

Reinfection in A Healthcare Worker with SARS-Cov 2 in a Hospital in North India

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Sir,

The world is gripped with the worst pandemic known to mankind in modern times and despite control measures, it continues to spread worldwide.

Here, we report a case of reinfection after a gap of 97 days in our hospital. A 26-year-old male was working as a health care worker (HCW) in the COVID Intensive Care Unit. After completing his posting of 14 days (active quarantine), he tested positive with SARS CoV-2 by Real-time PCR (RT-PCR) assay on 03/05/20 during routine testing which is done to all the HCW at the end of the active quarantine period as per the hospital policy. He was asymptomatic and his investigations were in the normal range. The patient was hospitalized in the isolation ward on 04/05/20. He received treatment with tab hydroxychloroquine (400 mg BD on the first day followed by 200 mg BD for the next 6 days), tab oseltamivir 150 mg BD for 7 days, tab montair LC OD (for 10 days), tab Zantac 150 mg OD (for 10 days), Vitamin B complex, Vitamin C and Zinc. The patient had an uneventful course in the hospital. The two nasopharyngeal swabs (NPS) collected on 10/05/20 & 13/05/20 were both negative for SARS CoV 2 infection. He was discharged on 14/05/20 and was encouraged to follow home quarantine for the next 14 days.

He re-joined the duties on 30/05/20 and was posted in the NON-COVID zone of the hospital. After a gap of 38 days, he was posted in COVID ICU on 7/08/20 as the HCW. On completion of his posting and 14 days active quarantine, he was sampled for SARS-CoV 2 by NPS swab assay by RT-PCR on 21/08/20. The test results came out to be positive again (COVID LAB). This time also, the patient was asymptomatic. He was admitted to the isolation ward and received the same treatment. The patient never required oxygen supplementation.

Preliminary evidence suggests that antibody responses occur in those who have been infected with SARS CoV-2 infection [1]. Second infection in these patients suggest that sufficient antibody was not generated at the time of the first infection or if they developed, they may have not lasted long enough to prevent re-infection. Reinfection can also happen if there is a very short-lived antibody response without any cellular immunity. Although, in our case, it cannot be confirmed as the antibody titre of the patient during the first episode was not done due to the non-availability of the test.

Ye *et al.* reported a 9% proportion of reactivation in COVID-19 patients after discharge from the hospital. The key risk factors for reactivation involve 3 categories: (1) host status, (2) virologic factors, and type and degree of immunosuppression. Host factors include sex, older age, and severity of the disease. The virologic factors associated with an increased risk of reactivation include high baseline SARS-CoV-2 load and variable genotype. Steroids used as immunosuppressive agents may result in broad immune dysfunctions and potential SARS-CoV-2 reactivation [2].

In our study, the patient was a young male, asymptomatic, and did not require immunosuppressive therapy. The viral genome was not studied as it was not available in our institution. However, our patient received antiviral therapy (Oseltamivir). It has been suggested that SARS-CoV-2 reactivation may occur whenever the antiviral therapy was used [2].

The reinfection of a healthy individual in a short span of fewer than 100 days has several implications in terms of herd immunity, vaccination schedules, and antibody titres in the convalescent serum and prevalence of infection in population. We also need to study the life span of antibodies.

Conclusion

In conclusion, this case highlights the importance of vaccination in individuals with the previous infection. People with the previous infection cannot be complacent in following social distancing and wearing of masks.

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