



TO STUDY A COMPARATIVE ANALYSIS OF THE EFFECT OF COMPLEX THERAPY REGIMENS ON THE QUALITY OF LIFE OF PATIENTS WITH PULMONARY HYPERTENSION

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Abstract

The article presents the results of a comparative analysis of the effect of complex therapy with bischofite electrophoresis on the quality of life and the psycho-emotional status of patients with different degrees of severity of bronchial asthma. The use of bischofite electrophoresis (52 patients) against the background of standard therapy helps to improve the ventilation capacity of the lungs, which positively correlates the quality of life and psycho-emotional status of patients with bronchial asthma

Keywords: bronchial asthma, pulmonary hypertension, bischofite electrophoresis, ventilation capacity of the lungs, psycho-emotional status, quality of life.

Relevance

Bronchial asthma (BA) is a global health problem, which is associated with a steady trend towards an increase in morbidity and social losses in this pathology. Currently, the problem of asthma is moving from pulmonological to cardiopulmonological, since hemodynamic disorders of the small circle of blood circulation often determine the prognosis of patients with this pathology. One of the main causes of disability and mortality in AD is the involvement of the heart and blood vessels in the process. Changes in the structure and function of the right ventricle (RV) are more often caused by a primary disorder of the respiratory system. It is known that pulmonary hypertension, changes in the pulmonary vessels and the right ventricle of the heart develop earlier than clinical, radiological, electrocardiographic signs of hypertrophy of the right parts of the heart are determined. Hypertrophy of the right ventricle is considered as a late and optional sign of AD, and the problem of dysfunction of the right ventricle is not considered as leading to the stage of its decompensation. Mutual aggravation and progression in a combination of bronchopulmonary and cardiovascular diseases is based on the commonality of some links of pathogenesis, which can lead to accelerated progression of coronary and heart failure, early development of life-threatening cardiorespiratory complications [7].

Severe bronchial asthma (BA) is one of the causes of pulmonary arterial hypertension (PH) and accounts for more than 50% of the structure of the formation of a chronic





pulmonary heart. At the age of 35-55 years, up to 12% of the world's population suffers from bronchial asthma. In ten years, the incidence of bronchial asthma has increased by 35%, every year from 100 to 150 million people get bronchial asthma [1,2].

The formation of pulmonary hypertension is the most severe complication of lung diseases. In addition to a sharp decrease in the quality of life (QL), LH largely determines the unfavorable outcome of the disease. This is largely due to the fact that bronchial asthma belongs to the group of psychosomatic diseases, since mental and somatic factors are closely intertwined in its origin, creating complex causal relationships [1,8]. The reason for the increase in the prevalence and mortality from asthma complicated by pulmonary hypertension, underdiagnosis and late detection. In order to establish early diagnosis, adequate prevention and treatment of LH, it is necessary to clarify the pathogenesis of this disease. In AD, of particular interest is the study of alternative methods of treatment for various stages of AD, which is important for the development of a complex of adequate treatment [8,9]. The general goal of treating patients with LH is to reduce the degree of risk, which implies improved exercise tolerance, improved quality of life, increased right ventricular function, and a low risk of death [7]. Treatment of patients with bronchial asthma (BA) is aimed at achieving complete control of the course of the disease and improving their quality of life (QOL). For this purpose, mainly medications and various physiotherapy methods are used. [5]. Physical factors potentiate the effect of medications, which makes it possible to reduce the dose of medications and achieve control of the disease faster. The pronounced effect of the aftereffect of physical factors prolongs the period of remission of the disease and reduces the frequency of exacerbations. The effect of physiotherapy on many links in the pathogenesis of bronchial asthma includes natural adaptation mechanisms and a positive effect on the autonomic nervous system [3]. Bischofite electrophoresis may be one of the non-drug methods of therapy for patients with AD. Since bischofite has a local anti-inflammatory effect, promotes the activation of metabolic processes, and physiotherapy procedures enhance the effect of bischofite. Under the influence of heat, an electric pulse, biologically active components penetrate into tissues faster and normalize biological processes. Also, the work of the body's systems and organs is activated, normal blood circulation is restored and stagnant processes in the lymphatic system are prevented [2, 4, 9, 10].

