

Coronavirus Disease 2019 and re-infection with different symptoms: A case report

Running title: COVID-19 and re-infection

**Hiva Alipanah¹, Ali Ganbari Asad², Yaser Mansoori³, Jalal Karimi⁴,
Atefeh Taheri⁵, Zahra Pourmontaseri^{4*}**

¹- Department of Physiology, Faculty of Medicine, Fasa University of Medical Science, Fasa, Iran

²- Department of Medical Biotechnology, Faculty of Medicine, Fasa University of Medical Science, Fasa, Iran

³- Department of Medical Genetics, Faculty of Medicine, Fasa University of Medical Science, Fasa, Iran

⁴- Department of Infection Disease, Faculty of Medicine, Fasa University of Medical Science, Fasa, Iran

⁵- Medical Biochemistry, Faculty of Medicine, Fasa University of Medical Science, Fasa, Iran

(*Corresponding author)

Zahra Pourmontaseri, Department of Infection Disease, Faculty of Medicine, Fasa University of Medical Science, Fasa, Iran, Tel: +98-9177090601, E-mail: montaserizahra90@gmail.com

Abstract

Novel coronavirus disease (COVID-19) become one of the most important global health issues. With increasing the number of COVID-19 patients, the possibility of occurring re-infection in recovered patients is arising. There is still not proven that the recuperated COVID-19 patients are immunized against the SARS-CoV-2. Herein, we reported a case of COVID-19 who was previously infected with the gastrointestinal form of the disease. The patient was infected again after 97 days of the initial GI symptoms of the disease or 82 days of the post negative test. RT-PCR was also positive in the virus detection. This is the first report of COVID-19 patient with the longest period of time of re-infection which has been reported yet.

Keywords: SARS-CoV-2, COVID-19, re-infection, symptoms

Introduction

Coronavirus disease 19 (COVID-19) is clinically characterized by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (1). After the first case of COVID-19 identified in December 2019 in Wuhan, China, the number of confirmed cases and deaths rapidly expanded. In addition, recent reports about the recurrence and reactivation of the disease have raised questions (2-9). It is unclear whether the recovered patients may be at risk of reinfection or not. Therefore, acquired immunity in COVID-19 patients is an important subject in today's medical community. Herein, we presented a case of COVID-19 re-infection.

Case presentation

A 39-year-old man referred to the Emergency Department of Vali-e-Asr Hospital of Fasa (Iran) with symptoms of fever, diarrhea, body aches, contusions, insomnia, and headaches on 7 April 2020. Physical examination revealed normal vital signs and oxygen saturation. A chest X-ray revealed as normal (Figure 1). He had no previous history of cardiovascular disease, hypertension, and diabete. He was initially diagnosed as a COVID-19 patient by using reverse transcription polymerase chain reaction (RT-PCR) assay performed on nasopharyngeal swab specimen. He was then treated with hydroxychloroquine, and recommended to be quarantined at home for at least 14 days due to his relative good condition. He was then checked up after 15 days in which whole symptoms were improved. In addition, the RT-PCR was shown negative for the SARS-CoV-2 on 22 April.

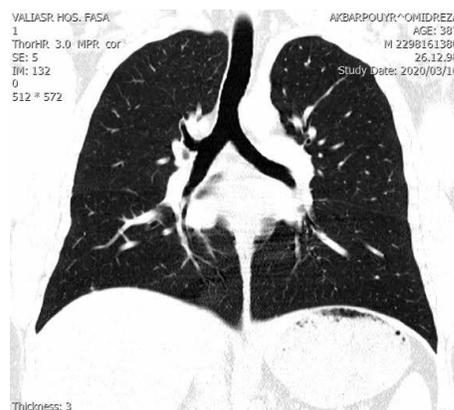


Figure 1: Normal chest X-ray of the patient in the first time of the COVID-19 infection

Ninety-seven days after the first presentation of the disease, on July 13, he re-presented new symptoms of the disease including cough, dyspnea, severe body pain, chest pain, high fever, chills, insomnia, and dizziness. Chest computed tomography (CT) scans showed bilateral lung involvements (Figure 2). Multiple patchy air space consolidating and ground glass opacities were seen in left and right lungs. Additionally, the RT-PCR assay was also reported positive performed on nasopharyngeal sample.

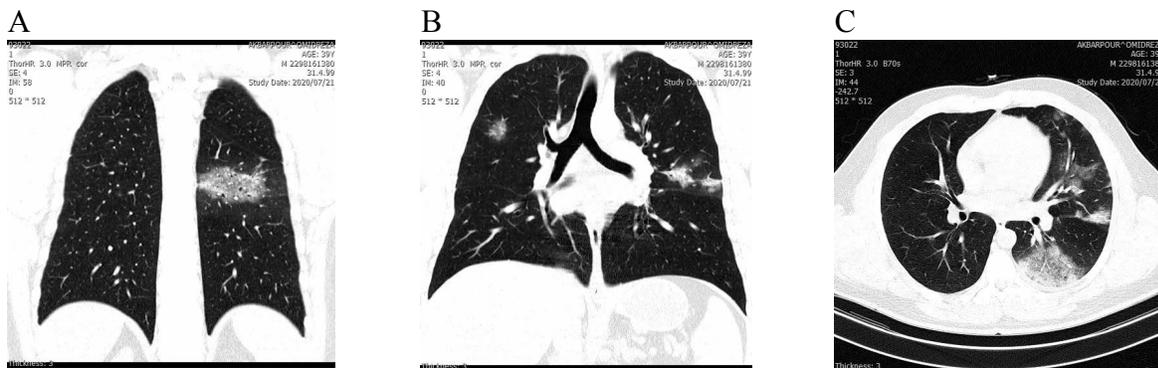


Figure 2: Multiple patchy air space consolidating and ground glass opacities are shown in chest X-ray of the patient in the second time of the COVID-19 infection on July 13.

