

Original Research Article

Acute kidney failure and Covid-19 in kidney transplant recipients

ABSTRACT

Aims: Acute renal failure is a common complication in patients with COVID-19 and is associated with increased intensive care unit admissions and mortality. Kidney transplant recipients appear to be at high risk for severe COVID-19 infection and thus for acute renal failure due to coexisting conditions and chronic immunosuppression.

Study design: This is a monocentric retrospective descriptive study.

Place and Duration of Study: The study took place in the nephrology, dialysis and renal transplantation unit and anesthesiology and reanimation department of CHU IBN ROCHD, in Casablanca, between March 2020 and September 2021.

Methodology: We included all 23 patients, kidney transplant recipients, who tested positive for COVID-19 between and who developed acute renal failure (AKI) during their evolution. Definition and staging of kidney injury (AKI) was based on the Kidney Disease: Improving Global Outcomes (KDIGO). We excluded patients with a presumptive and suspected diagnosis of COVID-19 who had an estimated glomerular filtration rate (eGFR) <15 ml/min/1.73 m² before admission, and who did not have not completed at least 1 year follow-up.

Results: Of the 280 transplant recipients undergoing regular follow-up, 35 transplant recipients tested positive for COVID-19 from March 2020 to September 2021.

Patients who developed a severe COVID-19 infection with a need for hospitalization in an intensive care unit were 19 (54.28%).

Twenty-three transplant patients infected with COVID-19 developed an AKI, 11 (65.71%) were men and (34%) were women. The average age was 45.77 years (25-68 years). Arterial hypertension was the most common comorbidity (28.57%). The median time between transplantation and diagnosis of COVID-19 was 8.82 years (IQR 27-87 months). All of these patients received intravenous dexamethasone 6 mg or 40 mg methylprednisolone, or increased corticosteroids for a period of 7 to 10 days, their average length of stay in intensive care was 7 days.

Conclusion: Kidney transplant recipients may be at high risk of developing severe COVID-19 infection due to chronic immunosuppression, comorbidities, and frequent contact with the healthcare system, and consequently a higher rate of hospitalizations, mortality, and acute renal failure.

Comment [O1]: Remove from here

Comment [O2]: Correct spelling

Keywords: [acute renal failure, kidney transplant, Covid 19, infection]

1. INTRODUCTION

Acute renal failure (ARI) is a common complication in patients with COVID-19 and is associated with increased intensive care unit (ICU) admissions and mortality. The incidence of ARI in patients infected with COVID-19 is approximately 3-15%; in patients with severe COVID-19 infection in the ICU, this incidence increases significantly to 14.5-50%. (2) Kidney transplant recipients appear to be at high risk for severe COVID-19 infection complicated by ARI due to coexisting conditions and chronic immunosuppression [1-3]. The incidence of AKI in affected kidney transplant recipients who test positive for COVID-19 is still being defined, and the reported incidence has been variable (30% to 57%) depending on patient demographics and background. the definition of IRA 3 [4-8].

Comment [03]: Why ARI and not ARF

Comment [04]: Change to ARF

2. MATERIAL AND METHODS

This is a monocentric retrospective descriptive study, which included all kidney transplant recipients at the IBN Roch hospital in Casablanca, who tested positive for COVID-19 between March 2020 and September 2021 (18 months) and who developed acute renal failure AKI during their evolution. Definition and staging of AKI was based on the Kidney Disease: Improving Global Outcomes (KDIGO) criteria. Recovery from AKI was defined as the return of renal function to baseline. In our study, we excluded patients with a presumptive and suspected diagnosis of COVID-19 who had an estimated glomerular filtration rate (eGFR) <15 ml/min/1.73 m² before admission, and who did not have not completed at least 1 year follow-up.

Comment [05]: Replace by evaluation or follow up

3. RESULTS

Of the 280 transplant recipients undergoing regular follow-up, 35 transplant recipients tested positive for COVID-19 from March 2020 to September 2021. Among the 35 transplant patients who were reinfected with COVID-19; 65,71% (n=23) developed acute renal failure,

In our study, 23 transplant patients infected with COVID (65.71%) were men and 12 (34%) were women while the average age was 45.77 years (25-68 years).

Arterial hypertension was the most common comorbidity (28.57%).

The median time between transplantation and diagnosis of COVID-19 was 8.82 years (IQR 27-87 months).

Comment [06]: How come???

Patients who developed a severe COVID-19 infection with a need for hospitalization in an intensive care unit were nineteen in number (54.28%).

Seven of them (7.18%) required conventional hemodialysis sessions.

All of these patients received intravenous dexamethasone (6 mg) or (40 mg) methylprednisolone, or increased corticosteroids for a period of 7 to 10 days, their average length of stay in intensive care was 7 days.

In addition, 80% of COVID-19 transplant patients had a modification of immunosuppressive treatments such as an increase in corticosteroid therapy and a decrease in mycophenolate mofetil.

The evolution was favorable for 74.2% patients, while 2 kidney transplant recipients among those who were on dialysis returned to hemodialysis and 7 died.

Comment [07]: Kindly rephrase

4. CONCLUSION

Kidney transplant recipients may be at high risk of developing severe COVID-19 infection due to chronic immunosuppression, comorbidities, and frequent contact with the healthcare system, and consequently a higher rate of hospitalizations, mortality, and acute renal failure.

Kidney transplantation poses an additional risk of AKI due to the above COVID-19-related factors and transplant-related factors such as graft rejection and calcineurin inhibitor toxicity.

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