

Covid-19 Re-infection vs Prolonged Viral Shedding

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ABSTRACT

Since December 2019, the COVID-19 pandemic has devastated communities across the world. As the number of patients recovered from COVID-19 continues to rise, the question of acquired immunity versus chances of re-infection becomes critical to understand the future spread of infection. Here, we present a case of a patient previously recovered from COVID-19, develops new symptoms concerning for possible re-infection with positive reverse transcriptase-polymerase chain reaction (RT-PCR) after few months of initial infection.

Introduction

First discovered in Wuhan, China in December 2019, severe acute respiratory syndrome coronavirus 2 (SARS-CoV2) and its associated disease COVID-19 spread across the world at a rapid pace. It was declared a pandemic by WHO by March 2020^{2,3}. The Center of Disease Control (CDC) suggests that patients with mild to moderate illness who are not severely immune compromised, precautions can be discontinued after 10 days of symptom onset and 24 hour of symptom resolution for patients with mild to moderate symptoms. Only for limited number of patients with severe disease, isolation and precautions can be extended up to 20 days after symptom onset⁴. However, recent reports of patient re-testing positive again after well beyond 10-20 days of isolation and precautions period raise the question of re-infection^{5,6}.

Case Report

A 42-year-old female presented with symptoms of generalized achiness and nausea on September 14th, 2020. She progressed to have a low-grade fever, diarrhea, and fatigue. After three days, on September 17th, 2020, she was seen at a local urgent care for persistence of symptoms. A SARS-CoV-2 RNA RT-PCR test was ordered and sample was obtained during the visit. After 4 days of symptom onset, on September 18th, the patient lost sense of taste and smell, experienced coughing and developed sore throat. On September 19th, 5 days after symptom onset, she received

results of a positive PCR test. Sore throat, cough, loss of sense of taste and smell, and fatigue continued throughout the duration of the 10-day quarantine. She regained taste and smell by 14 days of first symptom onset.

After 13 days of first symptom onset, on September 27th, 2020, patient had another nasal SARS-CoV-2 RNA, RT-PCR test that was reported negative. On October 23rd, 2020, patient had a procedure at local hospital after 39 days of first COVID-19 symptoms onset, patient underwent another Aptima Sars-CoV-2 assay (PCR) pre-procedure that was also reported negative.

After 61 days of first symptom onset, on November 14th, 2020, the patient presented with symptoms of achiness and fatigue like her first experience, but milder than before. On November 16th, she experienced a sore throat which progressed to swollen cervical lymph nodes. On November 18th, she was tested using the TaqPath RT-PCR COVID-19 Combo Kit at the local urgent care. The PCR test results were reported as positive on November 19th. Symptoms continued with fatigue, a sore throat and swollen lymph nodes which were painful during swallowing for 7 days. She did not develop loss of taste and smell at this time. By day 9, she was asymptomatic. No additional symptoms were experienced. She remained quarantined until November 25th, 10 days after the onset of latest symptoms.

Discussion

We present a case of possible COVID-19 re-infection after complete symptomatic resolution and laboratory evidence of RT-PCR COVID-19 negative, although alternative possibilities do exist. Positive RT-PCR testing for COVID-19 has been described after recovery^{6,7,8}. Most common explanation besides inaccuracy of testing could be persistent shedding of virus or true re-infection.

Genetic material of viruses can persist in the host even after clearance of live virus and resolution of the disease process^{9,10}, thus detection of genetic material by RT-PCR does not necessarily mean re-infection. Current literature suggests that patient suffering from COVID-19 can have a positive RT-PCR test due to prolonged viral shedding even after complete symptomatic recovery^{7,8,10}. Li J. et al, reported a positive RT-PCR test positive in a patient with severe COVID-19 after 36 days of symptom resolution and 60 days after symptom onset. Although the presence of antibodies to SARS-CoV-2 in serum significantly reduced risk of re-infection, protection is less robust in patients aged 65 and above^{14,15,16}.

Our patient had milder COVID-19 disease, possibly had prolonged viral shedding for over 2 months resulting in a positive RT-PCR test.

Another interesting finding in our patient is the presence of tender cervical lymphadenopathy. Although the CDC does not list lymphadenopathy as common signs and symptoms of COVID-19¹¹, there are reported cases of lymphadenopathy in severe COVID-19 disease^{12,13}.

Conclusion

Here, we present a case of a positive RT-PCR test due to prolonged viral shedding after 2 months of initial SARS-CoV2 infection. Another possibility is symptomatic COVID-19 re-infection although development of lymphadenopathy is not common in COVID 19.

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