

Clinical Profile and Outcome of COVID-19 in Kidney Transplant Recipients

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Background

- Kidney transplant recipients are at increased risk of infections
 - May lead to graft dysfunction and death
- Coronavirus disease (COVID-19) is the ongoing global infectious challenge
- The impact of this novel virus in kidney transplant recipients needs to be assessed
- The objective of this study was to study the Clinical profile and outcome of coronavirus disease-19 (COVID-19) infections in kidney transplant recipients (KTR)

Material and methods

- This was a retrospective study from our centre (SKIMS Srinagar)
- We included consecutive kidney transplant recipients with laboratory-confirmed COVID-19 (by RT PCR from oral or nasopharyngeal swab) detected between 1st March 2020 to 30th September 2021.
- The data (immunosuppression regimen, clinical profile, treatment, and outcomes of the patients) were retrieved from hospital records
- Exclusion criteria - Those with incomplete data or not willing to give informed consent were excluded.
- All patients underwent laboratory investigations including complete blood count, renal function tests, liver function tests, serum ferritin, C-reactive protein (CRP), and lactate dehydrogenase (LDH).

Material and methods

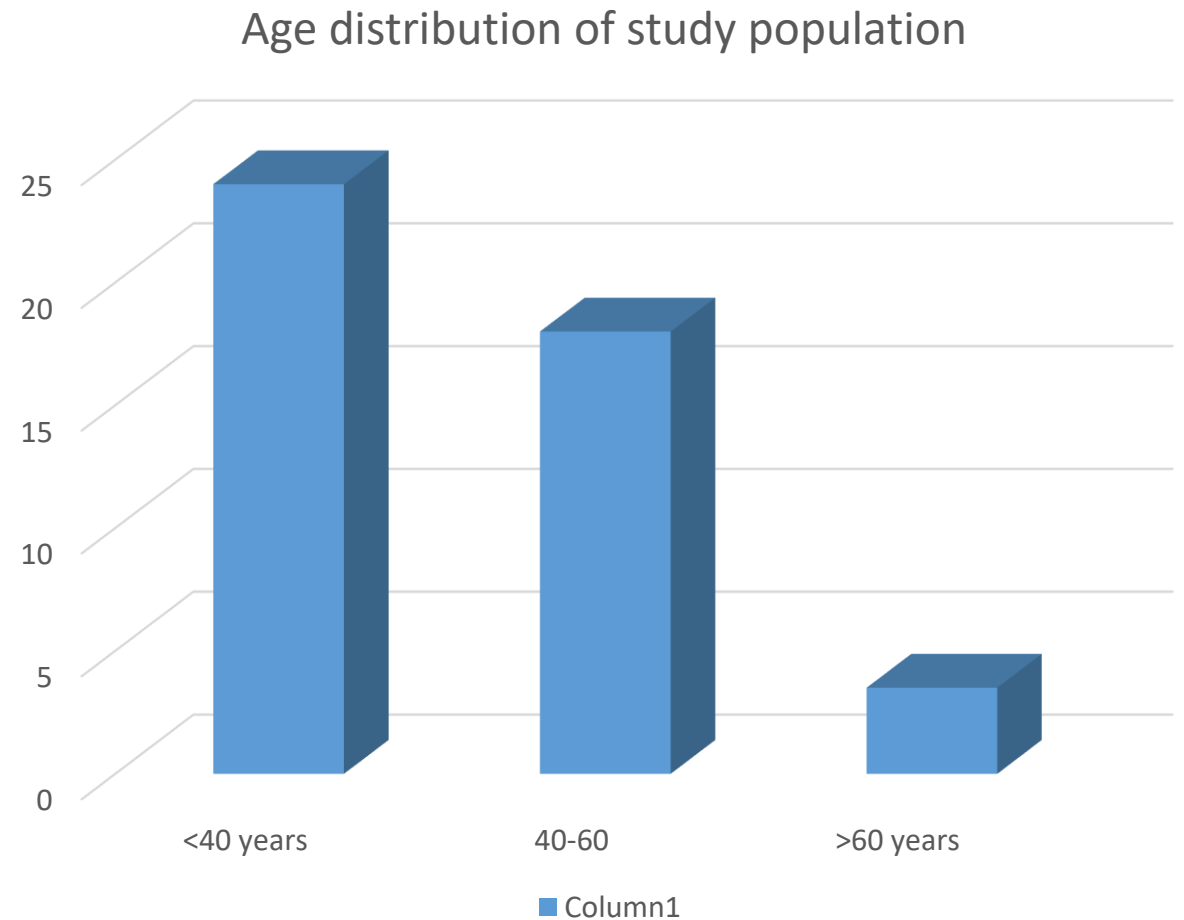
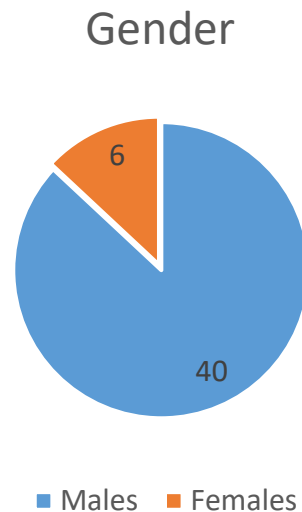
- The collected data were entered into a specific format by one physician and reviewed by the second physician.
- Clinical severity and assessment parameters were divided into:
 - a. Mild: KTRs with mild symptoms including fever, cough, without shortness of breath or hypoxia, and uncomplicated upper respiratory tract infections.
 - b. Moderate: Patients demonstrated clinical features of pneumonia including fever, cough, dyspnea, hypoxia with oxygen saturation (SpO₂) <94% on room air and respiratory rate of 24- 30/min
 - c. Severe: Patients had advanced signs of clinical pneumonia plus 1 of the following clinical criteria: respiratory rate >30/min, severe respiratory distress, and SpO₂ <90% on room air
- Patients were managed as per institutional protocol

