TYPES OF IMMUNE-MEDIATED DISORDERS, CONSIDERING SIGNS OF ENDOGENOUS INTOXICATION, IN PATIENTS WITH PULMONARY TUBERCULOSIS WHO DEVELOPED THE DISEASE FOLLOWING CORONAVIRUS INFECTION

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Abstract. Particular attention is drawn to the course of pulmonary tuberculosis in patients who developed the disease following a coronavirus infection (COVID-19), as the long-term sequelae of the latter can be clinically significant and influence the progression of tuberculosis.

Aim. To identify variants of immunological deficiency, taking into account signs of endogenous intoxication—in patients with drug-susceptible pulmonary tuberculosis who fell ill within one year of contracting COVID-19, based on comprehensive immuno-biochemical and general laboratory assessments, and to develop a laboratory diagnostic algorithm to facilitate further treatment adjustments.

Materials and Methods. We analyzed the results of examinations of 20 patients with drug-susceptible pulmonary tuberculosis (main group) who developed the disease within one year after contracting COVID-19. All patients underwent a complete blood count with the calculation of an integra index of inflammatory activity [13], as well as comprehensive immunological (cellular and humoral immunity parameters) and biochemical analyses, including the detection of markers of endogenous intoxication (levels of medium-molecular-weight molecules, erythrocyte sorption capacity, and catalase activity). Based on a comparison of data from the study group with those of the control group (comprising 15 apparently healthy individuals - blood donors with a history of laboratory-confirmed COVID-19 within the past year), the most significant immune system abnormalities in these patients were identified.

Results. An analysis of the immunograms of patients who developed pulmonary tuberculosis within a year of contracting COVID-19 revealed an immune imbalance syndrome characterized by the suppression of specific cellular immunity and a weakening of antiviral immunity, accompanied by chronic polyclonal activation of the humoral immune response. Systemic inflammation was observed in 80,0 % of the patients. The development of tuberculosis in these patients was accompanied by an endogenous intoxication syndrome: elevated levels of medium-molecular-weight molecules in erythrocytes and blood plasma, a reduction of nearly one-third in the erythrocyte-to-plasma catalase activity ratio, and an increase in the sorption capacity of erythrocytes - indicating a disruption of the structural and functional state of their membranes, an intensification of intoxication, and a weakening of detoxification mechanisms.

Conclusions. Based on the data obtained, four types of immune-mediated disorders were identified in patients with pulmonary tuberculosis who developed the disease following a coronavirus infection, taking into account signs of endogenous intoxication. A diagnostic algorithm for immunological deficiency variants was developed to determine the need for additional immunomodulatory therapy; this algorithm comprises three stages: initial screening, expanded laboratory diagnostics, and the formulation of one of four conclusions regarding the combination of different types of immune-mediated disorders.

Key words: pulmonary tuberculosis, COVID-19, immune dysregulation, endogenous intoxication, diagnostic algorithm.