

Case Report

Repeat infection with SARS COV-2, a worrisome situation: report of two cases from India

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ABSTRACT

Number of COVID cases and mortalities are still growing globally. There is no single treatment method found effective in reducing the disease severity. Several vaccines have been developed recently and most of them are under clinical trial only. Availability of an effective vaccine and its use at the community level is the only hope left with us. However, the emergence of re-infective cases from various part of the world has put a big question on the ongoing vaccination research and its use. Most of these re-infection cases reported were not studied for viral genome, different mutated virus causing repeat infection have been isolated in few reports only. In these situations, either a newer vaccine has to be developed every time for a new mutated virus or the multiple doses of the vaccine have to be administered if same strain of the virus is causing the re-infection. We report two cases from India who acquired repeat SARS COV 2 infection, adding up the much-required information in the current scenario.

Keywords: COVID 19, SARS COV-2, Re-infection, COVID vaccine

INTRODUCTION

COVID-19 pandemic has affected more than 200 countries globally and the spread is continuing on the rise. Over 68 million cases have been reported, including 1.55 million deaths and 47 million recoveries worldwide. India is the second worst affected country after U.S. on the tally where over 9.7 million cases have been reported.¹ No single successful treatment method have been developed showing promising results. The availability of an effective vaccine is the only hope left to all the people and health care workers globally to curb off this pandemic. Literature is now evolving on the reports of repeat COVID-19 infection cases. The infection could be due to the same or different viral strain; this emergence of SARS COV 2 re-infections has raised few queries on the ongoing vaccine research and development. We are reporting two distinct cases from

India who had repeated infection with SARS COV 2 virus.

CASE REPORT

Case 1

Our first case is a 24 years old male medical healthcare professional working in a tertiary COVID hospital located in Northern India. He had good health and was not suffering from any chronic illness. In the month of May 2020, he was posted to the COVID ward for duties, where he developed sore throat. He was admitted and his NPS sample was sent for RT-PCR (Dated-30th May 2020) which was found positive. Since the symptoms were mild, no investigations were sent.

The patient became asymptomatic on day 6 of admission; his repeat RT-PCR sample was sent which came out

negative (Dated-10th June 2020) after which the patient was discharged and home quarantined. Serum Anti SARS COV 2 IgG levels were checked after 4 and 8 weeks of the hospitalization and were found undetectable.

From 15th august 2020, he was posted again for the COVID duties in the same hospital. On 28/08/2020, the patient developed fever, myalgia, and mild sore throat. He was admitted, his NPS sample for RT-PCR was sent and was found positive (Dated- 29/08/2020). He had no past history suggestive of immunodeficiency. On examination, the patient was febrile, and there were no other clinical abnormalities detected.

Investigations revealed- Hemoglobin-14.1 gm/dl, TLC-2970 cumm, polymorphs – 42% and lymphocytes- 48%, Platelets- 1.13 lakh, CRP – 3.5 units, LFT, KFT were normal. His chest X-ray was normal (Figure 1). His symptoms were resolved in 5 days and he was sent to home quarantine after obtaining his negative RT-PCR report.

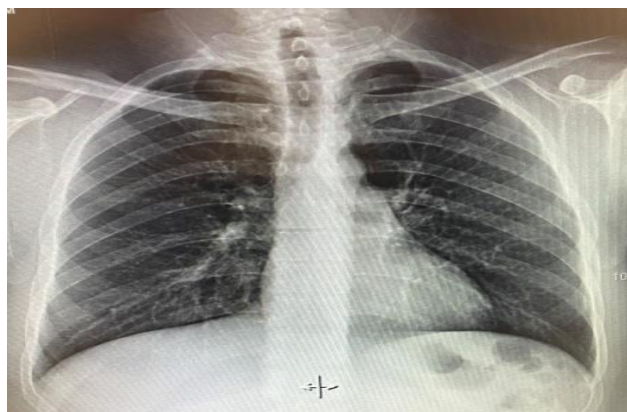


Figure 1: Chest X-ray of case 1.

