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A case of COVID-19 with long duration of viral shedding



Dear Editor,

Coronavirus disease-19 (COVID-19), caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has become a major threat to global health.^{1–3} The median range of viral shedding has been reported to be 11–20 days, with 49 days being the longest viral shedding period ever reported.^{2,4} In this report, however, we describe a special case of COVID-19 in which, despite the presence of SARS-CoV-2 antibodies, SARS-CoV-2 RNA has so far persisted in throat/nasal swab for over 72 days after disease onset.

On January 29, 2020, a 59-year-old woman with a history of hypertension and diabetes was diagnosed of COVID-19 by a COVID-19 special temporary hospital in Wuhan. She

manifested intermittent fever and dry cough. Her highest body temperature was 38.0 °C. Lung CT showed scattered ground glass-like opacities in bilateral lungs on day 2 and 10. Her temperature dropped to normal levels within 2 days and her coughing disappeared within 5 days.

SARS-CoV 2 RNA tested positive on a throat swab sample by real-time reverse-transcription PCR (RT-PCR) on day 12 from disease onset (February 9, 2020). Even though the patient has been symptom free since the first week of her first hospital stay, she has been isolated continuously in home, hotel or hospitals, and has been treated with antibiotics and traditional Chinese medicine (TCM) due to intermittent positive SARS-CoV-2 RNA test results. In fact, she tested positive for SARS-CoV-2 RNA on specimens collected from

Table 1 Clinical course, laboratory findings, and treatment of the case of COVID-19.

Day after disease onset	1-	6-	11-	16-	21-	26-	31-	36-	41-	46-	51-	56-	61-	66-	71-
Home/Hotel ^a	Home	Hot-1							Hot-2						
Hospital ^b				Hos-1		Hos-2						Hos-3			
Fever (>37.3°C)	■														
Cough	■														
SARS-CoV-2 IgM (AU/ml)									65.33						
SARS-CoV-2 IgG (AU/ml)									207.84						
SARS-CoV-2 RNA ^c			■		■ ■	■ ■	■ ■	■ ■			■ ■		■ ■ ■ ■	■ ■ ■ ■	
Leukocyte count (Per μL)			7140					9100						Normal	
Lymphocyte count (Per μL)			1710					3050						Normal	
CT (Lung)	++		++					+						±	
Treatment ^d				Antibiotics			TCM-1		TCM-2				TCM-3		

Note: ^a, Hot-1,2 is for different hotels; ^b, Hos-1,2,3 is for different hospitals; ^c, Red is positive and green is negative; ^d, TCM-1,2,3 is for different traditional Chinese medicine.

<https://doi.org/10.1016/j.jmii.2020.05.008>

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throat or nasal swabs on days 12, 23, 31, 53, 64, 66, and 72 but negative on days 21, 29, 35, 37, 50, 61, 68, 70 (Table 1). Notably, SARS-CoV-2 IgM and IgG antibody showed positive (65.33 and 207.84 AU/ml, respectively, <10 AU/ml indicate negative) on 38 days from disease onset (March 6, 2020).

Follow-up lung CT scans showed that, on day 31 after onset, the patchy infiltration of both lungs was significantly reduced, and almost disappeared on day 54 (only 1.8% of the lung tissues were involved). During the course of the disease, the patient's blood routines, liver and kidney functions were normal, blood pressure remained stable and the blood glucose slightly increased temporarily.

The case we are reporting suggests that SARS-CoV-2 virus can coexist with patients for a long time, and chronic infection can not be ruled out. Given that SARS-CoV-2 is very contagious, if the SARS-CoV-2 infection can last for several months or even become chronic in the patient's body, it would be extremely difficult to quarantine the patient for a long period of time, which would be disastrous for the global control of SARS-CoV-2 infection. Therefore, for discharged COVID-19 patients, continuous detection of SARS-CoV-2 RNA is required.

It is widely accepted that high affinity IgG response is important for long term immunity and immunological memory. In the patient, IgM and IgG antibody against SARS-CoV-2 were positive on 38 days from disease onset, unfortunately the patient was subsequently detected to carry the virus.

Funding

This study was funded by the Natural Science Foundation of Anhui Province (Grant no. 1608085MH162).

Declaration of Competing Interest

The authors have no conflict of interest to be declared.

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16 April 2020

Available online 23 May 2020