Living Donor Kidney Transplantation in a Covid-19-Recovered Donor–Recipient Pair: A Case Report

Abstract

Deciding on proceeding with solid organ transplant in the coronavirus disease 2019 (COVID-19) era is difficult both for the transplant unit and the transplant candidate. However, with no signs of the pandemic coming to an end and given the plight of patients with chronic diseases, it becomes necessary to take the challenging path. We report a case of living donor kidney transplantation in a COVID-19-recovered donor–recipient pair with a good early posttransplant outcome. Immunosuppression was used in the usual dose as per our unit's protocol. Thorough pretransplant evaluation to rule out active SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2) infection in both the donor and the recipient seems to be the key to avoid COVID-19 in the recipient and the transplant unit.

Keywords: *COVID-19, kidney transplant, living donor, SARS-CoV-2*

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Introduction

The pandemic due to severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has badly affected the solid organ transplantation services all over the world as both the transplant units and the patients themselves are apprehensive to proceed with transplantation due to the potential risk of life-threatening infection. However, with no signs of pandemic coming to an end and given the plight of patients with chronic diseases, it becomes necessary to take the challenging path. Various transplant societies have laid down the guidelines for recipient and donor evaluation in the coronavirus disease 2019 (COVID-19) era. With thorough pretransplant evaluation to rule out active SARS-CoV-2 infection in both the donor and the recipient and proper precautions taken in posttransplant period, good transplant outcomes can be achieved. We discuss a case of living donor kidney transplantation in a COVID-19-recovered donor–recipient pair with a good early posttransplant outcome.

Case Report

Our patient is a 38-year-old gentleman, a resident of Bangladesh, who was diagnosed with end-stage kidney disease (ESKD) in August 2019 during evaluation for headache. His serum creatinine was 6.7 mg/dL, but kidney biopsy was not done as ultrasonography had revealed shrunken kidneys. He was a chronic smoker but had no other addictions or history of drug abuse. Serology for hepatitis B and C and human immunodeficiency virus was negative. He was on conservative management for CKD until December 2019 when he developed uremic symptoms and started maintenance hemodialysis via a temporary internal jugular dialysis catheter. Subsequently, a left radiocephalic fistula was created as the permanent dialysis access, and he continued twice-weekly dialysis. There was no history of blood transfusion while he was on dialysis. He came to our center in January 2020 for evaluation of kidney transplantation with his mother as the donor. His mother was a 60-year-old lady with no comorbidities and was cleared for donation after a thorough evaluation.

Due to the COVID-19 pandemic, transplant surgeries were suspended at our center, and his transplant was deferred. Once transplants were planned to be resumed, the patient and his mother's COVID-19 test were performed as a presurgical screening. Despite being asymptomatic, both turned out to be positive by reverse transcription–

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polymerase chain reaction (RT-PCR). Both were admitted in the COVID-19-designated hospital for observation (as per government policy). They remained asymptomatic. Repeat COVID-19 test done after 2 weeks was negative, and they were discharged. COVID-19 tests repeated at the end of the third and fourth weeks were also negative. Three days after the last negative test for COVID-19, he underwent kidney transplant with his mother as the donor. It was a haplomatch, and complement-dependent cytotoxicity cross-match was negative. As per our unit's protocol, he received thymoglobulin (3mg/kg divided over 2 days) for induction and tacrolimus, mycophenolate mofetil, and prednisolone for maintenance immunosuppression. Posttransplant hospital stay was uneventful. He was discharged 10 days after transplant with a serum creatinine of 1.5 mg/dL and tacrolimus trough level of 12.6 ng/mL for which tacrolimus dose was reduced. The patient is now doing fine 11 weeks posttransplant and has a creatinine of 1.2 mg/dL. The donor's postoperative course was also unremarkable, and she was discharged 7 days after surgery.

Discussion

This is the first case of kidney transplant with both the recipient and donor being COVID-19 survivors. There are reports of lung transplants in COVID-19 survivors whose lungs were destroyed by the disease.[1] A case of liver transplant with the donor being COVID-19 survivor has also been published,[2] but there are no reports of kidney transplant in which the recipient and donor both were COVID-19 survivors.

The ongoing COVID-19 pandemic has come as a curse for patients with chronic diseases awaiting transplants as the transplant surgeries were put on hold all over the world. However, as there were no signs of the pandemic coming to end soon, various centers resumed transplant services with extra precautions. There are various issues in carrying out transplant in the COVID-19 era. The recipient has a potential risk of contracting the virus from the transplanted organ or by cross-infection from other patients and hospital staff. Also, immunosuppression makes the recipient more prone to severe COVID-19 during posttransplant period.[3,4] The situation is made more complex by the low sensitivity of nasopharyngeal swabs for real-time PCR,[5] and thus a substantial proportion of asymptomatic positive potential donors and recipients may be missed leading to transmission of the novel coronavirus in the transplant unit.

Various transplant societies [6-9] have laid down the guidelines for COVID-19 screening of donor and recipient as well as for accepting organs from COVID-19-positive/-recovered donors, and all the guidelines have similar recommendations. It is recommended that all transplant candidates and their potential living donors should have a viral testing of at least one sample from the respiratory tract by Nucleic Acid Amplification Testing (NAT) for SARS-CoV-2 within 3 days of donation, and if negative, a transplant can take place. Living donation should not be performed if either the donor or recipient has been exposed to a patient with confirmed or suspected COVID-19 within 14 days. If possible, both donor and recipient should have a 2-week stay-home period prior to transplant with both tested for SARS-CoV-2 by PCR at the end of this period, prior to transplant. A negative result does not definitely rule out infection and must be interpreted in the context of other assessments. Transplant should be avoided if the donor or recipient is likely to have COVID-19 despite a negative test result. Regarding accepting an organ from a COVID-19-recovered donor, it is advised that the donation should be at least 28 days after symptom resolution, and the donor should have a negative NAT. A similar strategy is advised for a COVID-19-recovered transplant candidate. In our case, both the donor and the recipient had positive COVID-19 test, but they were asymptomatic. The transplant was performed 33 days after the first positive result, and negative PCR result was documented 3 weeks after the first result as well as 72 hours prior to transplant surgery. No complications were noted even after 11 weeks follow-up.

Performing solid organ transplant in the COVID-19 era is challenging, and the risk of being on the transplant waiting list versus the benefit of undergoing a transplant during a pandemic must be carefully considered. A thorough evaluation (clinical as well as laboratorial) is mandated prior to transplant to have a successful outcome. Currently, there are no recommendations regarding the assessment of surgical fitness of patients recovered from COVID-19 undergoing elective surgery. Given the fact that COVID-19 pneumonia may result in lung fibrosis and COVID-19 patients are at increased risk of delayed thromboembolic events, the transplant teams need to apply their clinical judgment on case-to-case basis in this regard until more data emerge.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his clinical information to be reported in the journal. The patient understands that his name and initials will not be published, and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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