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LETTER TO THE EDITOR

WILEY

Response to: COVID-19 re-infection. Vaccinated individuals as a potential source of transmission

To the Editor:

Vaccination against SARS-CoV-2 has shown to offer effective protection against Coronavirus disease (COVID-19) in persons 16 years of age or older in different trials,[1,2] but its role against SARS-CoV-2 infection, determining subsequent positivity to real-time polymerase chain reaction (PCR) swab test is still unknown. Indeed, though being one of the greatest achievements reached by the scientific community in the last century, these trials did not address whether vaccinations succeeded to prevent asymptomatic infections. Only recently, plaque reduction neutralization testing was used to demonstrate that the BNT162b2 vaccine was capable to neutralize new highly transmissible SARS-CoV-2 variants with mutations in the S gene, detected in the United Kingdom (B.1.1.7 lineage), South Africa (B.1.351 lineage) and Brazil (P.1 lineage).[3] Nevertheless, knowing if vaccination may as well prevent SARS-CoV-2 spreading is of the outmost importance especially among healthcare workers (HCWs), who are known to be at high risk of transmitting the viral disease in the hospital setting.[4] Cases of SARS-CoV-2 re-infections have been poorly described,[5] but cases of swab test positivity after the vaccination have been often reported by mass media nowadays, along with concerns that vaccinated individuals could still transmit SARS-CoV-2 after COVID-19 vaccination.[6] Nevertheless, to date, no report that would at least *sound* scientific is currently available. Hereby, we briefly report the first real-world case of positive PCR test in a HCW after full dose vaccination-induced immunity.

A 50-years old male, working at our institution, underwent the two COVID-19 vaccine doses (Pfizer-BioNTech) on 7th January, 2021 and 28th January, 2021. Thirty days later, his wife developed SARS-CoV-2 infection. Despite being asymptomatic, the HCW underwent a COVID-19 Antigen Rapid Test, and subsequently to a swab real-time PCR test, that both resulted positive (B.1.1.7 variant—the 'so-called' UK variant). SARS-CoV-2 IgG anti S1/S2 test performed the same day resulted significantly positive (115 UA/mL; reference range: >14.9 UA/mL). He was then quarantined and got back to work only after a real-time PCR test that resulted negative 15 days after. During all these days, the HCW remained completely asymptomatic.

Whether or not vaccinated HCWs might be at risk of infect naïve patients is crucial, especially when not developing symptoms that may anticipate COVID-19, therefore reducing the possibility to diagnose COVID-19 quickly. In this regard, it should be underlined that COVID-19 vaccines are designed to elicit an IgG response, preventing the developing of COVID-19 but, nevertheless, only a limited protection against viral replication within the airways—and subsequent infection spreading—is likely to be provided from these vaccines, as this would require a local mucosal secretory IgA response.[6] Indeed, a mucosal vaccination route is necessary in order to prevent viral replication within mucosal cells and subsequent adequate local production of secretory IgA,[6] as shown for anti-polio vaccination.[7] Indeed, detectable viral RNA in the nasal swabs of several nonhuman primates after SARS-CoV-2 challenge in the Moderna mRNA-1273 vaccine models,[8] thereby speculating that COVID-19 vaccinated individuals may spread SARS-CoV-2, as this case suggests. This case confirms the importance of early identification of asymptomatic carriers even in vaccinated individuals who might spread the infection, thereby causing in-hospital outbreaks with severe consequences on individuals and public health.

CONFLICT OF INTEREST

The authors have no conflicts of interest to declare.

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