

LETTER TO THE EDITOR

Fatal outcome subsequent to reoccurring SARS-CoV2 infection in a kidney transplant recipient

Dear Editor,

Reactivation and reinfection of COVID-19 is a rare and threatening complication with relevance for organ transplantation.¹⁻⁴ We have recently observed a reinfection documented by severe acute respiratory syndrome coronavirus 2 (SARS-Cov2) reverse transcriptase-polymerase chain reaction (RT-PCR) following a previous two negative RT-PCR tests and clinical convalescence in a kidney transplant recipient (KTR) which resulted in mortality (Figure 1).

A 49-year-old gentleman with blood group O was waitlisted for kidney transplantation and received a deceased donor kidney transplant at our center in Ahmedabad, in June, 2020. He was hypertensive but non-obese and non-diabetic. The surgery was uncomplicated, and he received Thymoglobulin (1.5 mg/kg single dose). He had been diagnosed with an acute cellular and antibody-mediated rejection in first month after his transplant for which he had been treated with steroids, thymoglobulin, plasmapheresis, and intravenous immunoglobulin. His baseline serum creatinine was 2 mg/dl post-transplant on prednisolone, mycophenolate, and tacrolimus. On day 70 after his transplant, he was admitted for 7 days with mild COVID-19 (fever and cough), bilateral peripheral ground opacities on chest CT scan and positive SARS-CoV2 RT-PCR. He was discharged with supportive care without complications. He was doing well after discharge. His immunosuppression had been adjusted during his hospital stay and restored to his baseline regime by day 21 day after discharge with two negative RT-PCR tests. After he had been at home for 52 days, he was re-admitted with complaints of fever and cough in absence of any new COVID-19 exposure. At this second admission, he tested again positive for SARS-CoV2 RT-PCR, and his illness progressed from mild to severe COVID-19 in his 10-day hospital course, during which he also developed bacterial/fungal super-infections. Mycophenolate /tacrolimus was stopped and he was treated with oxygen, anticoagulation, convalescent plasma, steroids, and remdesivir. Unfortunately, he deteriorated and died on post-transplant day 147. The major differences in laboratory parameters between the first COVID-19 episode and second COVID-19 episode were his elevated red cells, an augmented neutrophil lymphocyte ratio, lower total leucocyte count, elevated C- reactive protein, lactate dehydrogenase, D-dimers, and procalcitonin. The low (.6%) incidence in our center (1/157) should be cautiously interpreted, as many possible asymptomatic or mild severity reactivations may have been unrecorded. To the best of our knowledge, we report the first case of fatal outcome subsequent to reoccurring

SARS-CoV2 infection in KTR. It could have been strengthened by addition of virologic and sequencing data but not possible due to resource limitations in India.

However, the sensitivity and specificity of RT-PCR being used in India is unaffected by variants.⁵ We should rule out prolonged viral shedding, type of specimen collection, sampling errors, method used before discharging patients, and infection by mutated SARS-CoV-2 in positive PCR retests before considering reinfection/reactivation. Further research from different transplant centers in the world will further provide evidence to understand true burden of reactivation and reinfection in the KTR setting and the clinical spectrum and outcome.

AUTHORSHIP STATEMENT

All authors contributed equally to the conception or design of the work; the acquisition, analysis, interpretation of data, drafting the work or revising it critically for important intellectual content, final approval of the version to be published and agreement to be accountable for all aspects of the work

ACKNOWLEDGEMENTS

The authors are appreciative of the support and advice that they have received from Professor Stefan G. Tullius in the preparation of this letter. The authors declare no funding was received for this work.

CONFLICTS OF INTEREST

The authors of this manuscript have no conflicts of interest to disclose

DATA AVAILABILITY STATEMENT

Data will be available from the corresponding author on request.

