1st group included 17 BA patients with II-III stage of severity with PH (average age 57.1 ± 1.5 years). The second group included 24 BA patients with AH (average age 57 ± 1.8 years). The control group consisted of 20 practically healthy individuals (HI), comparable in age.***

Keywords: bronchial asthma, pulmonary hypertension, arterial hypertension, quality of life, psychoemotional status, amlodipine, electrophoresis, bischofite.

1. INTRODUCTION

Relevance. In recent years, a steady increase in the incidence of BA has been noted, and the appearance of its severe forms is increasingly noted. The growing incidence of BA with concomitant arterial hypertension is combined with some features of its course, complications and outcomes. The number of patients in whom the first manifestations of the disease arose after 40-50 years increased, so BA began to be more often combined with diseases of the cardiovascular system, which in turn were significantly younger. The growth of comorbid pathology in a population requires the study of the pathogenesis of BA and AH. Previous studies have established that bronchial obstruction and asthma attacks are powerful stressors and adversely affect the state of vascular tone of the pulmonary circulation and the pulmonary circulation [2]. In addition, the structure of chronic pathology is currently characterized not only by an increase in the spread of individual nosologies, but also by an increase in their combined course, which aggravates the course of diseases and creates difficulties in diagnosis and treatment. The mechanisms that determine the chronicity of the disease are often common, and therefore a greater understanding of the single links of the combined pathology will overcome the known difficulties of its treatment [3,4]. The role of pulmonary vascular endothelial damage in changing pulmonary circulation in BA has already been reliably proven. It has been established that endotheliocytes continuously produce and secrete a large number of biologically active factors that are involved in the regulation of local blood flow and hemostatic mechanisms, control inflammation and proliferation. Under the influence of chronic inflammation and hypoxemia observed in BA, the endothelium is damaged, the balance of the production of regulatory substances is disturbed, which provokes an inflammatory-proliferative reaction in the intima and adventitia of the pulmonary vessels and leads to a change in the vascular bed and the development of secondary chronic vasoconstriction. PH is defined as a group of diseases characterized by progressive pulmonary vascular resistance, leading to right ventricular failure and premature death [1].

The disease can significantly limit daily activity, the quality of life of patients and lead to death [5,10]. The main goal of treatment is to achieve complete control of BA and a high quality of life in all patients, regardless of the severity of the disease, however, prognostic factors affecting the level of BA control have not yet been determined. Along with demographic, social, and clinical factors, a number of studies examined the effect of mental disorders on anxiety (anxiety, depression), and the data obtained are rather contradictory. Some authors consider depression as a cause of severe asthma and a high mortality rate, while other researchers believe that the severity of anxiety and depression does not affect the course of BA. [6, 9]. One of the main aspects in the treatment of patients with BA is the maintenance of adequate control over the course of the disease, that is, achieving a condition that allows the patient to feel almost healthy. There is evidence of a correlation of BA severity with the degree of decline in the quality of life of patients in various populations. The instability of the course of the disease can contribute to significant time-outs of classes at school in children, in adults absent from work, can damage the patient's career [5,8]. Major disorders can in themselves cause malaise, especially when their development is unpredictable. The level of control over the course of BA in turn affects the psycho-emotional sphere of the patient, the ability to perform physical exertion, the social adaptation of the patient as a whole, that is, the quality of life of a patient with asthma. There are a large number of tools and techniques for assessing the quality of life. All of them are questionnaires and scales, allowing you to get a quantitative expression in points for various aspects of the quality of life. The study of quality of life can be used both for simultaneous assessment of the patient's condition, and for dynamic assessment, for example, when determining the effectiveness of treatment [7]. Treatment of patients with BA with AH, based on the elimination of the causes of significant factors, relief of inflammation and restoration of bronchial patency, has a positive result: the disease began to flow much easier, the quality of life of patients improved, and mortality significantly decreased. However, according to the generalized data of various authors, even with the use of modern treatment methods, control over the course of BA can be achieved in $\leq$ 50% of patients, the treatment efficiency of patients with severe BA is low. Probably, the maximum possibility of obtaining a positive effect was achieved when using the currently used drugs and the modern treatment methodology, we need new, based on new mechanisms of action, therapeutic methods, new means of drug delivery [8]. For the earliest diagnosis, adequate prevention and treatment of patients with BA II-IV stage of severity with PH, it is necessary to clarify the pathogenesis of this disease, factors leading to and aggravating its course [1]. In patients with bronchial asthma II-IV stage of severity, PH is a predetermining unfavorable outcome of the disease, while the quality of life (LQ) of patients is sharply reduced. Further study is needed on the role of peripheral blood circulation and ventilation capacity of the lungs (VCL) in the progression of PH. Significant advances in the treatment of PH in recent years have been associated with calcium antagonists, which significantly improve the survival and life prognosis of patients with BA with AH. However, not all effects of drugs in this group have been sufficiently studied. [5,9]

