Application of Resonance Therapy in Complex Therapy in Patients with Chronic Obstructive Pulmonary Disease in a Comorbid State

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Annotation: The state of central hemodynamics, endothelial function and external respiration in patients with chronic obstructive pulmonary disease in a comorbid state were studied and the impact of complex therapy was assessed. In the dynamics of the complex treatment, including resonance therapy (RT) against the background of basic therapy, a significant improvement in microcirculation and the degree of recovery of endothelial function disorders was established. In these patients, there was a significant increase in VC and blood oxygen saturation - SaO2.

Key words: chronic obstructive pulmonary disease, peak flow, hypertension, hypoxic pulmonary vasoconstriction, endothelium, rehabilitation therapy.

It is known that in the occurrence of bronchial pathology, the main role belongs to local factors, but systemic processes also play an important role, which lead to profound significant changes in the internal environment of the body and structural damage to bronchial tissues [1,5]. The progressive nature of chronic obstructive pulmonary disease (COPD), the development of disabling complications, causing a significant proportion in the structure of temporary disability, disability and mortality, is an acute medical and social problem. Patients suffering from chronic bronchopulmonary diseases and hypertension (AH) need the active influence of natural biostimulants capable of strengthening and normalizing the physiological functions of the body, using the whole variety of adaptive reactions [3,4,6]. In the domestic and foreign literature, there are practically no evidence-based data on the possibilities of an integrated approach to the systemic methods of treating GB, combined with chronic obstructive pulmonary disease, which is due to the functional and production disunity of dentists with doctors of other specialties. Significant advances in the treatment of GB in recent years are associated with the use of phytopreparations and alternative therapies, which significantly improve the survival and prognosis of life in patients with cor pulmonale [1,5]. However, not all the effects of glycyrrhizic acid have been sufficiently studied. The plant world is rich in medicinal plants. Among them, licorice can be distinguished. Licorice has been used for a long time for diseases of the broncho-pulmonary system in the practice of oriental medicine. Avicenna very often mentioned licorice in his "Canons" as a means of...
"facilitating the work of the bronchi and lungs, removing all sorts of fluids" [7,11].

Glycyrrhizic acid (HA) from licorice can have several beneficial effects at once. First of all, of course, we are talking about the presence of anti-inflammatory effects. In addition, drugs containing this substance have antiviral, antipruritic and immunostimulating effects. The antiviral effect is carried out mainly against pathogens of the human papillomavirus and some others [2,6,8]. The basis of the antiviral effect is the ability of glycyrrhizic acid to interrupt the reactions of viral DNA synthesis at various stages of this process.

As a result, the assembly processes of viral particles cannot reach the stage of complete completion, which means that the causative agent of the disease will be deprived of the opportunity to multiply. In addition, glycyrrhizic acid blocks the processes of interaction between the virus and the target cell, which greatly complicates the penetration of the pathogen, where it can exert its harmful effect. In addition to the above, it should be noted the ability of glycyrrhizic acid to enhance the reactions responsible for the processes of interferon biosynthesis. These substances significantly reduce the susceptibility of healthy cells to viral particles, which inhibits the spread of pathology. All of the above effects are manifested even when drugs are used in non-toxic dosages, which means that the risk of developing undesirable consequences of antiviral therapy is minimized [1,2]. Preparations of glycyrrhizic acid are highly active against the above pathogens. Unlike many other representatives of the group of antiviral agents, addiction rarely develops to such drugs, even despite the constant mutations of the pathogens. Glycyrrhizic acid is a stimulant of nonspecific immunity. When exposed to this substance, phagocytic reactions are activated, which are responsible for the capture and destruction of foreign agents [1,10].

On the basis of licorice extract - glycyrrhizic acid, a number of expectorant preparations were created. However, due to the advent of powerful expectorants, its use has faded into the background.

For this reason, the aim of the research is to evaluate the effectiveness of the use of resonance therapy in the complex therapy of patients with chronic obstructive pulmonary disease in a comorbid state.

**Material and research methods.** The selection of patients was carried out on the basis of a comprehensive examination, which included general laboratory, clinical and functional methods of research, to solve the tasks set, 42 patients with mild to moderate hypertension and COPD aged 18 to 60 years were examined. The severity of COPD and basic treatment were determined according to the recommendations of the European Consensus of Pulmonologists [8], which provides for a unified assessment of severity in terms of FEV1 and basic therapy (BT). All patients according to the method of treatment were divided into 2 groups: group I - 30 patients with COPD with GB, against the background of basic therapy, received RT according to the scheme 1 time per day; e'd, within 10 days;

II - a group of 16 COPD patients with GB who took only BT. Also, all patients of the 1st and 2nd groups received breathing exercises, chest massage, circular shower, drinking therapeutic herbal tea.