Material and methods

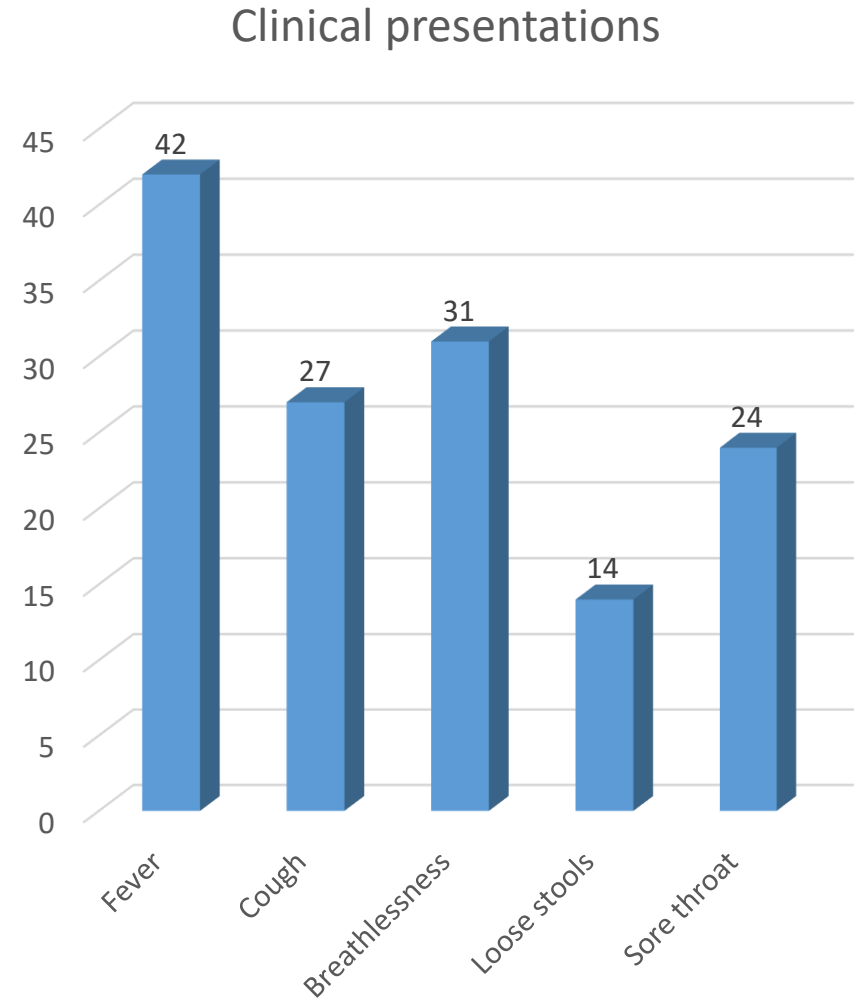
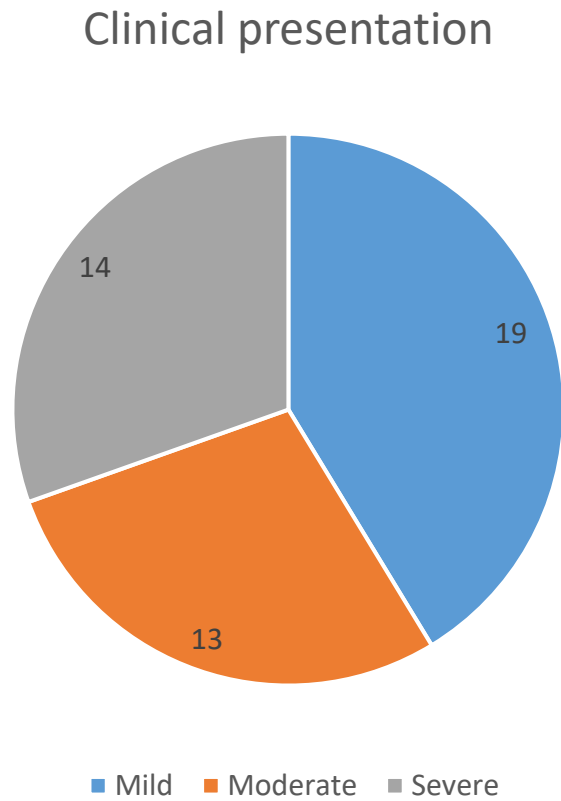
- All patients underwent chest imaging by computed tomography (CT).
 - Graded radiologically based on the percentage of lung involvement
- Decision on modification of immunosuppression was made on a day-to-day basis
 - Specific therapy included the use of Heparin, escalation of steroids (moderate or severe covid)
 - Patients in our cohort also received remdesivir, antibiotics as per institutional protocol.
- Statistical analysis was performed using IBM Corp. Released 2015. IBM SPSS Statistics for Windows, Version 23.0.

