

ОРИГІНАЛЬНЕ ДОСЛІДЖЕННЯ

Estimation of influence and tolerance of inhalations of hypertonic 7 % saline together with hyaluronic acid in chronic nonspecific pulmonary diseases

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Conflict of interest: none

BACKGROUND. Chronic inflammatory reaction in chronic nonspecific pulmonary diseases leads to the accumulation of sputum in airways, which causes frequent exacerbations and disease progression. Inhalations of 7 % hypertonic saline (HS) is an effective method of sputum removal, however, the majority of patients, which have the determined bronchial hyperreactivity, can't tolerate such treatment. Addition of 0.1 % hyaluronic acid (HA) increases their tolerance of HS.

OBJECTIVE. The aim of the study was to estimate the influence and tolerance of inhalations of OKISTAR hyal 7 %, containing 7 % HS and sodium hyaluronate (SH) in patients with chronic obstructive pulmonary diseases (COPD).

MATERIALS AND METHODS. We investigated 62 patients with COPD, which produced more than 10 ml of sputum daily and had more than 2 exacerbations annually on the background of adherence to standard therapy. All patients were divided into 3 clinical and pathogenetic groups. Study design was similar to open comparative randomized study.

RESULTS AND DISCUSSION. Antioxidant and membrane-stabilizing action of nebulization of HS and HS + SH was proved by the significant decrease of byproducts and end products of lipid peroxidation in blood, namely, isolated double bonds (IDB), diene conjugates (DC), ketodienes and conjugated trienes (KCT), malone dialdehyde in plasma (MDpl), oxidative modification of neutral and base proteins aldehyde- and ketone-dinitrohydrazones, peroxide resistance of red blood cells (PRRBC) and elimination of factors of misbalance of antioxidant protection, increase of the content of reduced glutathione and ceruloplasmine; decrease of catalase, glutathione transferase, glutathione peroxidase in the dynamics of proposed treatment. Analysis of the research data showed that the level of MAPl, IDB, DC, KCT, PRRBC lowered from the baseline values in group 2B by 39.3; 17.3; 16.02; 16.5 and 72.9 % respectively ($p < 0.05$ in all cases). The received data suggest that the proposed addition to basic therapy leads to the normalization of activity balance in the system of antiradical protection. Such effects are clearly seen in case of combined therapy (HS + HA) usage, which certifies the synergic action of proposed medications.

CONCLUSIONS. Usage of OKISTAR hyal 7 %, which contains HS 7 % and SH 0.1 %, in patients with COPD exacerbations provides the additional effect due to improvement of functional parameters, decreases the systemic steroids usage and the risk of basic therapy failures, diminishes exacerbation length and duration of inpatient treatment, decreases the need in salbutamol inhalations and dyspnea grade, provides the positive dynamics of clinical symptoms and increases the quality of life. Combination of HS and HA for nebulization is characterized by the synergetic action of both medications and can be administered to patients with COPD, beginning from stage II, as a basic therapy.

KEY WORDS: chronic nonspecific pulmonary diseases, inhalational hypertonic solutions, hyaluronic acid, hypertonic saline 7 %, sodium hyaluronate 0.1 %, OKISTAR hyal 7 %.