SOME PECULIARITIES OF THE ENDOCRINE STATUS IN CONVALESCENTS AFTER COVID-19 AND ITS CHANGES UNDER THE INFLUENCE OF RECOVERY TREATMENT

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Abstract. The aim — to study the thyroid hormones and cortisol levels in convalescents after COVID-19, including patients with chronic obstructive pulmonary disease (COPD) and their possible changes under the influence of recovery treatment.
Materials and methods. 83 convalescents after COVID-19 (with manifestations of COVID pneumonia in the acute period) aged 32–67 years, who had no history of thyroid or adrenal glands lesions' manifestations were examined. 29 of them had COPD (GOLD II-III). Patients began the course of rehabilitation within 1–3 weeks after inpatient treatment. The levels of thyroid-stimulating hormone (TSH), total fractions of thyroid hormones (thyroxine — T_4, triiodothyronine — T_3), cortisol as well as the level of interleukin-8 (IL-8) were determined in blood serum. Assessment was carried out by immunoenzymatic method at the beginning of recovery treatment and after it (within 21–22 days). Recovery treatment included the necessary basic anti-inflammatory and broncholytic therapy (for patients with COPD) and a physiotherapeutic complex, which included the use of haloaerosoltherapy (HAT) — dry aerosol media with certain concentration and dispersion (18-20 sessions per course) and singlet oxygen therapy (12 procedures per course).
Results. Before treatment significantly higher levels of all studied indices compared to control were found in both groups of patients (without history of COPD and patients with COPD). Certain change of the inverse relationship between the values of TSH and T_4, T_3 was noted, which probably indicates the presence of maladaptive thyroid syndrome. The obtained results can be interpreted as a consequence of systemic immune activation caused by SARS-CoV 2 infection and as a result of intensive treatment in the acute period. These changes took place on the background of a significant IL-8 level increase. A correlation between the levels of IL-8 and TSH (r=0.43) was revealed, which indicates a certain dependence between stimulation of thyroid gland function and the severity of the inflammatory process. Thyroid hormone levels in convalescents after COVID-19 without COPD (1st group) and convalescents after COVID-19 with COPD history (2nd group) were compared. Direction of changes in the thyroid hormones levels in both groups was similar, but the increase of TSH and T4 levels in the 2nd group was significantly higher and took place on the background of a higher IL-8 level. Studies of cortisol secretion in the examined groups showed a moderate, but reliable increase in its levels compared to the control by 1.2 and 1.4 times respectively. This may be related to both activation of the adrenal cortex during the convalescence and the consequences of therapy in the acute period of COVID-19. Taking into account received data, as well as the analysis of individual deviations of the studied indices, these changes should be considered as a non-thyroidal illness syndrome (NTIS) and dysfunctional adrenal disorders. The applied recovery treatment had a corrective effect on the thyroid and adrenal functions. Thus, by the end of treatment, the levels of cortisol and T_3 reached the control level on the background of a significant decrease of IL-8 level in both groups of patients. Positive changes in thyroid function in convalescents after COVID-19 without COPD history were more pronounced.
Conclusions. In convalescents after COVID-19 thyroid and adrenal dysfunctional disorders were observed, they were more pronounced in patients with COPD and directly correlated with an increase of pro-inflammatory IL-8 level. Rehabilitation treatment based on haloaerosoltherapy, which is aimed at bronchopulmonary system sanation and reduction of inflammatory process, contributes to the recovery of thyroid and adrenal function. Positive effect is more pronounced in patients without a history of chronic bronchopulmonary pathology.

Key words: convalescents after COVID-19, chronic obstructive pulmonary disease, thyroid and adrenal dysfunction, recovery treatment.