



Renal Consequences of COVID-19

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POINTS TO REMEMBER



ABSTRACT

The column in this issue is provided by Sean A. Hebert, MD, assistant professor of Clinical Medicine at the Houston Methodist Academic Institute. Dr. Hebert specializes in transplant nephrology at Houston Methodist.

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The kidney is one of the major extrapulmonary organs involved in coronavirus disease 2019 (COVID-19) infections, but direct viral access to the kidney is not well understood. Fulminant viremia and viruria are not typical features of COVID-19 patients. Yet, SARS-CoV-2 RNA was detected in kidney tissue in up to 50% of COVID-19 patients on postmortem series.¹ While our understanding of COVID-19 continues to evolve, consider these important aspects of COVID-19 related to kidney disease.

Estimates of clinical characteristics in hospitalized COVID-19 patients^{2,3}

- Proteinuria: 65.8%–84%
- Hematuria: 41.7%–81%
- Acute kidney injury (AKI): 32%–37%
- Acute kidney injury (AKI) requiring renal replacement therapy (RRT): 12%–15%

Outcomes²

- In-hospital mortality is 50% among patients with AKI compared with 8% in those without AKI.
- Of all patients with AKI, only 30% survived with recovery of kidney function at hospital discharge.

Hypertension⁴

- There is no evidence that stopping renin angiotensin system inhibitors reduces COVID-19 severity.

Dialysis^{5,6}

- Viral transmission is minimal in outpatient in-center dialysis units due to routine disinfection, personal protective equipment, and cohort isolation.
- Cumulative incidence is 17% to 20% among in-center dialysis patients.
- Increased mortality rate: 25% to 30% compared with the general population of hospitalized COVID-19 patients.

Kidney transplant⁷

- Increased mortality rate: 13%–30%
- Graft loss: 3.4%–6.3%
- Discontinuing the antimetabolite mycophenolate is recommended for patients with severe infection.

Vaccine efficacy^{8–11}

- Dialysis:
 - 16% response after first dose compared with 62% in healthy controls
 - 82% response after second dose, but antibody titers are significantly lower than in healthy controls
- Kidney transplant:
 - 15% response after first dose
 - 54% response after second dose, with 46% not developing detectable antibody titers
 - Recipients can receive third dose 28 days or more after completing initial vaccine series
 - 33% response after third dose in patients with no detectable antibodies after second dose


Treatment

- Administration of bamlanivimab and casirivimab-imdevimab has shown favorable results with minimal adverse effects in solid organ transplant recipients.
- Remdesivir was superior to placebo in shortening time to recovery in hospitalized COVID-19 patients. Importantly, early trials excluded those with acute kidney injury, those on dialysis, or those with kidney transplants. Early studies in these populations have shown encouraging results.

COMPETING INTERESTS

The author has no competing interests to declare.

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