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 acute 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 developped an AKI, 11 (65.71%) were men and 12 (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.

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].

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.

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 infected with covid19; 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).

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 treatment 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.

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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