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DIAGNOSTIC SIGNIFICANCE OF IL-8 AND IL-12 IN VARIOUS FORMS OF INTERSTITIAL LUNG DISEASE

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Abstract: In patients with ILD, there is a multidirectional change in the production of cytokines, depending on the stage of the disease. The acute period of the disease is accompanied by a marked increase in the cytokine IL-8, and a subacute period of the change in the cytokine IL-12.

Keywords: interstitial lung diseases (ILD), cytokines, immunopathogenesis.

Introduction. Interstitial lung disease is a large group of diseases of various etiologies characterized by inflammatory lesions of the walls of the alveoli (alveolitis) and the surrounding interstitial tissue. Currently, this group includes more than 130 diseases; but interstitial lung diseases do not include infectious diseases of the lungs of known etiology and malignant tumors (eg, lymphogenous carcinomatosis), which may cause similar clinical symptoms [2,4,5]. ILD is rightly considered an immunopathological disease, in the development of which the leading role belongs to allergic reactions of the 3rd and 4th types [1,6,7].

Chronic interstitial lung disease (CLID) is a group of lung diseases of various etiology, pathogenesis and morphology, characterized by the development of cough with sputum production and paroxysmal or persistent shortness of breath, which is not associated with specific infectious diseases. Chronic interstitial lung disease is the general name for a whole group of lung diseases. What unites the diseases of this category is that they all affect the interstitium, part of the anatomical structure of the lungs. Interstitium, or interstitial tissue, is the connective tissue of the lungs that provides support to the alveoli, the microscopic air sacs of the lungs. Blood vessels pass through the interstitium and perform the function of gas exchange between

blood and air in the lungs. The interstitium tissue is so thin that it is usually not visible on a chest x-ray or CT scan, although interstitial disease may be detected on these studies. Any damage to the lung tissue causes thickening of the interstitium. Thickening can result from inflammation, scarring, or extra fluid buildup. When comparing the studied parameters in groups of patients with different course of the disease, it was found that the highest level of IL-8 was recorded among patients with acute ILD. In this group, the content of IL-8 is 38.1±2.91 pg/ml, which is more than 3 times higher than in the control group. In contrast, IL-8 levels were relatively low in chronic EAA, with intermediate values in patients with subacute ILD [5,6].

The study of the function of external respiration is an important stage in the examination of patients with alveolitis, but is not a necessary criterion for making a diagnosis. In a significant number of patients with alveolitis, violations of bronchial patency are found that occur at the very beginning of the disease and can be traced throughout the disease. It is currently unclear why bronchial obstruction exists in a particular patient, but it is necessary for the patient to be functional before significant and severe diffuse pulmonary fibrosis occurs. The role of functional studies of the lungs in the diagnostic plan is insignificant, but important for resolving the issue of the functional state of patients, resolving the issue of the severity of the disease, the phase of its course, and the effectiveness of treatment. treatment and termination of contact with the disease-provoking antigen [7,8].

In recent years, significant progress has been made in understanding the morphological essence of the process of most respiratory diseases. Modern clinical morphology has many methods for diagnosing respiratory diseases. Among them, cytological and bacterioscopic examination of sputum, bronchoalveolar lavage (bronchoalveolar lavage), biopsy of the bronchi and lungs are of the greatest importance. These achievements are associated with the possibility of obtaining and studying biopsy material from almost all parts of the respiratory system using modern morphological research methods, such as immunohistochemistry, electron microscopy, autoradiography, and luminescence microscopy. The new data obtained on the early structural manifestations of respiratory diseases make it possible to use the results of morphological diagnostics for effective treatment. According to the literature, the most common environment for interstitial lung lesions is exogenous allergic alveolitis [1,2,3].

