

Coronavirus disease 2019 re-infection: first report from Turkey

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Abstract

There are concerns about the possibility of SARS-CoV-2 reinfection and recently, a patient with SARS-CoV-2 re-infection (or COVID-19) confirmed by epidemiological, clinical, serological and genomic analyses have been published. We have noticed another patient with SARS-CoV-2 re-infection based on clinical and laboratory studies: A 23-year-old woman presented to her hospital with fever (39°C), chills, fatigue, cough, headache, sore throat, muscle and joint pain on April 9, 2020. On examination, oropharynx was mildly hyperemic, and chest auscultation was normal. SARS-CoV-2 PCR from nasopharyngeal specimen was ordered. She was given isotonic saline and acetaminophen and prescribed azithromycin and acetaminophen and sent home for isolation. SARS-CoV-2 PCR was reported positive and she was given hydroxychloroquine for five days. She improved in 10 days and PCR studies on April 22, and April 27 remained negative. On 4 August 2020, she was re-admitted with fever (38.7°C), chills, fatigue, loss of appetite, taste and smell loss, muscle and joint pain. On examination, oropharynx and chest auscultation were normal. SARS-CoV-2 PCR was reported positive and she was prescribed hydroxychloroquine, acetaminophen and sent home for isolation again. She improved in one week (taste-smell loss improved in 10 days) and on follow-up visit after 14 days, she was doing well. PCR was negative on 17 August 2020. Her anti-SARS-CoV-2 antibodies were negative on 17 August 2020 and slightly positive (2.14 signal-to-cutoff) on 29 August 2020. Previous report from To et al. [Clin Infect Dis. 2020;ciaa1275. doi:10.1093/cid/ciaa1275] showed that viral genomes from first and second episodes belonged to different clades/lineages. They described second episode of asymptomatic infection occurred 142 day after the first symptomatic one. Our patient is the first report, describing two symptomatic episodes 116 days apart. We conclude that as the patients recovered from COVID-19 increases, increased awareness may delineate the characteristics of re-infection.

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To the Editor,

We have read the review by Osman et al. [1] concluding that re-positive quantitative RT-PCR assays for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) after previous negative results might be attributed to false-negative laboratory results and prolonged viral shedding. However, there are still concerns about the possibility of SARS-CoV-2 re-infection and recently, a patient with SARS-CoV-2 re-infection confirmed by epidemiological, clinical, serological and genomic analyses has been published [1].

Very recently, we have noticed another patient with SARS-CoV-2 re-infection based on clinical and laboratory studies.

A 23-year-old woman presented to her hospital with fever, chills, fatigue, cough, headache, sore throat and muscle and joint pain on 9 April 2020. She was working in this hospital as a registrar. She had no underlying disorders and had smoked half a pack of cigarettes per day for 8 years. On examination, she had fever (39°C), here oropharynx was mildly hyperaemic and chest auscultation was normal.

Laboratory studies showed that haemoglobin was 12.8 g/dL; white cells were $8.8 \times 10^9/L$; neutrophils were $6.3 \times 10^9/L$; lymphocytes were $1.9 \times 10^9/L$ and C-reactive protein concentration was normal. A chest CT remained negative.

SARS-CoV-2 PCR from a nasopharyngeal specimen was ordered. She was given isotonic saline and acetaminophen; she was then prescribed azithromycin and acetaminophen and sent home for isolation. SARS-CoV-2 PCR (with a Ct value of 38) was reported positive and she was given hydroxychloroquine, 200 mg bid for 5 days. She improved in 10 days and PCR studies on 22 April and 27 April remained negative. She did not work for 2 months; and began to work in July 2020.

On 4 August 2020, she was re-admitted with fever, chills, fatigue, loss of appetite, taste and smell loss, muscle and joint

	April			May			June			July			August		
Clinical disease															
SARS-CoV-2 PCR															
SARS-CoV-2 Antibodies															

FIG. 1. Timeline of the re-infected patient. Each box shows a week of the given month. Red boxes show periods of illness. SARS-CoV-2, severe acute respiratory syndrome coronavirus 2; PCR, polymerase chain reaction.

pain. On examination, she had fever (38.7°C), oropharynx and chest auscultation were normal. Laboratory studies showed haemoglobin 14.6 g/dL; white cells were $6.7 \times 10^9/L$; neutrophils were $3.6 \times 10^9/L$; lymphocytes were $2.4 \times 10^9/L$ and C-reactive protein concentration was normal. SARS-CoV-2 PCR (with a Ct value of 38) was reported positive and she was prescribed hydroxychloroquine, acetaminophen and sent home for isolation again. She improved in 1 week (taste/smell loss improved in 10 days) and on a follow-up visit after 14 days, she was doing well. PCR was negative on 17 August 2020. Her anti-SARS-CoV-2 antibodies (IgM + IgG; Roche, Basel, Switzerland) were negative on 17 August 2020 and slightly positive (2.14 signal-to-cutoff) on 29 August 2020 (Fig. 1).

Early laboratory and clinical studies are reassuring against the possibility of re-infection: monkeys re-challenged with the same SARS-CoV-2 strain after recovery from initial infection demonstrate no evidence of recurrent disease [2]. Among the patients who were re-tested as PCR positive after clinical recovery from coronavirus disease 2019 (COVID-19), there were no cases in which complete virus could be isolated in cell culture, suggesting against these patients having been actively infected [3]. To et al. [4] showed that viral genomes from the first and second episodes belonged to different clades/lineages. They described a second episode of asymptomatic infection that occurred 142 day after the first symptomatic episode. Ours is the first report describing two symptomatic episodes 116 days apart.

The drawback of the current report is that there is no genomic analysis; it is not known whether the two episodes were caused by the same clade/lineage. We conclude that as more patients recover from COVID-19, increased awareness may delineate the characteristics of re-infection.

Conflict of interest

The authors declare that they have no conflict of interest.

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