

IVD_05 - Evaluation of the immune response against SARS-CoV-2 analyzed for up to six months of acute infection and clinical utility of rapid immunochromatographic tests available in Brazil

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Introduction: The COVID-19 pandemic represents an acute global health and economic crisis, with alarming consequences for human mortality and morbidity. Therefore, there is an urgent need for more studies on the innate and acquired immune response to SARS-CoV-2 infection, both to increase its effectiveness and to prevent its deleterious effects.

Objectives: Thus, this study aimed to clarify the chronology of IgM/IgG antibodies, the kinetics of serum soluble mediators after COVID-19 and the applicability of using indirect rapid tests available in Brazil.

Methodology: Samples of 330 patients hospitalized at the Hospital Baleia, in Belo Horizonte, positive and negative for COVID-19, were collected at the beginning of hospitalization up to six months after admission to perform the ELISA, flow cytometry, and evaluation of the usefulness and reliability of the rapid indirect tests available in Brazil.

Results: Patients with RT-qPCR+ had detectable IgM by ELISA since the first week of follow-up, which remained detectable for up to eight weeks. The IgG antibody showed high titers from the second week after the onset of symptoms and remained detectable for six months. By separately evaluating the antibody chronology among RT-qPCR+ patients by age, gender, presence or absence of neoplasia, and clinical severity of the disease, similar antibody profiles were observed between these groups, with no statistically significant difference. The soluble systemic biomarkers evaluated showed a decrease during the six months after hospitalization, except for CCL11, CXCL8, CCL3, CCL4, CCL5, IL-6, IFN-g, IL-17, IL-5, FGF-basic, PDGF, VEGF, G-CSF and GM-CSF. After performing the ECO COVID nAb test, a significant number of patients had neutralizing antibodies to the Wuhan reference strain and to the Alpha, Gamma and Beta variants.

Conclusion: In view of the results of this study, the immune response during COVID-19 is still controversial and may be closely related to the severity of the disease, existing comorbidities, and other specific clinical characteristics of each patient.

Keywords: SARS-CoV-2, Covid-19, immune response