



FORMATION OF ANTIBODIES AGAINST SARS-COV-2 IN PATIENTS WITH COVID-19 IN VARIOUS CLINICAL GROUPS

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<https://www.doi.org/10.5281/zenodo.8001594>

ARTICLE INFO

Received: 25th May 2023

Accepted: 30th May 2023

Online: 31th May 2023

KEY WORDS

ABSTRACT

Coronavirus infection is a zoonanthropotic, highly contagious infectious disease caused by viruses of the Coronaviridae family. To date, the question of the efficiency of formation, the duration of circulation, and the affinity of antibodies against antigens of a new type of coronavirus (COVID-19) remains poorly understood.

Purpose of the study. Study of the formation of antibodies of three classes (Ig G, IgM, IgA) in patients of 4 groups: 1) with an inapparent form (asymptomatic), 2) with a course of ARVI, 3) with the development of SARS, 4) with lesions of the small intestine.

Materials and methods. More than 700 patients with COVID-19 were examined, in which antibody production was subsequently monitored. The observation period for patients was from May 2021 to May 2022. To date, clinical and laboratory diagnostic data have been accumulated. Serological study of the formation of antibodies was carried out by a number of methods (IHA, ELISA, immunoblot).

Results and its discussion. General clinical indicators. The most pronounced deviations in laboratory parameters were recorded in patients with the development of SARS-syndrome and with intestinal damage. The most significant clinical indicators in terms of the goal were changes in the general blood test and some biochemical parameters. In some cases, there was a slight increase in blood glucose - 6.8-7.5 mmol / l, not associated with diabetes or medication. Often, already at the initial stages of the disease, a moderate decrease in hemoglobin (85-110 g/l) was recorded, including in patients without anemia in history. Production of antibodies to coronavirus antigens. The most natural correlation in the efficiency of education is the dependence of antibody titer (IgM /IgG) on the severity of lymphocytopenia. Thus, it has been established that among the studied groups of patients, the most effective antibody formation is recorded in patients with moderate ARVI, without SARS syndrome, while maintaining the level of normal or borderline value (at the lower limit) of the percentage of lymphocytes, or with severe lymphocytosis in the first 2-4 days of onset diseases. The duration of the preservation of the production of IgG antibodies is on average 5-



10 months. It should be noted that the formation of IgA antibodies in patients with a course of the disease according to the type of SARS of moderate severity was recorded from the 2nd day from the expected 35th onset of the disease, decreased by 5-7 days of illness, and remained at the "plateau" level for 10-12 days and then faded away. The same pattern is observed in patients with SARS syndrome, who have a moderate decrease in lymphocytes of at least 12-10%. In this case, the formation of IgM antibodies reaches a significant level, although the level of IgG antibody titer is on average somewhat lower than in the course of the disease by the type of acute respiratory viral infection. The production of IgG antibodies persisted for 3 to 6 months. In contrast, in patients with SARS, with a decrease in lymphocytes below 10% - mainly 5-8%, there is a mild and unstable formation of IgM and IgG antibodies. However, the production of IgA antibodies reached a significant level and remained stable for at least 10-14 days. Patients with a decrease in lymphocytes below 3% often died and, in this regard, correlations were not studied. Unfortunately, in this group of patients, a protective titer of IgG antibodies was not formed, and patients in this group were on a long-term rehabilitation. Of particular interest, from an immunological point of view, are patients with coronavirus intestinal lesions. In patients with the enteric form (subfibrile temperature, moderate weakness, moderate or severe diarrhea), the formation of IgM antibodies was recorded, however, the formation of IgG antibodies was not stable and IgG antibodies were eliminated after 30-40 days from the onset of the disease. At the same time, some patients also recorded a decrease in lymphocytes up to 5-8%. However, when the intestinal form is combined with moderate ARVI manifestations, without a pronounced decrease in lymphocytes and hemoglobin, the production of IgM antibodies and persistent production of IgG antibodies are observed for at least 6-9 months. In at least 40% of patients monitored by us, with previously detected antibodies to SARS-CoV-2, after recovery, specific symptoms of a recurring viral attack (changes in taste, smell, prodromal phenomena, sore throat, etc.) are recorded, which, however, disappear spontaneously within 1-3 days. At the same time, a simultaneous increase in IgM and IgG antibodies is observed when testing for 3-5 days from the onset of symptoms. Subsequent monitoring shows that the patient monitors such "attacks" on average 2-3 times with an average interval of 7-18 days between "attacks". Patients of the monitoring group do not notice further possible "attacks", although they had noted contacts with covid patients.

Conclusions. 1. The severity of antibody production correlates with the content of lymphocytes in the blood. Keeping lymphocytes within close to normal ranges ensures efficient production of antibodies. A pronounced decrease in lymphocytes (lymphocytopenia) correlates with low efficiency of antibody production and rapid elimination/depletion of IgG-class antibodies. 2. A significant part of patients who did not have severe lymphocytopenia formed a fairly long-term (more than 9 months) protective immunity to SARS-CoV-2 in a natural way.

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