

Symptomatic reinfection with COVID-19: A first from Western India

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ABSTRACT

The reinfection of recovered COVID-19 patient is one of the major concerns worldwide. Here we report a case of previously recovered patient from Covid-19 who presented with symptomatic reinfection beyond 3 months. We report a case of 58 year old female patient who after presenting with symptomatic episode of RT-PCR confirmed COVID-19 in April 2020, presented with a new symptomatic infection by SARS-CoV-2 four months later. These 2 episodes of infection were caused by different sources as evident from her epidemiological correlates. This is the first epidemiologically, RAT, RT-PCR and antibody confirmed COVID-19 case of re-infection of SARS CoV-2 reported from Western India.

Keywords: COVID-19, recurrent infection, SARS-SOV-2

Introduction

Just as the elusive “hunt” for herd immunity intensifies for COVID-19 either through vaccination or community infection, the news of reinfection in previously recovered cases remains a fear across the world. It was primarily thought to be a respiratory virus, but it has affected multiple systems.^[1,2] Studies have reported that there is a variation in case fatality rate and recovery rate across the various majorly affected states in India.^[3] As the number of recovered patients from COVID-19 rises, the question of possibility of reinfection is critical in anticipating future community transmission of COVID-19.^[4] Here, we report a case of previously recovered patient from COVID-19 who presented with symptomatic reinfection after 3 months of first episode.

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Case Presentation

A 58-year-old female patient, who was a known case of hypertension and hypothyroidism taking tablet L-thyroxine 50 mcg once a day and tablet metoprolol 25 mg twice a day regularly presented on 17th April 2020 with chief complaints of low-grade intermittent fever, generalized body ache, running nose and soreness of throat for last 3 days. Her reverse transcriptase by polymerase chain reaction (RT-PCR) for COVID-19 was done at Civil hospital, which returned positive. Her husband was also symptomatic for COVID-19 and was also tested positive. Both were admitted in Civil hospital on 19/4/2020. Her chest laboratory parameters including complete blood count and X-ray were normal [Figure 1]. She was treated with azithromycin 500 mg once a day for 3 days along with paracetamol 500 mg thrice daily apart from multivitamins. Patient became asymptomatic after 2 days. Her repeat RT-PCR for COVID-19 was done on 28th and 29th April 2020 which both returned negative after which she was discharged on 29th April 2020. Her husband had COVID-19 pneumonia for which he remained hospitalized in

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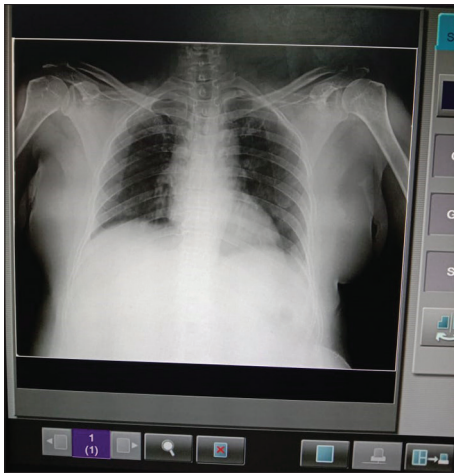


Figure 1: X-ray of patient with SARS-COV-2 recurrent infection

civil hospital for 23 days and was subsequently discharged on her regular medication for hypertension and hypothyroidism at home. She was asymptomatic for almost next 4 months.

On 17th August 2020, she again developed symptoms in form of intermittent 101°F fever, generalized body ache, dry cough, and throat pain. Her rapid antigen test (RAT) returned positive. Her husband was negative on this occasion. Patient needed rehospitalisation on 19th August 2020 where her RT PCR for COVID-19 also returned positive with cycle threshold (CT score) of 18 suggestive of high viral load, thus confirming a case of reinfection with COVID-19. Total antibody and immunoglobulin G antibody test for COVID-19 were negative suggestive of non-existent immunoglobulin memory from previous COVID-19 infection. Her inflammatory profile revealed CRP of 17.8 mg/L and IL-6 of 15.4 pg/ml with otherwise normal X-ray chest (shown below) and other reports. Patient was subsequently discharged after being afebrile for 5 days.

Discussion

The novel coronavirus 2019 named COVID-19 or SARS-COV-2 has infected total of 68,165,877 cases and 1,557,385 deaths worldwide by 12th December 2020 as per WHO COVID-19 dashboard. The reinfection among previously recovered patients with dynamic RT-PCR outcomes in clinically suspected cases may be ascribed to persistence of “dead viral products” putting the probability of true re-infection into doubt. Recurrence is defined as a relapse with the same species and serological strain of virus that was present before the therapy while reinfection connotes a recurrence with a new source of virus often with a new strain. Several lines of evidence have shown that re-infection is associated with the second episode instead of extended viral shedding. Although neutralizing antibodies evolve rapidly after infection,^[5,6,7] recent studies have shown that, as early as 1-2 months after acute infection, antibody titres begins to decrease.^[8,9] Patients who screen negative and get discharged from hospitals can have a recurrence of positive results because of prolonged viral shedding at low levels above

the detection limit of RT-PCR assays.^[6,10] However in this case, we encountered a patient with reinfection from a new contact source which occurred beyond 3 months of the first episode and is the first case of reinfection from the western part of India. Hong Kong reported first case of COVID-19 reinfection in a 33-year-old woman after 4 and a half months.^[11] Two cases were reported each from Belgium and Netherlands having reinfection after 3 months of first infection. In India, two cases have been reported to WHO from Telangana state with reinfection after 2 months. The confirmation of re-infection has several important implications. Firstly, it is unlikely that herd immunity will eliminate SARS-CoV-2, though it may possibly make subsequent infections milder than the first infection. Secondly, the possibility of COVID-19 reinfection points to a possibility that COVID-19 may become endemic to certain pockets with seasonal outbreaks as in case with other human coronaviruses. Thirdly, vaccines may not be able to provide lifelong protection against COVID-19 and even if we do develop a vaccine, need for booster dosing might be needed for a sustainable immunoprotection. Fourthly, vaccine studies may have to recruit such patients who have recovered from a previous COVID-19.^[11] Furthermore, studies have also reported that there is increasing development of cardiac complication due to COVID-19 pandemic-induced stress in acute phase.^[12] Study also reported dermatological manifestation in previously recovered COVID-19 patient.^[13] Primary care physician need to be aware of recurrence and reinfection in patients who had previous COVID-19 infection. Thus, family physicians have an important role in triaging not only asymptomatic vs symptomatic patients but also stay cautious for a suspected recurrence in a previously recovered patient from COVID-19.

Conclusion

RAT, RT-PCR, and antibody testing over a period of 4 months for COVID-19 confirmed the first reported case of re-infection of SARS CoV-2 in Western India. This case of reinfection suggests that the herd immunity from community transmission may be an elusive strategy and vaccine development needs to reorient towards possible waning immunity from single infection.

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Nil.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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