

γ -INTERFERON-EXPRESSING LYMPHOCYTES IN PATIENTS WITH COVID-19 CORRELATES WITH THE SEVERITY OF THE DISEASE COURSE

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ABSTRACT

The course of the immune response to SARS-CoV-2, clinical manifestations and outcomes has a wide range. A comprehensive clinical and immunological examination was carried out of 104 patients with SARS-CoV-2 at the age 18-65 years old. Mild course - 34, moderate-severe - 24, severe - 28, extremely severe - 18 (4 were fatal). Control: 30 healthy people. Patients with COVID-19 had decreased absolute lymphocyte count correlated with the severity of the disease: slightly increased in mild cases (2.50 ± 0.38 per μl); reduced in moderate (1.59 ± 0.25 in μl) and severe cases (1.22 ± 0.45 in μl), and significantly reduced in extremely severe cases (0.75 ± 0.06 in μl). The relative and absolute content of T-lymphocytes was significantly reduced in all groups compared to the control: mild (1.18 ± 0.20 / μl ; $p < 0.01$), moderate (1.68 ± 0.11 / μl ; $p < 0.001$), severe (0.45 ± 0.18 / μl ; $p < 0.001$), extremely severe (0.31 ± 0.030 / μl ; $p < 0.001$). Only two patients in the mild course group had the level of Natural Killer cells above 20% other groups were low. The number of NK cells expressing γ -interferon (γINF) was the highest in the mild group, $10.71 \pm 2.67\%$, twice less in moderate course $5.74 \pm 2.54\%$ and very low in severe ($2.98 \pm 1.55\%$) and extremely severe cases ($3.70 \pm 1.31\%$). The highest expression of γINF in $\text{CD3}+\text{CD4}+$ was in the mild group: 10.6%- 28.2%. Patients did not have an increase in the number and functional activity of T-cytotoxic and NK cells, peculiar for acute viral infections. A decrease in the number and functional activity of killer lymphocyte populations correlated with the severity and outcomes of the disease.

Key Words: covid-19, γ -interferon, immune response