FEATURES OF THE INFLAMMATORY PROFILE IN PATIENTS WITH BRONCHIAL ASTHMA AND COMORBID OBESITY

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Abstract. The prevalence of overweight (OW) and obesity is steadily increasing. This leads to an increasing number of cases of combined or comorbid bronchial asthma (BA) associated with OW or obesity. Such a clinical situation becomes a particular challenge for BA treatment, as these patients require more medications, show reduced sensitivity to corticosteroids, have longer hospital stays, worse quality of life, and greater disease severity compared to patients with normal body weight (BW) and asthma.
Objective. To assess the characteristics of the inflammatory profile in patients with BA and comorbid obesity, and to determine its impact on the course and control of the disease.
Materials and Methods. A total of 285 patients with BA were examined: 216 with obesity/overweight (BMI 31.7 ± 0.5 kg/m^2) and 69 with normal BW (BMI 23.7 ± 0.5 kg/m^2). Assessements included complete blood count, sputum cytology, and measurement of IL-4, IL-5, IL-6, IL-1, procalcitonin, ferritin, and FeNO levels. Asthma control was assessed using the Asthma Control Questionnaire (ACQ).
Results and Discussion. In the BA+obesity group, significantly higher levels of leukocytes, eosinophils, IL-6, IL-1, ferritin, and procalcitonin were found (0.42 ± 0.02 vs. 0.22 ± 0.01 ng/ml, $p<0.05$). A strong positive correlation was established between body mass index (BMI) and procalcitonin ($r\approx0.72$; $p<0.001$). The FeNO level in obese patients was lower, but the difference between groups was not statistically significant. According to ACQ results, this group had poorer asthma control ($p<0.05$). These findings indicate the formation of a specific immuno-inflammatory BA phenotype with high systemic inflammatory activity and poorer disease manageability.
Conclusions. BA with obesity is characterized by elevated pro-inflammatory markers and procalcitonin. A strong positive correlation was found between BMI and procalcitonin levels. Comorbidity with obesity is associated with reduced asthma control. Obesity forms an immuno-inflammatory BA phenotype, which determines a more severe course of the disease.

Key words: bronchial asthma, excess body weight, obesity, comorbid patient, interleukins, chronic inflammation.