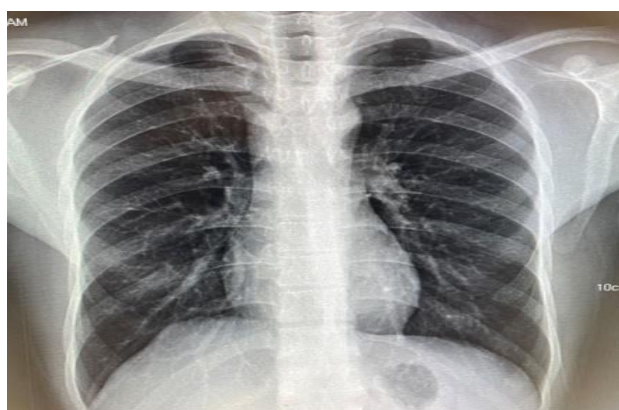


Figure 2: Chest X-ray of case 2.

Case 2

Our second case is a 27 years old male health care professional from the same institute. He was healthy and free from any chronic illness. He was posted at COVID wards in the same hospital for the patient care. After 2

weeks of the duties, he was tested positive for SARS COV 2 using RT-PCR method (Dated-29-05-2020). The patient was asymptomatic, and had no abnormal findings on systemic examination. He was discharged after obtaining his negative report. He was tested for Anti-SARS COV 2 antibodies after 4 and 8 weeks of first infection which were undetectable. He resumed his COVID duties after recovery and after two weeks he was again tested positive (Dated - 5-09-2020). He had no past history suggestive of immunodeficiency. He remained asymptomatic during his stay, the systemic examination was normal, all blood investigations and Chest X ray were normal (Figure 2). Patient has been discharged after obtaining his negative RT PCR report (Dated-16.09.2020)

DISCUSSION

Re-occurrence of COVID-19 in a previously infected and recovered patient is a matter of concern and has to be viewed seriously. Re-manifestation of clinical symptoms as in our first case indicates that either there is a rapid decline in the immune response generated from the previous infection or the virus is undergoing mutations and causing re-infection. Both of these possibilities require consideration by the vaccine researchers and developers. If there is a rapid decline in immune response, multiple vaccine doses have to be given at the frequent intervals and if the mutant is found to be the culprit then the current vaccines will not provide us the expected hope. Identification of viral strain causing this re-infection has to be identified.

In a report by Yuan et al, all the patients who were found re-infected were asymptomatic and had a significant level of protective antibodies.² Repeat testing was done within 2-3 weeks of the first infection in all of the patients. Similarly, in a report by Ye et al from Wuhan, China, five patients were reported to have re-infection. In this report, time period between negativity from 1st infection and re-infection was 4 to 17 days only.³

There is sufficient evidence saying that virus can persist in a patient up to 4 weeks, which could be picked by RT-PCR.⁴ There are reports available describing re-infection with COVID-19, however, none of them could delineate between persistence, re-activation, and repeat exposure.^{2,3,5}

Recently, a case has been reported by To et al, in this report the repeat infection was noted after 142 days of the first infection.⁶ Case was identified to be infected with different viral strain by doing genome analysis. However, the patient was asymptomatic and was detected at the airport security check when returning from the foreign country. Protective immunoglobulin levels were also significant in this patient.

Our first case was symptomatic in both the infective episodes and severity was noted more in repeat infective episode. No sero-conversion was seen after first episode

of the infection. However, our 2nd case was asymptomatic in both the episodes, he could be a viral carrier in second positive report but he was never sero-converted to acquire natural immunity and re infection was detected 96 days later.

We are reporting these two cases from India, describing the incidence of re-infection with SARS COV 2. The duration between the first and re-infection in case 1 was 90 days and in case 2 was 96 days. Persistence of the virus for this long duration in a healthy individual not on immunosuppressive drugs has not been described and indicates that patients were re-infected. Whether the viruses causing re-infection are of same lineage or different, both will have the guiding roles on the ongoing vaccine research.

CONCLUSION

With the emergence of SARS COV 2 re-infective cases, the myth of acquiring immunity post COVID exposure has to be busted and all the precautions have to be followed till the pandemic subsides.

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