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FACTORS EFFECTING MORTALITY AMONG COVID-19 PATIENTS IN RENAL TRANSPLANT RECIPIENTS FROM A SINGLE CENTER IN PAKISTAN

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INTRODUCTION:

Corona virus disease-19 (Covid-19) has significantly affected organ transplantation with concerns regarding severe infection and mortality. Data on Covid-19 in renal transplant recipients (RTRs) is scarce from Pakistan. The aim of this study is find out the factors effecting mortality among COVID-19 patients in renal transplant recipients (RTR) from the largest transplant center of Pakistan.

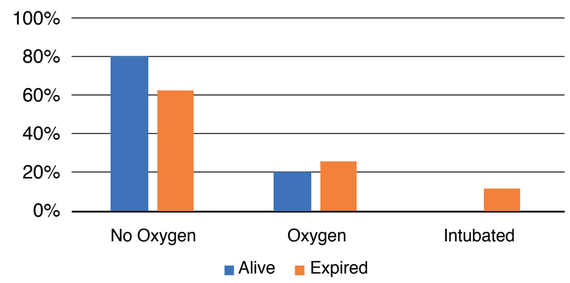
METHODS

All RTRs >18 years, with positive severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) polymerase chain reaction (PCR) and diagnosed as severe disease, between April to December 2020 were retrospectively reviewed. The severe disease was defined as O_2 saturation <94% at room air on admission. Survivors and non- survivors were compared. Demographics, immunosuppression, comorbid conditions, clinical features, laboratory investigations and graft function were noted.

RESULTS

A total of 95 RTRs had severe disease. There was no difference in mortality between age, gender and co-morbid conditions among survivors and non-survivors. Both groups received similar immunosuppressive regimen. Intensive care unit (ICU) admission [16.5% vs 68.8% p<0.001 OR 11.17 (95%) CI (3.3-37.6)] and high D-dimers >1.5μg/ml (p=0.052) at the time of admission were significantly associated with mortality. There was no association of graft function with mortality. Treatment with methyl-prednisolone was found to be significantly associated with survival [83% vs 43% p=0.02 OR 0.15 (95%) CI (0.05-0.49)]. (Table 1) WHO grading of the disease is shown in figure 1, there was a 100% mortality among patients on mechanical ventilator.

Figure 1: Who Clinical Grading of Severe Disease



CONCLUSION

ICU admission and high D-dimers at the time of admission are the significant risk factors for mortality. There was no association of graft dysfunction with mortality. Steroids use has significantly improved survival in renal transplant recipients with severe COVID-19 infection.

Table 1: Comparison between survivors and non-survivors among patients with severe disease n=95

Characteristics	Survivor n=79 (%)	Non-Survivor n=16 (%)	p-value	OR (95% C.I)
Mean Age (years)	39.5 ± 11.5	37.9 ± 9.5	0.601	-
< 30	19 (24.1)	4 (25.0)	0.58	1.1 (0.3-3.6)
30-50	46 (58.2)	11(68.8)	0.43	1.1(0.5-4.9)
> 50	14 (17.7)	1 (6.3)	0.23	0.3(0.03-2.5)
Male	54 (68.4)	12 (75.0)	0.769	1.39 (0.41-4.74)
Comorbid conditions				
Diabetes mellitus	5 (6.3)	2 (12.5)	0.335	2.1 (0.37-12.0)
Hypertension	58 (73.4)	12 (75.0)	0.999	1.1 (0.3-3.7)
Induction immunosuppression	13 (16.5)	3 (18.7)	0.5	1.2 (0.3-4.7)
Maintenance immunosuppression				
Cyclosporine based	30 (38.0)	6 (37.5)	0.97	0.9 (0.3-2.9)
Tacrolimus based	13 (16.5)	4 (25.0)	0.476	1.7 (0.47-6.1)
Azathioprine based	51 (64.6)	10 (62.5)	0.876	0.9 (0.3-2.8)
MMF based	16 (20.3)	2 (12.5)	0.728	0.6 (0.12-2.73)
m-TOR inhibitor based	10 (12.7)	3 (18.8)	0.454	1.6 (0.39-6.59)
ICU admission	13 (16.5)	11 (68.8)	< 0.001	11.17 (3.3-37.6)
Treatment				
Methyl prednisolone	66 (83.5)	7 (43.8)	0.002	0.15 (0.05-0.49)
Tocilizumab	40 (50.6)	9 (56.3)	0.682	1.25 (0.42-307)
IV IgG	39 (49.4)	9 (56.3)	0.616	0.32 (0.45-3.9)
Remdesivir	12 (15.2)	4 (25.0)	0.462	1.861(0.514-6.75)
Laboratory parameters				
ALC <1000	19 (50)	5 (71.4)	0.422	0.400 (0.069-2.322)
LDH > 350	18 (47.4)	4 (44.4)	0.999	1.125 (0.261-4.848)
CRP >7	16 (64.0)	6 (75.0)	0.687	0.593 (0.098-3.573)
Ferritin > 1000	8 (34.8)	4 (44.4)	0.696	0.667 (0.139-3.204)
D-dimer >1.5	3 (20)	5 (71.4)	0.052	0.100 (0.013-0.793)
Serum creatinine				
(Median IQR)	2.21 (1.45-4.05)	4.3 (1.6-5.4)	0.104	-
Acute Kidney Injury	40 (51.3)	10 (62.5)	0.413	0.632 (0.209-1.907)