

Serology of COVID-19: antibody dynamics and diagnostic utility

Since the beginning of the pandemics, the diagnosis of COVID-19 has relied mainly on the amplification of nucleic acids using RT-PCR testing of naso- and oro-pharynx or more invasive respiratory samples in selected cases. However, the sensitivity of the RT-PCR is limited, and particularly in the early course of the disease. Serology has been foreseen as another help for the diagnostic workup, but its application remained unclear besides for epidemiological purposes.

A study conducted in China has recently described the dynamics and rates of seroconversion in the course of COVID-19. To do so, they analyzed sera from **285 patients who tested positive with the RT-PCR**. Using a magnetic chemiluminescence enzyme immunoassay to detect IgG and IgM, **100% of patients exhibited positive IgG-serology 17 to 19 days after symptom onset**. However, less patients showed evidence of IgM seroconversion with 94.1% of patients between 20 to 22 days after symptom onset. Seroconversion for both IgG and IgM occurred **simultaneously**.

In addition, the authors followed up 63 patients with confirmed COVID-19 until discharge. They collected **samples** at 3-day intervals. Among these, the seroconversion rate was 96.8% (61/63) over the follow-up period. 23 initially seronegative patients had **seroconversion, which occurred at a median time of 13 days after symptom onset** and each time before 20 days.

To investigate the added value of serology in the diagnosis of COVID-19, they tested **52 RT-PCR-negative patients with classical COVID-19 symptoms or radiological findings**. Interestingly in **three cases (5.7%)**, IgG and IgM were both positive and could confirm the diagnosis.

Furthermore, **one hundred and sixty-four close contacts of patients with known COVID-19** were tested with **both PCR and serology**. In sixteen cases, infection could be proven with PCR (three of which, without symptoms). In the remaining 148 patients with no symptom and negative RT-PCRs, **seven (4.3%) had positive virus-specific IgG and/or IgM indicating that serology testing could be also useful in asymptomatic patients**.

Although more data generated using other serology testing methods are needed to confirm the reported findings, serology appears as a very useful and complementary diagnostic tool, particularly after one week of symptom onset.

Based on the publication of Quan-Xin Long et al published in *Nature Medicine* and entitled : ["Antibody responses to SARS-CoV-2 in patients with COVID-19"](#)

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