FEATURES OF THE COURSE OF SEVERE FORMS OF COVID-19 DEPENDING ON THE IMMUNOPHENOTYPE OF PATIENTS

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Abstract

The COVID-19 pandemic caused by SARS-CoV-2 has become a serious threat to humanity, affecting almost all of humanity on earth, resulting in the death of more than 10 million people [1] worldwide. Intense inflammation, manifested by increased levels of cytokines, commonly referred to as “cytokine storm”, often leads to critical conditions such as ARDS (acute respiratory distress syndrome) and death due to multiple organ failure [2,4,5,15,16] .

The innate immune response is the first step in the defense mechanism against viral infection. Pattern recognition receptors in host dendritic cells recognize viral genomic DNA or RNA to initiate the production of cytokines and chemokines [3,6,7,9,11,12,16,24], which in turn attract immune cells such as macrophages, neutrophils and T cells, to the site of infection depending on their source and target cells [2,6,7,14].

Key words: COVID-19, severe course, cytokines, inflammatory mediators, distress syndrome, respiratory viral infections.

Material and research methods. For this purpose, we examined 60 hospitalized patients with confirmed COVID-19 (34 men and 26 women) who were hospitalized at the State Institution "Specialized Hospital "Zangiota 1" for the treatment of patients with coronavirus infection" and 25 practically healthy patients of the same sex and age for comparison of the results of immunophenotyping.

Immunological studies were carried out in the laboratory of fundamental immunology of the Institute of Immunology and Human Genomics of the Academy of Sciences of the Republic of Uzbekistan on the basis of a scientific agreement between the Institute and the clinic of the State Institution "Specialized Hospital "Zangiota 1" for the treatment of patients with coronavirus infection. The studies included the study of the content of the main cytokines of the immune system to assess the immunoreactivity of patients with Serum production of the main cytokines IL-6, IL-1 beta and IFN-gamma in the peripheral blood serum of patients was studied using Vector-Best kits, Novosibirsk for ELISA studies.

The results of the study and their discussion.Immunoregulatory index (IRI), which is an important criterion for the suppression of cellular antiviral immunity. Thus, we understand that in this way, the suppression of the T-cell immune response is formed, which causes a decrease in antiviral protection. Moreover, it should be noted that in the group of people with a severe course of the disease, there is a significant suppression of IRI, T-helpers/inducers compared with the data of patients with a moderate course. the same picture is observed in the number of T-cytotoxic lymphocytes, which turned out to be slightly increased in the group of people with a severe course of the disease.

Analysis of the percentage of CD19 + B - lymphocytes in patients with COVID-19 was higher than in the control group, which was statistically significant. Moreover, in the group of persons with a severe course, the number of B-lymphocytes was slightly reduced compared to the group of persons with a moderate course of the disease.

Conclusions:

1. These investigations will be key in identifying patients who are more likely to progress to a severe form of the disease and thus to take the necessary precautions.
2. With moderate and severe COVID-19, lymphopenia and neutropenia were detected upon admission to the hospital. CT revealed greater involvement of the lungs in the pathological process in severe cases of the disease.
3. The content of CD4+ T-lymphocytes, CD8+ T-cells, IRI, NK cells is markedly suppressed in patients with COVID-19, especially in severe cases.

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