Purpose of the study: A comparative analysis of the relationship between violations of the quality of life and the psycho-emotional status of patients with various stages of severity of BA with AH and the effectiveness of various modes of complex therapy.

2. MATERIAL AND METHODS.

The study included 41 patients aged 36 to 64 years, suffering from BA, in whom the disease was complicated by pulmonary hypertension (PH). Patients were divided into 2 groups. The 1st group included 17 BA patients with II-III stage of severity with PH (average age 57.1 ± 1.5 years). The second

group included 24 BA patients with AH (average age 57 ± 1.8 years). The control group consisted of 20 practically healthy individuals (HI), comparable in age. The examined patients did not have concomitant diseases. A week before inclusion in the study, all vasodilators were canceled.

Studies were conducted during the period of relative remission of pulmonary disease. In addition to general clinical studies, the function of external respiration, oxygen saturation of the blood were studied in all patients, electrocardiography was performed in 12 standard leads, an X-ray examination of the chest organs, two-dimensional and doppler echocardiography.

Hemodynamics of the pulmonary circulation was studied using two-dimensional and doppler echocardiography. The following parameters of the spectrum of diastolic filling of the right ventricle (RV) were calculated: E / A — ratio of the rates of early and atrial filling; TD (m / s) - time delay of early filling; IRT (m / s) - isovolumic relaxation time and atrial filling fraction (AFF, %). Mean pulmonary arterial pressure (PAP) was calculated using the formula proposed by Kitabatake et al. We analyzed the VCL with an estimate of forced expiratory volume in 1 sec (FEV1, %), lung capacity (FVC, %) and Tiffno index (FEV1 / FVC, %).

The psychoemotional status of patients was assessed on the basis of psychological testing using the Spielberger test to identify reactive and personal anxiety.

The study of quality of life parameters for patients with BA with AH was carried out according to a specialized Seattle questionnaire and was evaluated using a point system. This questionnaire allows you to evaluate the patient's level of emotional state (ES), satisfaction with treatment (TS), professional fitness (PF) and physical condition (PC).

Depending on the treatment methods, patients are divided into the following 2 subgroups: subgroup 1a (11 patients) and subgroup 2a (15 patients) received drugs from the calcium channel antagonist group of amlodipine tablets 5-10 mg once a day, drugs of this group increase the degree of endothelium-dependent vasodilation and significantly reduce pulmonary systolic BP, bischofite electrophoresis (EB), and standard therapy (ST) according to (GINA, 2016), which includes inhaled GCC and mucolytics, as well as physical therapy (PT) and breathing exercises, chest massage, psychotherapy session. In the presence of signs of intrabronchial infection, patients were prescribed antibiotic therapy; Subgroup 1b (11 patients) and subgroup 2b (14 patients) received EB procedures against standard therapy. Bischofite electrophoresis procedure (by S.B. Vermel): with a 30 ml bischofite solution, a reusable conductive electrode gasket with an area of 300 cm2 is soaked with. The anode (positive electrode) should be installed on the interscapular region, two other electrodes with an area of 150 cm2 each - on the area of the calf muscles of both lower extremities. The procedure lasts 15-20 minutes daily for 10 days. Studies of patients were performed on the day of admission and after 10 procedures.

3. RESULTS AND DISCUSSION.

After complex therapy, it was found that in patients with BA complicated by PH and with AH, reactive anxiety and personal anxiety decreased in all subgroups. In 1a and 1b subgroups of patients, the scores of the psychological test are greater than in 2a and 2b subgroups.