Among the majority of known cytokines, great importance is attached to cytokines interleukins-8 and -12, which affect the active movement of various types of leukocytes and other cells, as well as regulate cellular immunity in various inflammatory processes. Cytokines released as a result of immunocomplex damage,

especially TNF-a (tumor necrosis factor), induce the expression of adhesive molecules on the cell membranes of leukocytes and endothelial cells, which significantly increases the subsequent migration of lymphocytes and monocytes to the site of inflammation. A distinctive feature of delayed-type reactions is the activation of macrophages by gamma-interferon secreted by activated CD4+ lymphocytes. Continued antigenic stimulation supports the development of delayed-type reactions and leads to the formation of granulomas and activation of fibroblasts by growth factors, ultimately to excessive collagen synthesis and interstitial fibrosis [3,5,8]

Purpose and work. Revealed to study the diagnostic values of cytokines secreted by lymphocytes in peripheral blood serum, in particular, determining the production of interleukin (IL-8 and IL-12) by immunocompetent cells in patients with interstitial lung disease.

Material and methods. 60 patients with ILD with different course of the disease, who were hospitalized in the pulmonology department of the Samarkand city medical association No. 1, were examined. Verification of the diagnosis was carried out in accordance with the international WHO classification (ICD-10, heading J84.9). All patients with ILD depending on the stage were divided into 3 groups: group 1 - acute (20), group 2 - subacute (20), group 3 - chronic (20) stage of the disease. All clinical and biochemical, laboratory examinations were carried out by standardized methods. Determination of the level of IL-8 and IL-12 in the blood serum was carried out by enzyme immunoassay using the test system for ELISA: "ELISA-IL-8" and "ELISA-IL-12" (CJSC "Vector-Best", Russia). The control group consisted of 20 practically healthy individuals. The obtained data were subjected to statistical processing on a personal computer using programs developed in the EXCEL package using a library of statistical functions.

Research results. To clarify the immunological content of IL-8 in the patients examined by us, EAA showed that its level in the general group of examined patients is 33.2 ± 1.8 pg/ml (Fig. 1) and significantly exceeds the values characteristic of practically healthy individuals (16 .5±1.6 pg/ml, $p<0.01$).

Thus, when analyzing our results, it was found that in patients in the subacute stage of ILD, the level of IL-12 is 83.9±3.51 pg/ml, significantly higher than in the group of practically healthy individuals (59.8±6.7 pg/ml). ml, $p<0.01$). As it turned out, the level of IL-12 significantly fluctuates in the groups of patients we compared with different stages of ILD. This indicator was the highest in patients in the chronic stage of ILD (124.6±9.0 pg/ml), significantly different from the parameters of the healthy group (59.8±6.7 pg/ml; $p<0.01$) and patients with acute course of ILD

(105.6±10.2 pg/ml; p<0.01). Also, in patients with subacute ILD, the level of IL-12 was more than twice as high as in the control group (p<0.02).

Therefore, the obtained results indicate that all the studied clinical variants of IPD are characterized by an increase in the content of IL-8 in the blood serum of patients, however, the prevalence of humoral allergic mechanisms in the pathogenesis of the disease is accompanied by the highest level of this pro-inflammatory cytokine, which significantly differs in acute IPD (38.1±2.39 versus 16.5±1.6 pg/ml, p<0.05).

In the study of the content of IL-12 in the blood serum of the patients examined by us, the following features of this indicator were revealed depending on the phase of ILD.

Thus, the highest level of the studied parameter is observed in patients with ILD in the chronic stage, which distinguishes this group from the general group of studied patients with ILD, and also distinguishes it from the two compared groups with acute and subacute stages of the disease.

Conclusions: The results of the study of the levels of production of IL-8 and IL-12 showed that ILD during the acute course is accompanied by the most pronounced changes in the pro-inflammatory cytokine IL-8, which ensures the active movement of various types of immune cells to the focus of inflammation, and the period of subacute and chronic allergic inflammation was accompanied by pronounced changes in the production of cytokines regulating the cellular immune response, in particular IL-12 in patients with ILD. Therefore, the data obtained indicate that in patients with ILD, there are multidirectional changes in the production of cytokines, depending on the stage of the disease, which are of great clinical diagnostic and therapeutic significance.

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