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Serology characteristics of SARS-CoV-2 infection after exposure and post-symptom onset

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Antibody responses were induced after SARS-CoV-2 infection, and the complementary diagnostic value of the antibody test to the RNA test was observed. Antibody tests are critical to the clinical management and control of SARS-CoV-2 infection and COVID-19. https://bit.ly/3fQZwZp

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ABSTRACT

Background: Timely diagnosis of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection is a prerequisite for treatment and prevention. The serology characteristics and complement diagnosis value of the antibody test to RNA test need to be demonstrated.

Method: Serial sera of 80 patients with PCR-confirmed coronavirus disease 2019 (COVID-19) were collected at the First Affiliated Hospital of Zhejiang University, Hangzhou, China. Total antibody (Ab), IgM and IgG antibodies against SARS-CoV-2 were detected, and the antibody dynamics during the infection were described.

Results: The seroconversion rates for Ab, IgM and IgG were 98.8%, 93.8% and 93.8%, respectively. The first detectible serology marker was Ab, followed by IgM and IgG, with a median seroconversion time of 15, 18 and 20 days post exposure (d.p.e.) or 9, 10 and 12 days post onset (d.p.o.), respectively. The antibody levels increased rapidly beginning at 6 d.p.o. and were accompanied by a decline in viral load. For patients in the early stage of illness (0–7 d.p.o), Ab showed the highest sensitivity (64.1%) compared with IgM and IgG (33.3% for both; $p<0.001$). The sensitivities of Ab, IgM and IgG increased to 100%, 96.7% and 93.3%, respectively, 2 weeks

later. When the same antibody type was detected, no significant difference was observed between enzyme-linked immunosorbent assays and other forms of immunoassays.
Conclusions: A typical acute antibody response is induced during SARS-CoV-2 infection. Serology testing provides an important complement to RNA testing in the later stages of illness for pathogenic-specific diagnosis and helpful information to evaluate the adapted immunity status of patients.