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INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI: 10.21474/IJAR01/15876

DOI URL: <http://dx.doi.org/10.21474/IJAR01/15876>



RESEARCH ARTICLE

CASE REPORT: POSSIBLE COVID-19 REINFECTION IN RIYADH, SAUDI ARABIA

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Manuscript Info

Manuscript History

Received: 15 October 2022

Final Accepted: 18 November 2022

Published: December 2022

Key words:-

COVID-19, Infectious Diseases,
Respiratory Diseases, Preventive
Medicine, Genomics

Abstract

Coronavirus disease 2019 (COVID-19) is a clinical syndrome that results from an infection with a recently discovered strain of coronavirus. Majority of the patients suffering from COVID-19 experience clinically mild to moderate symptoms and do not require specialized clinical care. There are individuals that are asymptomatic and do not present with the clinical signs and symptoms that are characteristic of COVID-19. However, the elderly and individuals with comorbid pathological conditions such as cardiovascular diseases are at a high risk of developing a severe form of COVID-19. Currently, there is no treatment or prevention approach that has been licensed for use by the drug regulatory authorities in the care and management of persons suffering from COVID-19. Nonetheless, there are numerous ongoing clinical trials attempting to find a vaccine or cure for the disease. Since December 2019, COVID-19 has caused significant mortality and morbidity all around the world and the disease has largely disrupted the functioning of global communities. As the number of individuals who have recovered from COVID-19 continues to increase, many countries have started to re-open schools, mosques, and other public places. Medical researchers have therefore focused attention on the likelihood of re-infection with COVID-19 and the importance of acquired immunity in fighting the virus. The case report describes a 29-year-old male patient who after one month of recovery tested positive for COVID-19 infection for a second time. Extended viral shedding, dynamic polymerase chain reaction (PCR) results, and reinfection are some of the common reasons for a post-recovery positive test for COVID-19.

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Introduction:-

COVID-19 is a respiratory illness that is caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and has great potential for fatality¹. In January 2020, the World Health Organization (WHO) declared the COVID-19 outbreak to be of significant global concern and a public health emergency. Due to the unavailability of clinically effective treatment and prevention modalities for COVID-19, non-pharmacologic approaches such as personal hygiene are the first-line options for controlling the spread of the disease¹. Development of community herd

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immunity could be a potential defense mechanism against the virus, but it is still not clear whether recovery from COVID-19 confers an individual with post-infection immunity. According to WHO some patients may still test positive for SARS-CoV-2 for several weeks after the resolution of the clinical symptoms of the disease². Despite the positive result, the patients have significantly low infectivity and are not likely to transmit the virus to other individuals. The WHO indicates that significant amounts of antibodies against SARS-CoV-2 have been identified in persons who have recovered from the viral infection³. However, some people have very low levels of the antibodies suggesting that in addition to humoral immunity, cell-mediated immune responses also play a role in fighting the viral infection. Recent studies suggest that even though antibodies do not decrease the risk of SARS-CoV-2 reinfection, they markedly reduce the severity of a subsequent infection⁵.

Case Report

The patient is a 29-year-old male, and he has a medical history of herpes simplex virus infection and leukopenia. He presented to a private healthcare facility in June 2020 with complaints of severe headache, dizziness, and loss of sense of smell. Due to the anosmia, a PCR test was carried out in the hospital, and was positive for SARS-CoV-2. The patient was then admitted to a government quarantine facility. He was hemodynamically stable and was given paracetamol twice daily and Ribavirin 400mg every 12 hours beside complementary and alternative medicines such as honey. A second PCR test was conducted 3 days after admission into the quarantine center and the results obtained showed that the patient still had SARS-CoV-2 infection. He was then discharged 10 days after the second test according to the ministry of health protocols that consider a patient to be fully recovered in 10 days after the first positive test. A third PCR test was carried out in a government healthcare center and was negative for SARS-CoV-2 infection. In July 2020, about 30 days after the initial discharge, the patient presented to the emergency department with complaints of shifting chest pain and a sore throat. The patient was afebrile, and a chest x-ray was normal. However, a PCR test was conducted and a positive result for SAR-CoV-2 was confirmed. The patient was given over the counter drugs and complementary and alternative medication for symptomatic management of the infection.

Individuals who have fully recovered from SARS-CoV-19 infections should closely monitor their health status and look out for possible post-recovery complications of COVID-19⁴. It is not clear how long it takes for the complete resolution of long-term complications associated with COVID-19 infection. However, a study conducted on individuals who had recovered from severe acute respiratory syndrome suggests that peripheral pulmonary lesions persist for longer than one year after the resolution of clinical symptoms⁶. Computed tomography (CT) scans, smell identification tests, magnetic resonance imaging, and slit-lamp diagnosis are some of the assessments that are used in the clinical evaluation of persons who have recovered from SARS-CoV-2 infection. CT scans are conducted to ascertain the presence and extent of pulmonary inflammation⁶. A slit-lamp diagnosis test is used to identify conjunctivitis and other symptoms of ocular complications that are associated with SARS-CoV-2 infection. Anosmia is a common symptom of COVID-19, and a smell identification test is essential in the evaluation of possible viral neurological invasion. Analysis of the levels of hepatic enzymes provides important information on the extent of liver injury following COVID-19 full recovery. Determination of troponin levels is useful in predicting the likelihood of myocardial infarction, while elevated creatinine in blood specimens suggests possible acute renal impairment.

Discussion:-

The case report describes a 29-year-old patient who was discharged from a quarantine center after he had fully recovered from a SARS-CoV-2 infection. However, the patient tested positive a month later and was admitted back to the hospital. Even though there is a possibility of COVID-19 reinfection, in this case, other plausible alternate explanations also exist. Dynamic PCR results that change from positive to negative have been evident in some patients². Inaccurate testing techniques and extended shedding of the virus are some of the reasons for post-recovery positive PCR results. According to a recent study, the sensitivity of PCR machines can be as low as 66 % and, therefore, there is a possibility for obtaining either false-positive or false-negative results². However, it is unlikely that the patient obtained a false-positive result since he had signs and symptoms that are consistent with COVID-19 such as chest pain and sore throat. A positive post-recovery test does not necessarily confirm the presence of an active infection because the viral genetic material can persist for many days after the resolution of the clinical

symptoms². The recurrence of signs and symptoms of COVID-19 after a patient has fully recovered can be attributed to inflammatory immune responses, reinfection, or viral relapse⁵. Additionally, immunosuppressive diseases and drugs might impair the rate of viral load clearance and increase the risk of SARS-CoV-2 reactivation. According to the case report, the patient has leukopenia and herpes simplex, which are both immunosuppressive pathologic conditions that could increase the risk of reinfection in the patient. Individuals who have a post-recovery positive test for SARS-CoV-2 generally have mild or no symptoms of COVID-19⁵. It is important that healthcare professionals distinguish COVID-19 recurrence from secondary complications associated with the disease such as superinfections and pulmonary thromboembolism.

Conclusion:-

Clinical follow-up for individuals who have recovered from SARS-CoV-2 infection should be carried out, including viral nucleic acid assays and frequent monitoring of signs and symptoms of COVID-19 infection. A home-based patient-care program should be instituted to assist persons who have recovered from SARS-CoV-2 infection to improve their physical activity and nutrition.

Healthcare workers are required to be aware of the likelihood of SARS-CoV-2 reinfection, and clinicians should be knowledgeable on how to distinguish between reinfection and symptoms of COVID-19 post-recovery complications.

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