On July 31, the patient's symptoms returned to normal, but the chest CT remained to lung involvement. Multiple air space consolidation were shown in both lungs with peripheral and distal peribronchovascular distribution (more prominent in left side).

Discussion

Some previous studies claimed that animal models such as rhesus macaque could result in immunity to the SARS-CoV-2 after primary infection with the virus (10). However, the concerns about the risk of re-infection of Covid-19 is still challenging. Here we recognized a re-infected COVID-19 case after three months of the recovery of the primary COVID-19 infection. As yet, the re-infection of Covid-19 has not been definitively confirmed. Nevertheless, in numerous recent reports, SARS-CoV-2 RNA was detected repeatedly from throat or

nasopharyngeal swabs after subsiding the symptoms or achieving negative test results (7, 11, 12). For example in some cases, asymptomatic COVID-19 patients showed positive reports using RT-PCR after 5, 13- and 15-days of the post negative tests (7, 13). In one patient, a 71-year-old woman revealed the re-infection after 36 days of the recovery based on RT-PCR test (14). In our study, the patient revealed clinical manifestation along with nasopharyngeal RT-PCR positive.

Conclusion

This is the first report of COVID-19 patient with the longest period of time of re-infection which has been reported until now. This case disclosed that the recovered COVID-19 patients may not be immunized enough against the re-infection. This occurrence should be seriously considered for scientists trying to discover its vaccine. Further, this virus may be latent in infected cells and be recurrent, which needs more investigation.

Funding

None.

Declaration of interest

None reported

References

1. Violi F, Pastori D, Cangemi R, Pignatelli P, Loffredo L. Hypercoagulation and antithrombotic treatment in coronavirus 2019: a new challenge. *Thrombosis and haemostasis*. 2020;120(6):949.
2. Ye G, Pan Z, Pan Y, Deng Q, Chen L, Li J, et al. Clinical characteristics of severe acute respiratory syndrome coronavirus 2 reactivation. *Journal of Infection*. 2020.
3. Ravioli S, Ochsner H, Lindner G. Reactivation of COVID-19 pneumonia: A report of two cases. *The Journal of Infection*. 2020.
4. Zhou L, Liu K, Liu H. Cause analysis and treatment strategies of "recurrence" with novel coronavirus pneumonia (covid-19) patients after discharge from hospital. *Zhonghua jie he he hu xi za zhi= Zhonghua jiehe he huxi zazhi= Chinese journal of tuberculosis and respiratory diseases*. 2020;43:E028-E.

5. Lafaie L, Célarier T, Goethals L, Pozzetto B, Grange S, Ojardias E, et al. Recurrence or Relapse of COVID-19 in Older Patients: A Description of Three Cases. *Journal of the American Geriatrics Society*. 2020.
6. Hoang VT, Dao TL, Gautret P. Recurrence of positive SARS-CoV-2 in patients recovered from COVID-19. *Journal of Medical Virology*. 2020.
7. Duggan NM, Ludy SM, Shannon BC, Reisner AT, Wilcox SR. A case report of possible novel coronavirus 2019 reinfection. *The American Journal of Emergency Medicine*. 2020.
8. Parry J. Covid-19: Hong Kong scientists report first confirmed case of reinfection. *British Medical Journal Publishing Group*; 2020.
9. Loconsole D, Passerini F, Palmieri VO, Centrone F, Sallustio A, Pugliese S, et al. Recurrence of COVID-19 after recovery: a case report from Italy. *Infection*. 2020;1-3.
10. Bao L, Deng W, Gao H, Xiao C, Liu J, Xue J, et al. Reinfection could not occur in SARS-CoV-2 infected rhesus macaques. *BioRxiv*. 2020.
11. Xing Y, Mo P, Xiao Y, Zhao O, Zhang Y, Wang F. Post-discharge surveillance and positive virus detection in two medical staff recovered from coronavirus disease 2019 (COVID-19), China, January to February 2020. *Eurosurveillance*. 2020;25(10):2000191.
12. Xiao AT, Tong YX, Zhang S. False-negative of RT-PCR and prolonged nucleic acid conversion in COVID-19: rather than recurrence. *Journal of medical virology*. 2020.
13. Lan L, Xu D, Ye G, Xia C, Wang S, Li Y, et al. Positive RT-PCR test results in patients recovered from COVID-19. *Jama*. 2020;323(15):1502-3.
14. Li J, Zhang L, Liu B, Song D. Case Report: Viral Shedding for 60 Days in a Woman with COVID-19. *The American Journal of Tropical Medicine and Hygiene*. 2020;102(6):1210-3.

Figure Legends

Figure 1: Normal chest X-ray of the patient in the first time of the COVID-19 infection

Figure 2: Multiple patchy air space consolidating and ground glass opacities are shown in the chest X-ray of the patient in the second time of the COVID-19 infection on July 13.