Results

- A total of 46 KTRs developed COVID-19 infection.
- Median age of transplant recipients was 41 years



Clinical presentation



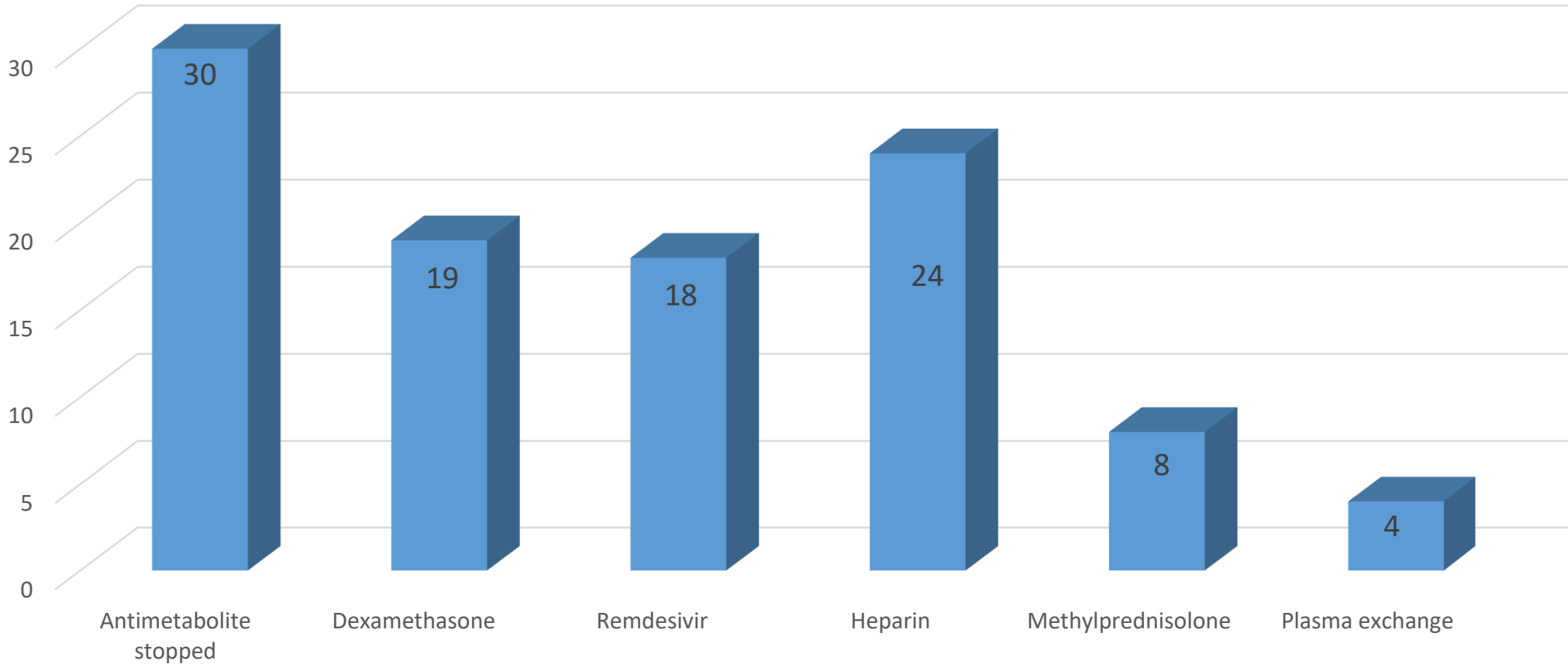
Baseline characteristics

Characteristic	Value
Time since transplant, years	4.7 ± 2.3
Transplant to Covid	
<1 year	10
>1 year	36
Serum Creatinine, mg/dL (mean ± SD)	1.58 ± 0.4
Type of transplant	
Live	46
Deceased	0
Immunosuppression (30 days before infection)	
Steroids	46
CNIs	46
mTOR inhibitors	5
Mycophenolate	34
Azathioprine	7
Comorbidities	
Hypertension	32
Graft dysfunction	18
Diabetes Mellitus	16
Heart disease	5

Characteristics of study population as per severity

	Total (46)	Mild (19)	Moderate (13)	Severe (14)	P Value
Age	41.5 ± 8.9	37.1 ± 9.1	44.7 ± 13.7	48.1 ± 11.2	0.024
Male:Female	40:06	17:02	12:1	11:3	0.45
Time since transplant, median (IQR)	4.6 (2.1-10.3)	4 (2.2-6.2)	7 (2.1-10.3)	6 (3.4-8.4)	0.8
Comorbidities					
Hypertension	32	12	8	12	0.57
Graft dysfunction	18	5	5	8	0.8
Diabetes Mellitus	16	4	5	7	0.78