However, in the period of clinical improvement in patients, a relatively high tension of the sympathoadrenal units in the adaptive reactions of the body remains.

In the dynamics of treatment with amlodipine, EB against ST, in patients with BA with AH, the parameters LQ: PC, ES, PF and TS were improved more than in patients who received only EB and ST procedures. When comparing within the subgroup, in patients with stage II-III BA severity with PH (subgroup 1a and 1b), the quality of life parameters were somewhat more significant than in patients with stage III-IV severity with subgroup PH 2a and 2b ($p < 0.05$). A decrease in TD, IRT, AFF and PAPmd was determined, as well as an increase in E / A ($p < 0.05$, significance of the difference with the indices before treatment). Our findings show that in the examined patients, a decrease in pressure in the pulmonary artery

leads to a decrease in pressure in the RV of the heart. As a result, there is a decrease in the duration of IRT, TD and AFF and a decrease in the pressure gradient between the ventricles. That is, positive changes in DFRV significantly affect remodeling of the cardiovascular system.

When conducting a correlation analysis between the parameters LQ, VCL, pulmonary hemodynamics indices and RV remodeling of the heart, it was noted that with improved bronchial patency FEV1 improved PC, ES, PF and TS by ($r = 0.64$; 0.45; 0.26 and 0, 21, $p < 0.03$). A decrease in the level of PAPmd led to an improvement in PC, ES, PF and TS by ($r = -0.74$; -0.65; -0.58 and -0.27, $p < 0.01$). A correlation was established between an increase in E / A and PC, ES, PF and TS ($r = -0.57$; -0.49; -0.38 and -0.19, $p < 0.05$).

The data obtained indicate that the inclusion of amlodipine and EB in the complex therapy of patients with Ba with AH against standard therapy can increase the ventilation capacity of the lungs, reduce the hemodynamic load on the right heart, thereby improving the structure of heart RV diastole. It should be noted that the interconnected disorders of psycho-vegetative regulation factors and LQ of patients with remodeling of the right ventricle of the heart improve after the procedures, and the severity of the disease decreases and the LQ of these patients increases in parallel.

Thus, studies have shown that in patients with BA with AH, changes in the emotional-personal sphere, autonomic nervous system and physical condition are parallel to violations of the diastolic function of the right ventricle, pulmonary hemodynamics and bronchial obstruction. The progression of pulmonary hypertension in BA patients is adaptive, and the development of BA with AH patients is less well adapted to all areas of activity, there is a disruptive state in the field of psycho-vegetative regulation factors.

Patients with concomitant pathology have lower BP elevation rates. For patients with bronchial asthma with AH, pronounced disturbances in the function of external respiration and low indicators of quality of life are also characteristic. Moreover, with an increase in the degree of bronchial obstructive syndrome, a more significant decrease in the quality of life indicators was noted. All of the above indicates the presence of a number of clinical and functional features in patients with combined BA with AH pathology, which should be taken into account when developing a treatment plan for this category of patients [1,5].

The mutual aggravation and progression of disorders of the diastolic function of RV and pulmonary hemodynamics is based on the commonality of some links in the pathogenesis: the development of hypoxia of disorders of the pulmonary-cardiac microcirculation and pulmonary hypertension. We noted a parallel improvement in the parameters of the psycho-vegetative, physical status and levels of PAP md and BP as well as the state of the ventilation capacity of the lungs in BA patients with PH complicated after standard treatment with amlodipine.

4 CONCLUSIONS.

1. In patients with BA with AH, there is a more pronounced decrease in LQ in terms of physical condition and satisfaction with treatment, and in patients with BA II-III stage of severity with pulmonary hypertension in terms of emotional state and professional fitness ($p < 0.05$), which must be taken into account during rehabilitation measures.
2. The basis for the onset and development of pulmonary hypertension in patients with BA II-III stage of severity are adaptive, and in patients with BA with AH, they are de-adaptive states in the field of psycho-vegetative regulation factors, which indicates a decrease in VCL and prolonged hypoxia of the brain.
3. Treatment with amlodipine and EB with standard therapy improves the psycho-vegetative disorders of patients with BA with AH which positively correlates with VCL, pulmonary arterial hypertension, arterial hypertension, and RV remodeling of the heart.

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