

Infectious Complications, Including COVID-19, in Kidney Transplant Recipients: Experience of the Nephrology and Transplantation Department at CHU Mustapha

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ABSTRACT:

Introduction: Infections remain a major cause of morbidity and mortality in kidney transplant recipients due to immunosuppression. The COVID-19 pandemic has exacerbated this risk. **Objective:** To assess the frequency, types, and outcomes of infectious complications, particularly COVID-19, among kidney transplant recipients followed at CHU Mustapha. **Methods:** A retrospective descriptive study was conducted between December 2020 and November 2021, including 24 patients. Clinical, biological, and outcome data were analyzed. **Results:** The mean age was 48 years, with a male-to-female ratio of 2:1. Pulmonary infections were the most frequent (70%), followed by urinary tract infections (25%) and septicemia (12%). Clinical evolution required hospitalization in 33% of cases, with an overall mortality of 17%. Major risk factors included age >60 years, diabetes, obesity, and combined immunosuppressive regimens. **Conclusion:** Kidney transplant recipients are highly vulnerable to infections, especially COVID-19. Preventive vaccination, early detection, and immunosuppressive therapy adjustments are essential to reduce morbidity and mortality.

Keywords: Kidney transplantation, COVID-19 Infectious complications, Immunosuppression, Septicemia

INTRODUCTION:

Kidney transplantation is the treatment of choice for end-stage renal disease. However, immunosuppressive therapy exposes recipients to an increased risk of infections. With the emergence of SARS-CoV-2, this vulnerability has become even more evident, with studies reporting a mortality rate two to three times higher in transplant recipients compared to the general population [1–3]. In addition to COVID-19, urinary tract infections, bacterial pneumonia, and septicemia remain common complications [4].

The aim of this study is to describe the infectious complications observed among kidney transplant recipients during the COVID-19 pandemic in the Nephrology and Transplantation Department of CHU Mustapha.

Patients and Methods:

Study design: Retrospective descriptive study.

Setting: Nephrology and Kidney Transplantation Department, CHU Mustapha (Algiers).

Period: December 2020 – November 2021.

Population: 24 kidney transplant recipients diagnosed with COVID-19 (confirmed by RT-PCR or chest CT scan).

Data collected: age, sex, comorbidities, immunosuppressive therapy, type of infection (urinary, pulmonary, septicemia), clinical outcomes.

Statistical analysis: Data are presented as frequencies and percentages; comparisons were made using Chi² test with p<0.05 considered significant.

RESULTS:

General characteristics: The mean age was 48 years (21–72), with male predominance (M/F ratio = 2:1). More than

half of the patients had at least one comorbidity (hypertension 58%, diabetes 29%, obesity 21%).

Table 1. Demographic and clinical characteristics of patients (n=24)

Variable	Result
Mean age (years)	48 (21–72)
Sex (M/F)	16/8
Hypertension	58 %
Diabetes	29 %
Obesity	21 %
Combined immunosuppression	75 %

Types of infections: Pulmonary infections were predominant (70%), followed by urinary tract infections (25%) and septicemia (12%).

Table 2. Types of infections observed

Type of infection	Frequency (%)	Comments
Pulmonary (COVID ± bacterial superinfection)	70 %	Severe forms in 30% of cases
Urinary tract infections	25 %	Mostly in women, early onset
Septicemia	12 %	All cases in ICU

Clinical outcomes: One third of the patients required hospitalization, with 12% admitted to ICU and 17% mortality.

Table 3. Clinical outcomes of patients (n=24)

Outcome	n (%)
Hospitalization	8 (33 %)
ICU admission	3 (12 %)
Death	4 (17 %)
Graft recovery	18 (75 %)

DISCUSSION:

This study highlights the high vulnerability of kidney transplant recipients (KTR) to infectious complications during the COVID-19 pandemic. Pulmonary infections predominated and accounted for most fatalities, similar to early international observations reporting substantially higher mortality among hospitalized KTR compared to the general population [1–3]. Reported case-fatality rates varied widely across cohorts, with early studies showing 20–30% mortality [1–3], while later multicenter registries and meta-analyses described rates between 10–25% depending on inclusion criteria and pandemic wave [4–6]. Our observed mortality of 17% lies within this international range.

Risk factors for severe disease included advanced age, diabetes, obesity, and intensive immunosuppressive regimens, consistent with reports from the TANGO consortium and national registries [2,3,7]. Mycophenolate mofetil (MMF) exposure has frequently been associated with more severe courses, leading to recommendations for temporary dose reduction or withdrawal in severe cases [2,4].

Acute kidney injury (AKI) has been frequently documented in KTR with COVID-19 and is associated with poor graft and patient outcomes [5,8]. Although our small sample precludes strong conclusions, our findings align with reports indicating higher incidence of graft dysfunction and even graft loss in critically ill patients. Pulmonary disease was the dominant presentation; bacterial and fungal superinfections were mainly observed in ICU patients, consistent with international series [3,9]. Differences in reported outcomes across cohorts reflect case mix, diagnostic access, and evolving management strategies (use of dexamethasone, anticoagulation, vaccination) [4,10]. Therapeutic management has evolved pragmatically: MMF reduction, cautious continuation of calcineurin inhibitors, and steroid adjustment are widely practiced [2,3]. Vaccination remains crucial, although KTR exhibit weaker serological responses, requiring booster doses and complementary preventive strategies [11,12].

In practice, our findings support systematic vaccination, early detection, tailored immunosuppression adjustment, and aggressive management of secondary infections.

Despite limitations (retrospective design, small sample size, single-center), this series provides valuable data from a North African tertiary center and corroborates international findings.

Future directions include multicenter prospective studies to optimize immunosuppression management, assess antiviral strategies, and monitor long-term graft survival.

CONCLUSION:

Kidney transplant recipients face a high risk of infections, particularly during the COVID-19 pandemic. Pulmonary infections were the leading cause of mortality, while urinary tract infections were frequent and septicemia severe. Preventive vaccination, early detection, and timely immunosuppressive adjustments are crucial to improve outcomes. Multicenter prospective studies are needed to validate these findings and guide optimal management strategies.

Ethical approval was obtained from the institutional review board of CHU Mustapha. Informed consent was obtained from all patients.

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