Heart disease	5	1	2	2	0.58
NLR, median (IQR)	5.5 (3.8-12.2)	4.2 (3-6.8)	6.5 (5-10.8)	19 (7-24.7)	0.008
CRP	32.4 (16.3-79.1)	19.5 (5-52.3)	53.9 (31.5-96.0)	63.4 (23.2-228)	0.006
Ferritin	689 (347.5-2000)	646.5 (293.2-2030.8)	1063.5 (558.5-1725.5)	1063 (435.6-2000)	0.54
LDH	343 (261-445)	302 (242.5-413)	357 (257.8-489)	405 (341-611)	0.04
CTSI score	8 (5-14)	6 (5-8)	11 (8-16)	14 (9-18)	0.002
AKI	22	3	8	11	0.004
Death	6	0	0	6	<0.0001

Treatment Strategies



Risk factors for composite outcome of death and need of dialysis

	Adjusted OR (CI)	P value
Age >50 years	3.25 (1.25-7.7)	0.027
NLR	1.099 (1.003-1.204)	0.044
CRP	1.008 (0.996-1.019)	0.18
LDH	1.005 (0.998-1.012)	0.14
Graft Dysfunction	2.1 (0.8-5.9)	0.34

Conclusion

- In our study, AKI developed in 48% of patients
- Mortality in our population was 13% (higher than in general population)
- Risk factors for Mortality in our study population was advanced age, higher NLR.

Acknowledgements

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