



**ORIGINAL RESEARCH PAPER**

**General Medicine**

**IMPACT OF COVID - 19 IN RENAL TRANSPLANT RECIPIENT – A CASE REPORT**

**KEY WORDS:** Covid 19, Renal transplant, renal cortical necrosis

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**ABSTRACT**

SARS-CoV-2 has been a pandemic which began in 2019. The clinical presentation of COVID-19 is highly variable and ranges from asymptomatic infection to severe pneumonia, cytokine storm, and death. The prevalence of morbidity and mortality due to Covid – 19 were notably higher in people with co-morbidities, and several studies have documented the same. Renal transplant recipients are more susceptible for infections especially in this pandemic time. The mortality is very high in such patients, as they are on immunosuppressive agents. We report a case of covid – 19 infection in a renal transplant recipient.

**INTRODUCTION:**

Renal transplantation is a procedure done to improve survival and quality of life in end-stage renal disease patients. It has been shown to have a projected survival benefit of 10 years more than those only on dialysis. Renal transplant recipients are more susceptible for infections especially in a time of pandemic. The mortality is very high in such patients, as they are on immunosuppressive agents. Although COVID-19 predominantly affects the lungs, these patients are at a higher risk of developing kidney and multi organ failure .There have been reports of increased severity of COVID-19 in renal transplant patients. Here, we report a case of covid – 19 infection in a renal transplant recipient.

**CASE PRESENTATION:**

A 47 year old male patient who had right kidney transplant in 2003 came with a high grade fever and breathlessness for the past one week. He was already on tablet Cyclosporine, Azathioprine and Prednisolone. His oxygen saturation at presentation was 80% in room air and he was tachypneic (RR > 24/min). He tested positive for Covid19 RT – PCR and CT Chest showed bilateral extensive ground glass appearance with a CT severity score of score 22/25. His baseline renal function tests were within normal limits. He was then shifted to the intensive care unit where he was started on intravenous Meropenem, Heparin, Dexamethasone and Remdesivir.

He was on high flow nasal oxygen therapy with intermittent positive pressure ventilation. He then developed oliguria and his creatinine was 5.8 mg/dl and his urine examination revealed 2+. Proteinuria. Furthermore, he also developed sudden onset of graft dysfunction. Hemodialysis was initiated. His blood, urine cultures and CMV testing were negative. We then opted for a renal allograft biopsy which showed coagulative necrosis of the glomeruli and the tubules, all of which were suggestive of renal cortical necrosis. (Image 1 ) There also was an organizing thrombus in the medium sized vessel. His renal function improved with hemodialysis. After 14 days, a repeat RT-PCR was negative and he was symptomatically better. He was discharged following this and is currently on the same immunosuppressive drugs.

Image shows renal allograft biopsy which showed coagulative necrosis of the glomeruli and the tubules, all of which were suggestive of renal cortical necrosis.



**DISCUSSION:**

SARS-CoV-2 has been documented to cause over 5 million deaths ever since its pandemic began in 2019. The prevalence of morbidity and mortality were notably higher in people with co-morbidities, and several studies have documented the same. The clinical presentation of COVID-19 is highly variable and ranges from asymptomatic infection to severe pneumonia, cytokine storm, and death. Diagnosis is based on RT-PCR or other laboratory investigations and clinical findings. Of all the multitude of drugs tried for this pandemic virus, dexamethasone, tocilizumab, and baricitinib have been shown to reduce mortality and remdesivir has been shown to reduce the length of hospital stay. However, there is no single drug that is a cure-all for this virus (2).

The pathogenesis of COVID-19 associated kidney injury and worsening renal disease is unknown, and may be due to a combination of multiple factors like cytotoxicity, RAAS disturbances and cytokine-mediated injuries. Histopathological analysis of kidneys in deceased COVID patients has shown evidences of proximal tubular injury and necrosis. This was also seen in our case where our patient had features suggestive of renal cortical necrosis (3,4).

This virus is of particular concern in patients who have undergone renal transplantation. The major reason implicated for this is the immunosuppression. Immune-compromised individuals are at greater risk of severe infection due to their impaired immune responses, particularly in the presence of concurrent comorbidities, which are widely common in patients with CKD. The most common presenting symptom in these patients has been fever followed by cough, similar to the low risk category, except for the severity. The disease prevalence per se and the mortality of COVID-19 is much higher in renal transplant patients than the general population. A study by Elias et al., has found that the mortality rate in these patients was around 24%. They have also found that predisposition to infection was higher closer to the date of transplantation. This implies that the immunosuppressants started at the time of surgery might

have a role to play (5). That said, managing immunosuppression in COVID-19 patients is a critical process. There have been incidents where removal of antimetabolites has been attempted in view of COVID-19 infection post-transplant, but with little success. There are no clear-cut guidelines on how to treat these patients and hence indicates that utmost care and caution are required (6).

A multicenter cohort study in India by Kute et al., has shown that transplant rejection rates during the COVID-19 pandemic was around 6.18%, which is comparable to standard transplant outcomes. They have hypothesized that COVID-19 severity may not be a criterion for reducing or stopping immunosuppression. Around one in six deaths in the US, among transplant recipients, was attributed to COVID-19 in 2021. There has also been a high racial or ethnic predisposition, with more severe disease being seen in the minority groups (7).

The pandemic has severely affected the management of solid organ transplantation, predominantly due to the uncertainties in management. The intensity of immunotherapy - whether triple or dual - also affects the severity of disease and risk of mortality. But there are no clear-cut guidelines on how to go about managing transplant recipients turning COVID positive. Though reduction in immunosuppression may not always be warranted, it may be attempted in some cases as per the clinician's discretion. Hemodialysis may improve survival and benefit patients with worsening renal function following infection (6,8,9).

**CONCLUSION:**

We propose that extra caution is required in managing solid organ transplant recipients in this pandemic era to prevent unnecessary morbidity and mortality, as witnessed in our case. If managed promptly, renal parameters may be prevented from worsening in COVID-19 infections in organ transplant recipients. Also, we suggest considering reduction in immunosuppression and hemodialysis at appropriate times.

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