The purpose of the study. Comparative analysis of the effect of complex therapy with bischofite electrophoresis on the quality of life and psychoemotional status of patients with various degrees of severity of AD

Material and Methods





The study included 52 patients aged 36 to 64 years, suffering from AD, whose disease was complicated by LH. The patients were divided into 2 groups. The "a" group included 27 patients with grade II-III BA with LV (mean age 53.1 ± 2.5 years) The "b" group included 24 patients with grade III-IV asthma with LV (mean age 58.2 ± 2.8 years). The control group consisted of 30 practically healthy individuals (ZL), comparable in age. The examined patients had no concomitant diseases.

Depending on the treatment methods, the patients were divided into the following 2 subgroups: 1a subgroup- (14 patients) and 1b subgroup (12 patients) received electrophoresis of bischofite (EB) and standard therapy (CT) according to (GINA, 2017), which includes short- and/or prolonged-acting bronchodilators, inhaled GCS and mucolytics, and also physical therapy and breathing exercises, chest massage, psychotherapy session. In the presence of signs of intra-bronchial infection, patients were prescribed antibacterial therapy; subgroup 2a (13 patients) and subgroup 2b (12 patients) received only standard therapy. The patients were examined on the day of admission and after 10 procedures.

The method of conducting the bischofite electrophoresis procedure (according to S.B. Vermel): with 30 ml of bischofite solution, a reusable conductive gasket with an electric area of 300 cm² is soaked. The anode (positive electrode) should be installed on the interscapular area, 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 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, and X-ray examination of the chest organs were studied in all patients. The ventilation capacity of the lungs (AFL) was analyzed with an estimate of the volume of forced exhalation in 1 second (FEV₁, %), the vital capacity of the lungs (VEL, %) and the peak exhalation rate (PSV, %), blood oxygen saturation SaO₂ was also determined. The study of the parameters of the quality of life of patients with AD was carried out according to a specialized Seattle questionnaire and was evaluated by a point system. This questionnaire allows you to assess the patient's level of emotional state (ES), satisfaction with treatment (UL), professional fitness (PP), physical condition (FS) and data from a 6-minute step test. The psychoemotional status of patients was assessed on the basis of psychological testing using the Spielberger test to identify reactive and personal anxiety.

Hemodynamics of the small circulatory circle was studied using Doppler echocardiography. The following parameters of the spectrum of pancreatic diastolic filling were calculated: E / A – the ratio of the rates of early and atrial filling; VZ (m/s)





the time of slowing down of early filling; VIR (m/s) – the time of isovolumic relaxation and the fraction of atrial filling (AFN, %). Mean pulmonary arterial pressure (LAD).

Results and Discussion

According to the FVD data, a decrease in the ventilation-perfusion state of the bronchopulmonary system was observed before treatment in all patients with asthma with LH. Thus, the FEV₁ index was 58.2±0.5% in group 1b, 66.1±1.6% in group 2b (p<0.005), SaO₂, respectively, 85.1±5% in 1b and 89.6±1.4% in 2b (p<0.05), which is characteristic of the increase in bronchial obstruction. In patients with grade II-III AD with pulmonary hypertension in terms of emotional state and professional fitness, and in patients with grade III-IV AD with LV, there is a more pronounced decrease in QL in terms of physical condition and satisfaction with treatment (p<0.05),

Prior to complex therapy, it was found that all patients with asthma with LH have psychoemotional overstrain, so reactive anxiety and personal anxiety in 1a and 2a subgroups are higher than in 1b and 2b subgroups. However, in the dynamics of treatment in patients, the relatively high tension of sympathoadrenal links in the adaptive reactions of the body remains.

A comparative analysis of ventilation parameters in a group of patients who received bischofite electrophoresis against the background of 10 days of therapy showed an increase in volumetric indicators. Also, the data of the 6-minute step test showed a parallel increase in the performed sample by 12%.

