

COVID-19 IN RENAL TRANSPLANT RECIPIENTS

**COVID-19 INFECTION IN KIDNEY TRANSPLANT RECIPIENTS DURING THE
SECOND WAVE OF COVID-19 PANDEMIC : AN EXPERIENCE FROM A
TERTIARY CARE RENAL TRANSPLANT CENTRE**

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Introduction

Kidney transplant recipients (KTRs) are at a higher risk of developing severe COVID-19 infection*

- **Transplant-specific risks:**
 - ✓ Type of induction therapies used
 - ✓ prolonged maintenance immunosuppressants including steroids
 - ✓ Previous e/o rejections , viral infections
- **Nonspecific:** Comorbidities like underlying CKD PTDM, HTN, obesity
- Prolonged viral shedding – remaining infective for longer

*Kute V, Ramesh V, Shroff S, et al. Deceased-donor organ transplantation in India: current status, challenges, and solutions. *Exp Clin Transplant*. 2020;18(suppl 2):31–4

HOW DID KTRs FARE DURING THE SECOND WAVE OF COVID?

(Presentation of data from March 1,2021 to June 1, 2021)

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Introduction

- Coronavirus disease (COVID-19) started as a severe pneumonia of unknown cause in late 2019 and spread throughout the world by early 2020.
- COVID-19 is predominantly a respiratory disease but in severe cases it can cause acute kidney injury and multi-organ failure.
- we present nineteen cases of COVID-19 infection in kidney transplant recipients in a tertiary care teaching hospital in northern India, during the second wave of COVID pandemic, in a period spanning three months, namely March 1, 2021 to June 1, 2021.
- The severity of COVID-19 illness in these patients were categorized on the basis of the COVID management protocol published by the Ministry of Health and Family Welfare (MOHFW), into mild, moderate and severe .

TOTAL PATIENTS	HOME ISOLATION	HOSPITALIZATION	DEATH
19	12 (63.15%)	7 (36.8%)	6(31.5%)

TOTAL HOSPITALIZATION	HDU	ICU	DISCHARGE	DEATH
7	1 (14.28%)	6(85.7%)	1(14.28%)	6 (85.7%)

Characteristics		Total (19)
Basic disease	Unknown DM Chronic glomerulonephritis HTN	13(68.4% 02 (10.7 %) 4 (21.0%)
Comorbidities	PTDM Hypertension Viral infection	4 (21.05%) 14 (73.6%) 1(5.2%)
Maintenance IS	Tacrolimus, MMF , prednisolone	19 (100%)

Characteristics	Survivors Median (IQR)	Nonsurvivors Median (IQR)	p value
Age (years)	36 (26-43.5)	38 (32-44.5)	0.53
Baseline serum creatinine (mg/dl)	1.20 (1.01-1.43)	1.43 (1.02-1.72)	0.73
Post transplant duration (months)	22 (13.5-37)	18 (2-44.5)	0.09

Characteristics	Survivors (13)	Nonsurvivors (6)	<i>p value</i>
Female: Male	0:13	2:4	0.065
ATG: Basiliximab	7:6	3:3	1.00
H/o acute rejection in the past 6 months	1	1	0.49
Severity of COVID illness			
Mild	9	1	
Moderate	2	0	
Severe	2	5	
Shortness of breath	1	5	0.001
Acute graft dysfunction	1	4	0.04
Mucormycosis	0	2	0.065

Characteristics	Survivors (13)	Nonsurvivors(6)	<i>p value</i>
Tacrolimus			
Reduced	1	2	0.006
Same	12	2	
Stopped	0	2	
Mycophenolate mofetil			
Reduced	7	0	0.031
Same	2	1	
Stopped	4	5	
Steroid			
Same	11	1	0.002
Hiked up	2	5	

Observations

- Patients with severe COVID requiring ICU admission had nearly 100% mortality
- While chest radiograph abnormalities were common (15/19), only clinical severity of disease dictated survival after COVID illness
- Raised inflammatory markers, acute graft dysfunction and need for mechanical ventilation were seen in nearly all the non-survivors
- While 5 of the 6 non-survivors had respiratory involvement at death, one patient was lost to a sudden cardiac event
- All the afflicted patients were never vaccinated prior to the illness

Discussion

- COVID -19 pandemic adversely affected annual rates of solid organ transplantation, including renal transplants
- These candidates are immunocompromised and prolonged viral shedding leads to infectivity for longer period of time
- Among the KTR with COVID-19 infection , most of the patients are asymptomatic or with mild symptoms and most of the patients can be managed with home isolation protocol.
- The patients who were hospitalized, presented with severe disease and require ICU care.
- Acute Kidney Injury is common in hospitalized patients and most of them require renal replacement therapy

- The outcome depends upon severity of disease at time of presentation.
- The mortality in our case series was high, at 75%.
- The patients with severe illness required hospitalization and mechanical ventilation and the mortality in such patients was increased
- our case series reported a median duration of fever prior to admission was 3 days, and breathlessness was present for one day prior to presentation, among the patients with severe illness
- Renal transplant recipients with COVID-19 illness also carry a greater risk of developing acute kidney injury, which positively correlated with the severity of illness in our series
- The late presentation could have contributed to the higher mortality in our case series

- The mortality in our case series is high(overall 31.5%) % due to severe presentation of COVID-19 infection (85.7% in ICU settings)
- Variable mortality rates - 4.8%–33% have been reported in solid organ transplant (SOT) recipients with COVID-19*
- A large multicenter cohort study from India showed overall patient mortality was 11.6% **
- Mortality rates increased to 47% (25 of 53) for patients in the ICU and 96.7% (29 of 30) for patients on mechanical ventilation **

**Ali T, Al-Ali A, Fajji L, et al. Coronavirus disease-19: disease severity and outcomes of solid organ transplant recipients: different spectrums of disease in different populations? Transplantation. 2021;105:121–127*

***Kute V, Ramesh V, Shroff S, et al. Deceased-donor organ transplantation in India: current status, challenges, and solutions. Exp Clin Transplant. 2020;18(suppl 2):31–4*

Thank you