

Is reinfection possible after recovery from COVID-19?

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To the Editor—Recently, some patients have tested positive for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) using reverse transcription polymerase chain reaction despite earlier recovery from coronavirus disease 2019 (COVID-19). Among 111 recovered patients, 5% in China and 10% in South Korea have tested positive again.^{1,2} Typically, after recovery from a viral infection, the body produces antibodies that can resist reinfection from the same virus.³ There is evidence that COVID-19 reinfection is not possible within 7 to 10 days.⁴ A Chinese study on COVID-19 involving primates showed no viral replication in all primary tissue compartments at 5 days post-reinfection, indicating that the primary infection of SARS-CoV-2 could prevent subsequent infections.⁵

Positive reverse transcription polymerase chain reaction test results from the patients who have recovered from COVID-19 are possibly attributed to:

- (i) The virus persisting within body. Patients with severe acute respiratory syndrome have reported positive results in tests for the virus in faeces 2 months after onset.⁶ Respiratory tract secretion tests have also shown positive results and high concentrations of the virus for 3 weeks after onset.⁷ Virus shedding gradually decreases towards the detection limit around 21 days after onset.⁸
- (ii) Cross-contamination from another betacoronavirus.⁹
- (iii) False positive results.¹⁰
- (iv) Incorrect sample collection methods. The sample may not be collected widely and deeply enough to include the virus, resulting in a negative result.¹¹ Furthermore, the virus binds to the angiotensin-converting enzyme 2 receptor and remains in the throat, but the test includes only the upper respiratory tract where the amount of virus has been reduced.¹² When clinical symptoms are stable, the virus can still spread and infect different organs such as the spleen, hilar lymph nodes, kidneys, liver, and brain; in such cases deep throat saliva test may not be able to detect SARS-CoV-2 infection.¹³

There is currently no supporting evidence for COVID-19 reinfection after recovery. However, it is important to ensure that samples are collected correctly and test procedures are followed properly. In accordance with the advice of the World Health Organization, patients with no clinical symptoms

can be discharged from the hospital if they test negative for SARS-CoV-2 infection at least twice after a 24-hour interval.¹⁴

Author contributions

All authors contributed to the concept of the study, acquisition and analysis of the data, drafting of the manuscript, and critical revision of the manuscript for important intellectual content. All authors had full access to the data, contributed to the study, approved the final version for publication, and take responsibility for its accuracy and integrity.

Conflicts of interest

The authors have no conflicts of interest to disclose.

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