

POSSIBILITIES OF HALOAEROSOL THERAPY AS RESPIRATORY REHABILITATION IN THE CORRECTION OF INSULIN RESISTANCE IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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Abstract

Comorbidity in chronic obstructive pulmonary disease (COPD) considerably determines both the prognosis and social-economic outcomes and requires thorough evaluation.

The aim of the study was to investigate the possibilities of insulin resistance (IR) correction, as the basis for comorbidity, in COPD patients under the influence of renewal non-pharmacological treatment using haloaerosoltherapy (HAT).

Materials and methods. Complex clinical, functional and laboratory examinations were carried out in 32 patients with COPD (GOLD II-III) beyond the acute period. The average age of patients was 60.3 ± 1.71 years, and duration of the disease — (14.2 ± 0.89) years. The control group of apparently healthy subjects included 24 persons. Data of the COPD Assessment Test, results of the six-minute walk test, and lung function data were analysed. The severity of oxidant stress (OS), activity of systemic inflammatory process were evaluated. Carbohydrate metabolism was studied according to the data of glucose, insulin, C-peptide levels in the blood and the HOMA-IR index was calculated.

The basis for renewal treatment was HAT with certain parameters of concentration and dispersion.

Results. It was found that, regardless of the remission, certain clinical and functional changes were persistent, which indicated a tendency to the progression of disease, which is confirmed by the OS severity, endogenous intoxication presence and the inflammatory process activity. These changes were the pathogenetic basis for IR and the corresponding metabolic and clinical consequences. In particular, strong direct correlations were found between the content of Schiff bases and the level of insulin ($r = 0.71$), HOMA-IR index value ($r = 0.76$), the content of C-peptide ($r = 0.67$) and a correlation of medium strength between the level of tumor necrosis factor- α and insulin ($r = 0.52$).

After renewal treatment with the use of HAT, positive change of the studied indices were observed, which was accompanied by a decrease in the manifestations of IR, but not reaching the level of the control group.

Conclusions. 1. Chronic bronchial obstruction and insulin resistance are mutually aggravating pathological processes, connected by a common pathogenetic link — the presence of OS, endogenous intoxication and systemic chronic inflammation of low intensity. This determines the necessity to develop complex long-term management programs for patients with COPD, taking into account both respiratory disorders, as well as probability of IR, type 2 diabetes development and its complications.

2. Under the influence of HAT as a non-pharmacological method of respiratory rehabilitation, in accordance with the improvement of clinical manifestations of COPD, ventilation function, reduction in OS intensity and systemic inflammation activity, there is a decrease in the IR manifestations, but a certain level of it remains even after the renewal treatment course, which indicates a significant pathogenetic role of these metabolic disorders and determines the necessity for appropriate corrections in the complex programs of patients long-term management.

Key words: COPD, insulin resistance, metabolic disorders, haloaerosoltherapy.

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