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LETTERS

63 days detection of SARS-CoV-2 RNA from a recovered patient in Southern Italy: A Case Report

63 giorni di positività al SARS-CoV-2 RNA nel Sud Italia: un case report

Dear Editor,

SARS-CoV-2 shedding time represents a big Pubic Health concern, in particular with regards to home isolation and efficient swab tests scheduling.

In mild cases, the virus has been identified in respiratory tract specimens for up to 8 days after the onset of symptoms, while in more severe cases it has been identified for longer periods, peaking in the second week after infection (1, 2).

A retrospective cohort study conducted in Wuhan, China, reported for survivors a median duration of viral shedding of 20.0 days (IQR 17.0–24.0) from illness onset; the shortest observed duration of viral shedding was 8 days, whereas the longest was 37 days (3).

We report a case of a 43-year-old man from Apulia (Southern Italy) who presented a very long SARS-CoV-2 RNA detection time, i.e. 63 days.

From 19 to 24 February 2020 the man stayed in the Province of Lodi (Northern Italy) in Codogno and other municipalities affected by the first Italian clusters of COVID-19. On 24 February, he returned to Apulia by plane.

On 25 February he developed fever, mild sore throat, hacking cough, headache, fatigue, general discomfort and anosmia. Given the travel history and the symptomatology suggestive of COVID-19, he was admitted to the Infectious Disease Ward of the Local Hospital. At the same time, the Local Prevention Department was informed in order to adopt Public Health measures, such as risk assessment, strict isolation and contact tracing.

The real-time PCR on the combined oro-nasopharyngeal swab collected on 26 February revealed the presence of SARS-CoV-2. The virus was detected by a real-time PCR assay targeting E-gene, RdRP-gene and N-gene, performed with the protocol reported by the WHO (https://www.who.int/docs/default-source/coronaviruse/uscdcrt-pcr-panel-for-detection-instructions.pdf?sfvrsn=3aa07934_2).

Fever (up to 38.5°) was responsive to paracetamol and persisted for two days. He reported also nausea and vomiting on the first days. Sore throat, cough, headache, fatigue and general discomfort all resolved within 7-10 days. Anosmia persisted for more than two months.

Three combined oro-nasopharyngeal swab tests, performed on 4, 9 and 12 March (Table 1), detected SARS-CoV-2 RNA as well. Given the absence of symptoms, on 12 March he was discharged and subjected to fiduciary home isolation with active surveillance. Other combined oro-nasopharyngeal swab tests were collected after discharge during the home isolation (Table 1). All swab tests detected SARS-CoV-2 RNA until 8 May. On 11 May, the second swab test was negative for SARS-CoV-2 RNA. The patient resulted completely recovered from COVID-19 (two consecutive negative SARS-CoV-2 RNA tests and resolution of symptoms) on 11 May, after 76 days from symptoms onset.

In addition, serological assays (Anti SARS-CoV-2 ELISA IgG Test, Euroimmun, Lubeck, Germany) performed on 9 April, 28 April and 8 May (i.e. respectively 44, 63 and 73 days from symptoms onset) revealed a very weak immune response (ratio ≤ 1.5).

The patient had no history of any chronic or immune-system pathologies (e.g. neoplasia, HIV infection, immunodeficiency, auto-immune disease). He only reported seasonal allergic rhinitis. HIV test was negative. No antiviral drugs or whatsoever therapy or treatment were administered during the hospitalization. Clinical parameters resulted absolutely normal.

The complete timeline of patient's oro-nasopharyngeal swab tests for SARS-CoV-2 is reported in table 1.

Table 1 - Timeline of oro-nasopharyngeal swab tests for SARS-CoV-2.

Date	Days from			Swab test	Lab.s
	First exposure	Last exposure	Symptoms onset	SARS-CoV-2 RNA detection	
26/02/2020	7	2	1	Yes	1
04/03/2020	14	9	8	Yes	1
09/03/2020	19	14	13	Yes	1
12/03/2020	22	17	16	Yes	1
27/03/2020	37	32	31	Yes	2
07/04/2020	48	43	42	Yes	2
09/04/2020	50	45	44	Yes	1
28/04/2020	69	64	63	Yes	1
08/05/2020	79	74	73	No	1
11/05/2020	82	77	76	No	1

Exposure: area with documented local transmission of SARS-CoV-2 (Northern Italy).
Laboratories: 1. Molecular Epidemiology and Public Health Laboratory – U.O.C. Igiene (Policlinico di Bari); 2. Microbiology Laboratory, ASL Taranto.

The main peculiarity of this case is the extremely long SARS-CoV-2 RNA detection time in a subject without immunological deficit nor any other chronic condition: 63 days from symptoms onset, much longer than reported in the literature (1-5).

Prolonged SARS-CoV-2 RNA detection has been reported from nasopharyngeal swabs up to 37 days after onset of symptoms (3), as described in the Latest (8 April) ECDC Guidance for discharge and ending isolation in the context of widespread community transmission of COVID-19.

Viral shedding and viral load evaluation may have a central role in understanding the part played by convalescent patients in SARS-CoV-2 transmission as well as in carrying out more efficient Public Health measures, such as swab tests scheduling. Nevertheless, the presence of nucleic acid alone cannot be used to define infection potential (6-7).

Furthermore, the patient's serological test showed a very weak antibody-mediated immune response to SARS-CoV-2, in contrast with current evidence, since several studies reported that IgM and IgG antibodies develop within 19 days from symptoms onset. Nevertheless, neither correlates of protection for COVID-19 have yet been established nor the detection of antibodies seems to indicate a protective immunity, especially without a neutralization assay as detection method (8-12).

In conclusion, we presented the case of a man infected by SARS-Cov-2 with a very long course of SARS-CoV-2 RNA detection and with a very weak immune response. Moreover, the absence of any chronic condition or whatsoever administered therapy or treatment give us the picture of a

perfectly natural evolution of the disease. The evidence of long-time SARS-CoV-2 RNA detection suggests the need for further Public Health measures, for instance long-term follow up of COVID-19 recovered subjects, in order to limit the potential viral spread in the population.

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