Vivek B. Kute¹ 

Hari Shankar Meshram¹ 

Himanshu V. Patel¹

Divyesh Engineer¹

Sanshriti Chauhan¹

Subho Banerjee¹

Vijay V. Navadiya¹

Sudeep Desai¹

Ansy H. Patel²

Sandeep Deshumkh¹

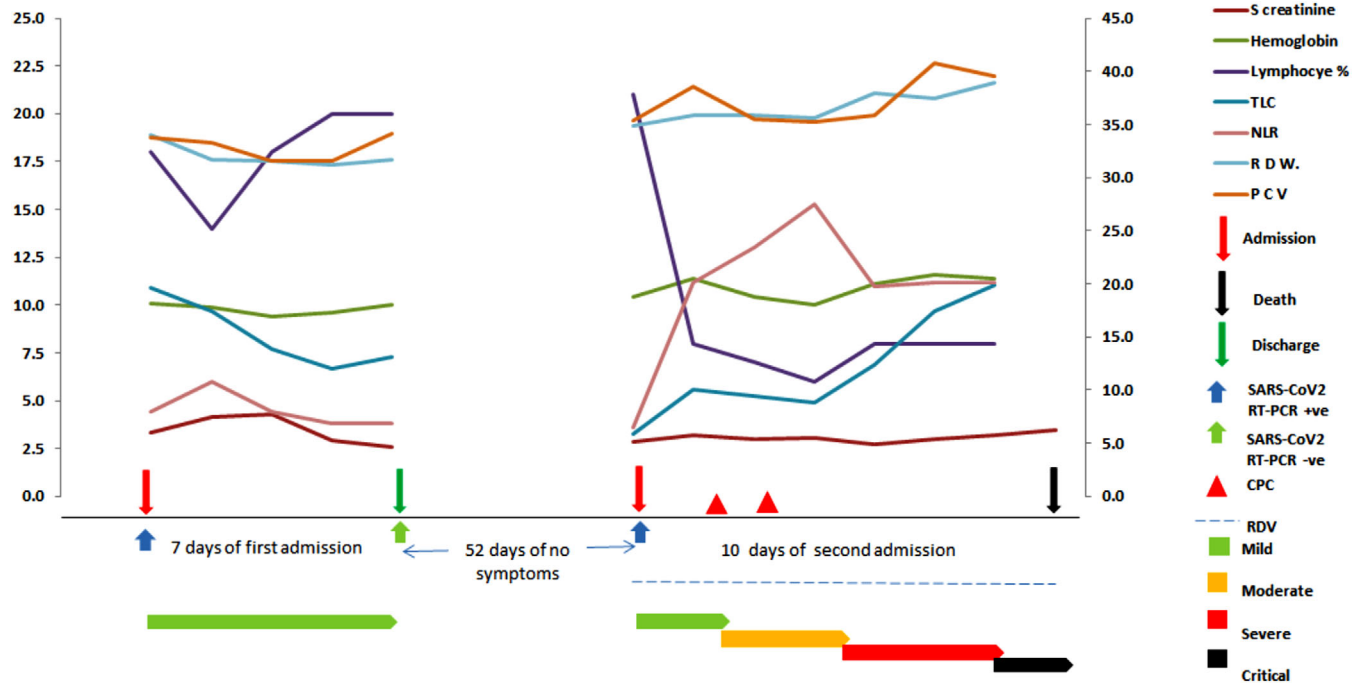


FIGURE 1 Timeline and brief summary of the case. Abbreviations: PCV (normal range: 42–52%): packed cell volume; RDW(Cutoff > 15.5% for COVID-19): red cell distribution width; TLC(normal range: $4-11 \times 10^3 \text{ mm}^3$): total leukocyte counts; NLR(Cutoff > 6 for COVID-19): neutrophil lymphocyte ratio; RDV: remdesivir; CPC: COVID-19 convalescent plasma; SARS-Cov2 RT-PCR: severe acute respiratory syndrome coronavirus 2 reverse transcriptase polymerase test from nasopharyngeal swab; COVID-19 severity described as mild, moderate, severe, and critical as per WHO definition

Ruchir Dave¹
 Vineet V. Mishra³

¹ Department of Nephrology and Transplantation Sciences, Institute of Kidney Diseases and Research Center, Dr HL Trivedi Institute of Transplantation Sciences (IKDRC-ITS), Ahmedabad, India
² BJ Medical College, Ahmedabad, India
³ IKDRC-ITS, Ahmedabad, India

Correspondence

Hari Shankar Meshram, DM Nephrology, Nephrology and Transplantation Institute of Kidney Diseases and Research Center and Dr. H L Trivedi Institute of Transplantation Sciences, (IKDRC-ITS), Ahmedabad, India.
 Email: drhsnephrology@gmail.com

REFERENCES

- Tomkins-Tinch CH, Daly JS, Gladden-Young A, et al. SARS-CoV-2 reinfection in a liver transplant recipient. *Ann Intern Med*. 2021:L21-0108. Epub ahead of print. PMID: 33872044; PMCID: PMC8059415.
- Montasser IF, Dabbous HM, Salah M, et al. Repeated COVID-19 infection in recipients of post-living donor liver transplantation: two real-life cases. *J Liver Transplant*. 2021;1:100002.
- SeyedAlinaghi S, Oliaei S, Kianzad S. Reinfection risk of novel coronavirus (COVID-19): a systematic review of current evidence. *World J Virol*. 2020;9(5):79-90.
- Chen Z, Xie W, Ge Z, et al. Reactivation of SARS-CoV-2 infection following recovery from COVID-19. *J Infect Public Health*. 2021;14(5):620-627.
- Hindustan Times. INDIA NEWS: RT-PCR tests in India 'do not miss' any variants of SARS-CoV-2, clarifies govt. Available from: <https://www.hindustantimes.com/india-news/rtpcr-tests-in-india-do-not-miss-any-variants-of-sars-cov-2-clarifies-govt-101618581682175-amp.html> Accessed on May 15, 2021.

ORCID

Vivek B. Kute <https://orcid.org/0000-0002-0002-2854>

Hari Shankar Meshram <https://orcid.org/0000-0001-9148-8168>