



# COVID Re-Infection or Something Else? A Case Report

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PUBLISHED ABSTRACT

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## ABSTRACT

**Introduction:** Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has infected over 100 million people so far globally with few cases of reinfection reported [1, 2]. Most people with coronavirus disease 2019 (COVID-19) develop antibodies after resolution of acute infection, however the exact duration of these antibodies and the extent to which it may indicate a protective immunity to SARS-CoV-2 in humans is unknown [2, 3]. We report an unusual case of probable asymptomatic reinfection with SARS-CoV-2 while still having antibodies present.

**Case Presentation:** A 39-year-old healthy female healthcare professional in New York City had severe myalgia, generalized body weakness, cough, and subjective fever (maximum axillary temperature 99.8F) in March of 2020. The patient was not tested for COVID-19 initially because there was no documentation of fever  $\geq 100F$  and restriction of testing due to limited availability. Conservative management with analgesics and hydration was done and symptoms subsided after 7 days. One week later (April 2020), multiple family members became sick with COVID-like symptoms and tested positive to SARS-CoV-2 by polymerase chain reaction (PCR). Patient was then screened with SARS-CoV-2 RT-PCR (Roche Cobas 6800) due to close household contact and was positive. Routine COVID-19 antibody testing (Roche Cobas Elecsys) offered to hospital staff on a voluntary basis a month later and again 4 months later (September 2020) during annual employee health screening were both positive. In January 2021, the patient was tested due to mandatory return-to-work screening after out-of-state travel and was found to be positive by both PCR and antibody (**Table 1**). At that time, patient was completely asymptomatic but was required to quarantine. Six days later, she repeated both tests in an urgent care facility at which time SARS-CoV-2 RNA PCR (Roche Cobas) was negative while the IgG antibodies (Abbott Alinity i) remained positive. A respiratory viral panel for SARS-CoV-2 RNA PCR and influenza A and B (Roche Cobas) done three weeks later as part of the prerequisites for clinical rotation in a different hospital was also negative.

**Conclusion:** The asymptomatic index case had antibodies at the time she re-tested positive to SARS-CoV-2 10 months after first testing positive. This may be a case of re-infection in which the presence of antibodies kept the patient symptom-free. Less likely, she may have been carrying viral particles in her nose for 10 months as there

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was no documented negative test in the interim. There are no published reports of such prolonged carriage of virus [4]. Furthermore, prolonged detection of viral particles does not translate to infectivity [4, 5]. The repeat positive test could also have been a false positive. Polymerase chain reaction cycle thresholds may prove helpful to clinicians to determine the significance of a positive PCR test.

DATE	REASON FOR SARS-CoV-2 TESTING	SARS-CoV-2 TESTING DONE
March 18, 2020	Severe myalgia, generalized body weakness, cough, and subjective fever.	Testing not done because patient did not meet testing criteria at that time (fever <100F).
April 3, 2020	Multiple symptomatic family members tested positive for COVID-19.	SARS-CoV-2 RNA RT-PCR <sup>a</sup> positive.
May 26, 2020	Voluntary SARS-CoV-2 antibody screening offered to hospital staff.	SARS-CoV-2 IgG <sup>b</sup> positive.
September 11, 2020	Annual employee health screening.	SARS-CoV-2 IgG <sup>b</sup> positive.
January 7, 2021	Mandatory return-to-work COVID testing after a week-long vacation out-of-state.	SARS-CoV-2 RNA RT-PCR <sup>a</sup> positive. SARS-CoV-2 IgG <sup>b</sup> positive.
January 13, 2021	COVID PCR and antibody testing done in an Urgent Care.	SARS-CoV-2 RNA RT-PCR <sup>a</sup> negative. SARS-CoV-2 IgG <sup>c</sup> positive.
February 9, 2021	Mandatory COVID screening for clinical rotation in another hospital.	SARS-CoV-2 RNA and Influenza A and B Qual NAAT <sup>d</sup> negative.

**Table 1** Timeline for SARS-CoV-2 testing.

Legend: a. COBAS-6800 (Roche); b. Cobas Elecsys (Roche); c. Alinity i (Abbott); d. Cobas (Roche).

## COMPETING INTERESTS

The authors have no competing interests to declare.

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