

ENTEROSORPTION AND SYSTEMIC ENZYMOTHERAPY IN TREATMENT OF PATIENTS WITH EXACERBATION OF BRONCHIAL ASTHMA AND COMORBID PATHOLOGY OF THE DIGESTIVE ORGANS

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Abstract. Among the reasons limiting the achievement of control, complicating the course of bronchial asthma (BA), comorbidity certainly plays a significant role. Current realities are disappointing: examination of patients with BA does not detect patients with only one chronic pathology, and even in the classic variant of its course, even with a mild and controlled course of the disease. One of the leaders, along with diseases of the cardiovascular system, is the comorbidity of the digestive organs (long-term use of systemic or inhaled corticosteroids and concomitant drugs, chronic inflammation, sensitization or atopy in the anamnesis, anatomically close location, similar pathogenesis, etc.). Recent studies has demonstrated convincing results of the effectiveness of enterosorption and systemic enzyme therapy. Enterosorption reduces manifestations of sensitization, atopy, reduces peripheral blood eosinophilia, the level of total IgE, circulating immune complexes, reduces the severity of intoxication and bronchial hyperreactivity. Enzymes perform their functions by catalyzing oxidation, reduction and decomposition reactions. The action of systemic enzymes involves proteolytic activity in the blood and lymph, thereby affecting a number of vital processes. In biochemical processes, enzymes, acting as catalysts, are triggers of chemical reactions that would not develop at all or proceed slowly without their participation. The preparations are a purposefully composed mixture of oral enzymes of plant and animal origin, have a wide range of general effects on the body. However, to date there are no clear data on the efficiency of the combined simultaneous use of systemic enzyme therapy with enterosorption, which determined **the aim of the study:** to investigate the effectiveness of enterosorption with systemic enzyme therapy in the complex treatment of patients with exacerbation of BA, comorbid pathology of the digestive organs and a history of sensitization/atopy.

Materials and methods. The prospective open study included 72 patients with exacerbation of BA, comorbid pathology of the digestive organs, sensitization/atopy in the anamnesis, as well as 20 healthy individuals without signs of clinically significant chronic pathology. The result was evaluated according to the dynamics of clinical, functional and laboratory indicators. The studies were conducted with the consent of the patients, and the methodology of their conduct corresponded to the revision of the Helsinki Declaration of 1983. The study protocol was approved by the local ethics committee, the participants were informed and signed a consent form upon admission to the hospital. The structure of the study corresponded to the officially accepted one. All patients underwent spirometry (Master Screen PFT, Cardinal Health, Germany). During the entire period of observation, the patients filled out diaries of individual observation every day, recorded the indicators of peak flowmetry (Mini-Wright peak flow meter). The severity of symptoms was assessed by patients on a 5-point scale (GINA 2002) (0 — no symptoms; 1 — mild degree of manifestation; 2, 3 — moderate; 4, 5 — severe). Allergological examination included collection of general clinical and allergological anamnesis, determination of the level of peripheral blood eosinophils and total IgE in blood serum. Subjects with BA underwent remedial and diagnostic fiberoptic bronchoscopy (FBS) with bronchoalveolar lavage (BAL) collection. FBS was performed at the beginning of observation, after 6 and 12 months. Patients' informed consent was obtained for bronchoscopy. Statistical processing was performed using the mathematical and statistical capabilities of MS Excel. The work was done for public funds.

Conclusions. 1. The use of enterosorbents and enzymes of systemic action in the complex treatment of patients with exacerbation of asthma and comorbid pathology of the digestive system allows to achieve a decrease in the clinical manifestations of asthma, namely: the «dyspnea» index from (3.0 ± 0.4) points to (1.5 ± 0.4) points, «night awakenings due to symptoms of BA» — from (3.5 ± 0.2) points to (1.5 ± 0.2) points, «morning stiffness» (chest tightness in the morning) - from (3.0 ± 0.2) points to (1.0 ± 0.2) points, «daily symptoms of the disease» — from (3.0 ± 0.2) points to (2.0 ± 0.2) points, the need for short-term β_2 -agonists — from (8.2 ± 1.1) points to (1.5 ± 0.1) times a day ($p < 0.05$), the total asthma score — from (12.5 ± 0.4) points to (6.0 ± 0.4) points ($p < 0.05$), which correlated with an increase from 65.2 % to 85.9% of bronchial patency indicators, with a decrease in the percentage of patients with a daily variation of PEFex > 20.0 % per day from 86.5 % to 35.4%. In 86.2 % of patients, it was possible to reduce the dose of systemic glucocorticosteroids (GCS), in 21.6 % — to stop their regular intake, in 29.7 % of patients to reduce the need for inhaled GCS. 2. The monthly course of enterosorption and systemic enzyme therapy in the examined subjects leads to a decrease in the number of BA exacerbations from (3.5 ± 0.2) to (1.8 ± 0.3) times, the number of hospitalizations — from (3.2 ± 0.3) times to (1.7 ± 0.2) times a year ($p < 0.05$), the average number of days of hospital stay — from (21.8 ± 1.0) days to $(16.5 \pm 1, 5)$ days, ($p < 0.05$), the number of emergency calls per year — from (8.5 ± 2.1) times per year to (4.4 ± 2.2) times per year, cases of dose increase of inhaled GCS per year - from (3.2 ± 0.5) times to (1.5 ± 0.1) times ($p < 0.05$). 3. Systemic enzyme therapy with enterosorption contributes to the reduction of the severity of catarrhal, mucous, atrophic endobronchitis in patients with exacerbation of BA and pathology of the digestive system, normalizing the cytology of BAL fluid and reducing the cytological signs of inflammation, namely: the total number of neutrophils significantly decreased from (11.5 ± 2.1) % to (5.2 ± 2.9) % ($p < 0.05$), eosinophils — from (10.3 ± 1.5) % to (4.2 ± 0.5) % ($p < 0.05$), but the total number of macrophages increased — from (13.5 ± 4.2) % to (29.2 ± 5.2) %, ($p < 0.05$). Among the cells of the bronchial epithelium, the percentage of ciliated cells normalized from (82.0 ± 3.3) % to (90.0 ± 3.8) % ($p < 0.05$), decrease of interstitial cells from (1.9 ± 0.1) % to (0.6 ± 0.1) % ($p < 0.05$), as well as basal cells — from (9.7 ± 0.9) % to (6.3 ± 0.2) % and goblet cells — from (15.8 ± 0.3) to (6.1 ± 0.4) % of cells ($p < 0.05$ for both cases). 4. Additional treatment with a combination of enterosorbents and enzymes in the complex therapy of patients with exacerbation of BA and comorbid pathology of the digestive system should be carried out in a course of at least one month.

Key words: bronchial asthma, enzyme therapy, enterosorption, comorbid pathology of digestive organs.