Case Report

SARS-CoV-2 immunity in a renal transplant patient after vaccination

Abstract

Beginning in December of 2019, the Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was first reported in Wuhan, China and rapid spread from person to person thought multiple different countries.[1] The widespread use of a vaccine is a key component of control of the pandemic with global distribution starting on smaller population and moving to global scale.[2] Presented here is an interesting case of a renal transplant patient who developed SARS-CoV-2 IgG antibodies thirteen days after his first dose of the vaccine, antibodies which protected him during a SARS-CoV-2 exposure.

Keywords: coronavirus, pandemics, immunity/immunization, vaccination

Volume 9 Issue 1 - 2021

Christina Le DO,[1] James Kang MD,[1] Eric Sin MD[2]

[1]Department of medicine, Stony Brook Southampton Hospital, USA

[2]Division of infectious diseases, Stony Brook Southampton Hospital, USA

Correspondence: Eric Sin, Division of infectious diseases, Southampton Hospital, 240 Meeting House Lane, Southampton, NY, 11968, United States,
Email eric.sin@stonybrookmedicine.edu

Received: January 13, 2021 | **Published:** January 26, 2021

Introduction

Beginning in December of 2019, the Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was first reported in Wuhan, China and rapid spread from person to person thought multiple different countries1. The widespread use of a vaccine is a key component of control of the pandemic with global distribution starting on smaller population and moving to global scale.[2] In the United States there are presently two mRNA vaccine available.[3–5] During the initial roll out of vaccines, the supply of vaccines is unlikely to be able to meet demand and those who work in health care settings as well as those in high risk groups will be among the first to receive the vaccine.[3] High risk groups include those with multiple medical comorbidities and those on immunosuppression.[6] Renal transplant patients are at increased risk severe disease from SARS-CoV-2 infection.[6,7] Presented here is an interesting case of a renal transplant patient who developed SARS-CoV-2 IgG antibodies thirteen days after his first dose of the vaccine, antibodies which protected him during a SARS-CoV-2 exposure.

Case

In the winter of 2021, 51 year-old man's father-in-law recently died due to complications of SARS-CoV-2. He was now taking care of his mother-in-law who had been quarantined at home with mild symptoms of SARS-CoV-2 infection. One week after the death of the man's father-in-law, the man developed a low grade fevers. Concerned due to his SARS-CoV-2 exposures, he came to the emergency room. His medical history was significant for a right side renal transplant in 1983 for which he was taking prednisone 5mg daily and cyclosporine 75mg twice a day. Other medical issues included two myocardial infarctions and hypertension. Thirteen days prior to his presentation he received the first of two doses of a SARS-CoV-2 RNA vaccine (mRNA-1273 from Moderna). In the emergency room, his temperature was 100.6F and he was saturating 91% on room air. Chest X-ray was suggestive of a right lower lobe atelectasis. Labs were notable for a white blood cell count of 12.1 10(9)/L, Creatinine of 2.08mg/dL, procalcitonin of 0.52ng/mL, ferritin of 169.5ng/mL and a D-Dimer of 497ng/mL. Blood, urine and sputum cultures were drawn and were ultimately negative. His initial SARS-CoV-2 Reverse Transcriptase Polymerase chain reaction (BioFire FilmArray) was negative. Antibody test (Abbott SARS COV2 COVID19 IGG/IGM Antibody) was ordered, his IgG was positive and his IgM was negative. He was kept was observation and given an empiric regimen of doxycycline 100mg twice a day and cefepime 2g daily. A second SARS-CoV-2 RT PCR (GeneXpert System Cepheid) preformed and resulted negative. He was discharged on a one week regimen of doxycycline 100mg twice a day and amoxicillin- clavulanic acid 875mg-125mg twice a day.

Discussion

An effective vaccine is needed to control the SARS-CoV-2 pandemic.[8] The mRNA vaccine developed by Moderna found an efficacy of 94.1% in phase III clinical trials which consists of two 100 microgram doses one month apart.[9,10] The primary end point of the clinical trials was the prevention of symptomatic disease.[10] This is a case of a renal transplanted man who developed IgG antibodies thirteen days after a single dose of the vaccine. After and exposure to multiple SARS-CoV-2 infected individuals he tested negative twice on SARS-CoV-2 RT PCR implying that the antibody response that he generated has protected him from SARS-CoV-2 infection.

Acknowledgments

None.

Funding source

None.

Conflicts of interest

None.

References

1. Khan M, Adil SF, Alkhathlan HZ, et al. COVID-19: A Global Challenge with Old History, Epidemiology and Progress So Far. *Molecules*. 2020;26(1):E39.
2. Tregoning JS, Brown ES, Cheeseman HM, et al. Vaccines for COVID-19. *Clin Exp Immunol*. 2020;202(2):162–192.
3. Dooling K, McClung N, Chamberland M, et al. The Advisory Committee on Immunization Practices' Interim Recommendation for Allocating Initial Supplies of COVID-19 Vaccine - United States, 2020. *MMWR Morb Mortal Wkly Rep*. 2020;69(49):1857–1859.

4. Oliver S, Gargano J, Marin M, et al. The Advisory Committee on Immunization Practices' Interim Recommendation for Use of Moderna COVID-19 Vaccine — United States, December 2020. *MMWR Morb Mortal Wkly Rep*. 2021;69:1653–1656.

5. Oliver S, Gargano J, Marin M, et al. The Advisory Committee on Immunization Practices' Interim Recommendation for Use of Pfizer-BioNTech COVID-19 Vaccine — United States, December 2020. *MMWR Morb Mortal Wkly Rep*. 2020;69:1922–1924.

6. Cravedi P, Mothi SS, Azzi Y, et al. COVID-19 and kidney transplantation: Results from the TANGO International Transplant Consortium. *Am J Transplant*. 2020;20(11):3140–3148.

7. Johnson KM, Belfer JJ, Peterson GR, et al. Managing COVID-19 in Renal Transplant Recipients: A Review of Recent Literature and Case Supporting Corticosteroid-sparing Immunosuppression. *Pharmacotherapy*. 2020;40(6):517–524.

8. Li YD, Chi WY, Su JH, et al. Coronavirus vaccine development: from SARS and MERS to COVID-19. *J Biomed Sci*. 2020 Dec 20;27(1):104.

9. Mahase E. Covid-19: Moderna applies for US and EU approval as vaccine trial reports 94.1% efficacy. *BMJ*. 2020;371:m4709.

10. Mahase Elisabeth. Covid-19: Moderna vaccine is nearly 95% effective, trial involving high risk and elderly people shows. *BMJ*. 2020;371:m4471.

Citation: Christina LDO, Kang JMD, Sin EMD. SARS-CoV-2 immunity in a renal transplant patient after vaccination. *J Bacteriol Mycol Open Access*. 2021;9(1):1–2. DOI: 10.15406/jbmoa.2021.09.00287