

Long-term Positivity to SARS-CoV-2: A Clinical Case of COVID-19 with Persistent Evidence of Infection

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ABSTRACT

In December 2019, an outbreak of a new coronavirus (SARS-CoV-2) was reported in Hubei province in China. The disease has since spread worldwide and the World Health Organization declared it a pandemic on 11 March 2020. We describe the case of a 65-year-old woman who clinically recovered from COVID-19 but showed persistent infection with SARS-CoV-2 for 51 days.

LEARNING POINTS

- A case of persistent infection with SARS-CoV-2 is described.
- Some tests may pick up viral RNA fragments, giving a false positive result.
- The quarantining of infected patients to limit possible SARS-CoV-2 spread is important.

KEYWORDS

SARS-CoV-2, COVID-19, persistent infection

INTRODUCTION

In December 2019, an outbreak of a new coronavirus (SARS-CoV-2) was reported in Hubei province in China. The disease reached Europe in February 2020, with the first cases seen in Italy. A pandemic was declared by the World Health Organization on 11 March. Chinese studies have shown that the median duration of viral shedding is approximately 2–3 weeks from illness onset, with rare instances of infection lasting more than 40 days^[1–3]. We present a case of long-term infection with SARS-CoV-2.

CASE DESCRIPTION

A 65-year-old woman was admitted to the Internal Medicine Department of Chieti Hospital on 17 March 2020 with a 7-day history of both fever and cough. The patient's medical history included arterial hypertension and hypothyroidism. She underwent a chest x-ray, ultrasound of the thorax according to indications in the literature^[4], and a CT scan of the thorax with evidence of interstitial pneumonia and respiratory

failure. Arterial blood gas (ABG) analysis showed mild hypoxemic hypocapnic respiratory failure, which was treated with 1 l/min of oxygen via a nasal cannula. The laboratory investigations demonstrated lymphocytopenia, and elevated C-reactive protein (245 mg/l) and lactate dehydrogenase (280 U/l). These findings suggested COVID-19.

A nasopharyngeal swab for SARS-CoV-2 taken at admission was positive, so darunavir/cobicistat 800/150 mg once a day plus hydroxychloroquine 200 mg twice a day were initiated. The patient rapidly improved and after 5 days was afebrile. At the end of March, 2 weeks after admission, she was completely asymptomatic, and laboratory tests showed no lymphocytopenia and a large reduction in C-reactive protein from 245 to 7.6 mg/l. The respiratory failure had also resolved and radiology showed improvement with a reduction in signs of bilateral pneumonia. However, a nasopharyngeal swab was still positive for SARS-CoV-2 on 31 March.

Although the patient had clinically recovered and had been transferred from our acute department to a unit for clinically stable patients, the nasopharyngeal swabs for SARS-CoV-2 continued to be positive until the end of April (swabs taken in mid-April, 22 April and 30 April), an interval of around 51 days from the onset of symptoms on 10 March. This is the longest duration of positivity described in a European patient in the current literature.

DISCUSSION

In contrast to the 15–20 days usually described as the average duration of mild COVID-19 disease, in this case we demonstrated SARS-CoV-2 positivity which lasted for over 50 days even though the patient was clinically well 2 weeks after the onset of symptoms.

Some authors^[5] have raised the possibility of re-infection with SARS-CoV-2. We have previously documented co-infection with other viruses^[6], but it seems unlikely that our patient could have been re-infected as she was always in isolation in our hospital with staff wearing personal protective equipment. Other authors have suggested testing faeces for the virus^[7], but we did not do this as our patient did not have diarrhoea or other gastrointestinal symptoms.

The probability of false positive tests in our hospital is very low because the laboratory uses a very sensitive multiple test SARS-CoV-2 assay (Gene Orf1ab, N protein, S protein) and we also performed sequential tests at short intervals to confirm the test results. Some tests may pick up viral RNA fragments which are non-infective, but at the moment we cannot state that our patient was not contagious based only on clinical data and thus we must consider she was still infectious until two negative swabs were obtained.

CONCLUSIONS

This case may help us to better understand COVID-19 and the time required between clinical and microbiological healing, especially from an epidemiological perspective, and the necessity of quarantine to limit possible SARS-CoV-2 spread, particularly in the case of long-term positivity.

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