When compared within the subgroup, in patients with BA II-III severity in 1a and 2a subgroups, the parameters of lung ventilation capacity: FEV₁ and PSV improved by 25% and 22%, respectively, in patients with BA III-IV severity in 1b and 2b subgroups, FEV₁ and PSV improved by 20% and 18%, respectively.

Comparative analysis of the effect of complex therapy with bischofite electrophoresis + CT for quality of life showed an improvement in the parameters of FS; ES; PP and UL, respectively, by: 11.2; 8.1; 6.8 and 9.3, in the group of patients who received only CT procedures, respectively, by: 8.2; 6.1; 4.3 and 5.2. When compared within the subgroup, improvement in the parameters of quality of life and psycho-emotional status, in patients with AD II-Stage III severity of the 1a and 2a subgroups were somewhat more significant than in patients with AD III-IV stage of severity of the 1b and 2b subgroups.

In the dynamics of treatment, a decrease in IOP, VIR, AFN and LADsr was determined, as well as an increase in E / A (p<0.05, the reliability of the difference with the indicators before treatment). The facts obtained by us show that in the examined patients, a decrease in pressure in the pulmonary artery leads to a decrease



in pressure in the pancreas of the heart. As a result, there is a decrease in diastolic dysfunction: the duration of VIR, VZ and AF and a decrease in the pressure gradient between the ventricles.

When conducting a correlation analysis between the parameters of QOL, indices of pulmonary hemodynamics, it was noted that with the improvement of bronchial patency of FEV₁, FS, ES, PP and UL improved ($r=0.64; 0.45; 0.26$ and $0.21, p<0.03$). Improvement in the level of FEV₁ led to an improvement in FS, ES, PP and UL on ($r=-0.74; -0.65; -0.58$ and $-0.27, p<0.01$). The relationship between the increase in PSV and FS, ES, PP and UL was established ($r=-0.57; -0.49; -0.38$ and $-0.19, p<0.05$). The data obtained indicate that the inclusion in the complex therapy of patients with asthma of electrophoresis of the hypophyte against the background of standard therapy allows to increase the ventilation capacity of the lungs, reduce the hemodynamic load on the right parts of the heart, thereby improving the structure of the pancreatic diastole. It should be noted that after the procedures performed, the severity of the course of the disease decreases and, in parallel, the QOL of these patients increases.

Thus, studies have shown that in patients with asthma with LH, changes in the emotional and personal sphere and physical condition are parallel to violations of bronchial patency, pulmonary hemodynamics of patients. The progression of pulmonary hypertension in patients with grade II-III AD is adaptive in nature, in patients with grade III-IV AD there is a maladaptive state in the field of respiratory and psychoemotional regulation factors, which should be taken into account when developing a treatment plan for this category of patients [1, 10].

Mutual aggravation and progression of cardiorespiratory disorders is based on the commonality of some links of pathogenesis: the development of obstruction, hypoxia of the brain and disorders of pulmonary microcirculation [2]. We noted a parallel improvement in the ventilation capacity of the lungs, as well as the parameters of the psychoemotional, physical status in patients with asthma with LH, occurring after standard treatment with the inclusion of bischofite electrophoresis.

Conclusions

1. In patients with grade III-IV asthma with LV, there is a more pronounced decrease in QL in terms of physical condition and satisfaction with treatment, and in patients with grade II-III asthma with pulmonary hypertension in terms of emotional state and professional fitness, which must be taken into account when carrying out rehabilitation measures.





2. The basis of the occurrence and development of pulmonary hypertension in patients with BA II-III stage of severity are adaptive, and in patients with BA III-IV stage of severity
3. Maladaptive states in the sphere of psychoemotional factors of regulation, which indicates a long-term decrease in AFL and hypoxia of the brain.
4. The use of electrophoretic therapy against the background of standard therapy improves the ventilation capacity of the lungs, which positively correlates with the quality of life and the psychoemotional status of patients with asthma.

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