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Reinfection of SARS-CoV-2 in a health care worker: A case report

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Abstract

Coronavirus-specific antibodies decline fast and allow reinfection starting 6 months post infection. Knowledge on reinfection is very important for SARS-CoV-2. Here we report a reinfection with SARS-CoV-2 of a 23 years old female health care worker 177 days after the onset of the first episode. The second episode was clinically more severe as the first episode. Our data show that reinfection with SARS-CoV-2 can occur with increased clinical impact in immunocompetent, young individuals after less than half a year.

Keywords: Reinfection; SARS-CoV-2; Health care worker; Epidemiology.

Introduction

As approval of SARS-CoV-2 specific vaccines is going on, knowledge on reinfection is important. So far, only few reports on patients with SARS-CoV-2 reinfection have been published [1-3]. Here we report the first case of reinfection with SARS-CoV-2 in a Health Care Worker (HCW) in Germany with no underlying comorbidities.

Case presentation

On April 6th 2020 a 23 year old nurse developed fever headache and limb pain. Two days later a nasopharyngeal swab drawn from her at the Aachen University Hospital occupational healthcare center was tested negative for SARS-CoV-2-RNA by PCR (Real Star SARS-CoV-2 RT PCR Kit, Altona, Germany). On April 11th the HCW additionally suffered of sore throat, rhinitis, dry cough and fatigue while fever had ceased in the meantime. The PCR was repeated on April 13th with a positive result (Ct 31,7). The symptoms vanished until April 23rd, hospitalization was not required. After 14 days of quarantine the PCR was repeated twice with negative result. On May 13th, 37 days after onset of symptoms, her serum was tested for SARS-CoV-2 specific IgG antibodies using the Anti SARS-CoV-2 ELISA (IgG) (Euroimmun, Germany), the Liaison SARS-CoV-2 S1/S2 IgG assay (DiaSorin, Italy), and the recomWell SARS-CoV-2 IgG ELISA (Mikrogen, Germany) with a negative result in each of the tests.

On September 30th the HCW developed fever, cough, sore throat, and headache. The course of symptoms was more severe compared to the episode in April. She visited the occupational healthcare center on October 6th. A nasopharyngeal swab drawn from her was tested positive for SARS-CoV-2 RNA by PCR (Ct 21.0). Hospitalization was not required. A follow-up PCR on October 21st was negative, a serum sample was positive

for SARS-CoV-2 specific IgG antibodies (18.0 AU with the Liaison SARS-CoV-2 S1/S2 IgG assay and 51.7 AU with the recom Well SARS-CoV-2 IgG ELISA). On October 22nd the HCW was free of symptoms.

Discussion

Reinfections are common in seasonal corona viruses [4]. This suggests that antibodies may decline fast and allow reinfection. A patient from Hongkong was asymptomatic during the second episode hinting at a sufficient immunological memory [1]. In our case, the HCW did not develop antibodies following the first episode more than four weeks after infection. The second episode was more severe than the first episode. This indicates that SARS-CoV-2 infections may not be accompanied by a proper immunological response in all cases and may not initiate a sufficient immunological memory. The HCW did develop antibodies after the second episode. Development of a proper immunological response may be dependent on the length and the intensity of exposure of the immune system to viral antigen. This should be taken into account for vaccination strategies.

The viral strain of the HCW's first episode was not available for sequencing anymore. Thus, reoccurance of persisting virus cannot be excluded although absence of virus was shown twice. Viral shedding has been shown up to 60 days after onset of symptoms [3]. However, the HCW did present with new symptoms 177 days after the onset of the first episode. Thus, viral persistence appears unlikely.

References

1. To KK, Hung IF, Ip JD, et al. COVID-19 re-infection by a phylogenetically distinct SARS coronavirus-2 strain confirmed by whole genome sequencing. Clin Infect Dis. 2020.

2. Mulder M, van der Vegt DSJM, Oude Munnink BB et al. Reinfection of SARS-CoV-2 in an immunocompromised patient: a case report. Clin Infect Dis. 2020.

3. Duggan NM, Ludy SM, Shannon BC et al. Is novel coronavirus 2019 reinfection possible? Interpreting dynamic SARS-CoV-2 test results. Am J Emerg Med. 2020; 39: 256e1-256e3

4. Edridge AWD, Kaczorowska JM, Hoste ACR, et al. Coronavirus protective immunity is short-lasting. Nat Med 2020; 26: 1691-1693.