In addition to complex conventional clinical and laboratory examinations, patients additionally underwent special examination methods. Control over the degree of cleaning of teeth from plaque was assessed using erythrosin red.

The degree of bronchial obstruction was studied by spirometry using the Medicog device manufactured by Estromedica with the measurement of FEV, MOS 75, MOS 50, MOS 25. The data obtained were processed by the method of variation statistics, the significance of differences was determined by the Student's T-test.

**Research results.** Upon admission of patients with chronic obstructive pulmonary disease, changes in the prodontal parts in the oral cavity were revealed. Since the development and progression of COPD is associated with a violation of the cardiovascular system. The first step in the treatment of GB was the appointment of an individual hygienic regimen of the oral cavity, which included brushing the teeth twice after meals (morning and evening), followed by monitoring the degree of cleaning the teeth from plaque using erythrosin red, a toothbrush and paste were individually selected.
Local therapy included the elimination of traumatic factors in the oral cavity: dental deposits, filling defects, defective prostheses. Individually, the basic therapy included antibacterial, anti-inflammatory therapy (rinsing the mouth with a 0.06% solution of chlorhexidine bigluconate, applications with romazulan), therapeutic dressings with heparin ointment were used. In the presence of carious cavities, dental treatment was performed.

The state of the respiratory system of patients was assessed by a point system (6). The initial symptomatology of patients with COPD is characterized by the presence in patients of complaints specific to this pathology, respectively: intensity of dry cough 1.15±0.11; difficult to separate sputum 1.45±0.12; shortness of breath 0.87±0.07; chest pain 1.73±0.12 (P<0.001). According to the total scores of patients with COPD (11.2±0.5 points), they were referred to a satisfactory condition.

The study of the function of external respiration in patients with COPD upon admission to rehabilitation showed a corresponding degree of severity of the COPD disease - a decrease in forced exit volume (FEV), as well as a decrease in the most sensitive spirometric parameters in early obstructive pathology, indicators of maximum post-expiratory velocity (MOV) 25%, 50% and 75% and a decrease in lung capacity (VC).

The criteria for evaluating the effectiveness of RT were the degree of restoration of trophic disorders, microcirculation, the degree of impaired lung functions: facilitation of sputum secretion from the respiratory tract; the presence of cough and shortness of breath; laboratory research.

Also, in patients with COPD of the 1st group, as can be seen from Figure (1), the indices of respiratory function not only significantly increased, but also approached the limits of the norm.

**Picture 1.**

Dynamics of functional parameters in COPD patients with GB

This indicates an improvement in conductivity at all levels of the bronchial tree, hence a decrease in edema and occlusion of their mucus. Observations showed a direct relationship between functional and objective data after 10 procedures. When analyzing foci of chronic infection in the oral cavity, a positive trend is observed, i.e. a decrease in the degree of trophism and microcirculation in peripheral vessels. At the same time, a parallel dependence of the state of cardiological health on the severity of COPD is determined. When evaluating the scoring of objective data, the sum of their totality in patients was 4.9±0.4 points (P<0.001). As a result of the non-drug therapy, a significant lengthening of the period of clinical remission of the disease by 4-5 times was noted, and a significant delay in the progression of foci of chronic infection in the oral cavity. As a result of the therapy with different modes, it can be stated that resonance therapy (RT) in combination with BT has a multifactorial effect on the body, including anti-inflammatory, bronchodilatory, and a decrease in the degree of endothelial dysfunction disorders.
It also contributes to the elimination of subjective and objective symptoms and prolongs the period of clinical remission of the disease. Consequently, the quality of life of patients with chronic obstructive pulmonary diseases with HD improves.

**Findings.** In patients with COPD, it is necessary to take into account the mutual aggravating effect of foci of chronic inflammation in the bronchi on the microcirculation of peripheral vessels.

In the dynamics of the complex of treatment, including RT therapy against the background of BT, a significant improvement in microcirculation and the degree of restoration of vascular endothelial disorders was established, in these patients, the EF parameters increased in parallel.

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