



COVID-19 and Kidney Transplantation

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The morbidity and mortality from COVID-19 are particularly high among patients with underlying health disease conditions and chronic disease, among which are kidney transplant recipients (KTRs). Several points merit to be discussed in order to better understanding the main topics concerning SARS-CoV-2 infection in KTRs.

First SARS-CoV-2 epidemiology in KTRs should be examined.

1. SARS-CoV-2 Epidemiology in KTRs

Two studies from the Columbia University and from Italy suggest that the incidence of COVID-19 in transplant patients is similar to that of patients on dialysis [1,2]. The characteristics of affected patients with more severe disease were older age and they had underlying comorbidities such as hypertension and diabetes mellitus.

Second, the best method to perform a diagnosis of SARS-CoV-2 infection should be established.

2. Diagnosis

Reverse transcription polymerase chain reaction (RT-PCR) assay of upper respiratory tract secretions is the current diagnostic test of choice, even if false positives and false negatives may occur [3].

3. Manifestations and Clinical Outcomes

As happens in the general population, KTRs with COVID-19 may have different clinical manifestations ranging from mild infection to multiple organ failure and death [4]. It does appear that the incidence of severe complications may be more frequent in KTRs than in the general population [5].

4. Renal Involvement

Limited literature data from KTRs suggest it to be similar to that of general population with a high degree of acute kidney injury (AKI) and proteinuria. Additionally, it is not clear whether AKI is to be ascribed to hemodynamic changes or to a direct infection from SARS-CoV-2. An interesting report describes endothelialitis in the transplanted kidney [6].

5. Outcomes

The mortality ranges from 16% to 30% [7]. A similar incidence is reported by several registries.

6. Management

Antiviral measures

Remdesivir is investigated, but still now the access to the drug is limited and there is a lack of safety data [8]. Other antiviral medications such as Lopinavir and Ritonavir have a strong interaction with CNI metabolism.

Tocilizumab, an IL-6 antagonist is being used in patients with CRS [9]. The recent published data of the study RECOVERY [10] highlight its relevance.



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7. Immunosuppression Management

Patients with COVID-19 benefit from reduction of their target CNI through level and from a reduction of antimetabolites [11]. Those with moderate/severe disease may benefit of a further reduction in CNI trough level and of complete avoidance of antimetabolites.

Steroids should remain unchanged in patients with mild/moderate disease, while patients with critical disease should benefit of intravenous methylprednisolone.

8. Other Drugs

Studies on animals have suggested that ACE inhibitors and angiotensin-receptor blockers may upregulate ACE2 expression, increasing the target molecules for SARS-CoV-2. Recent data document the benefit of RAAS blockade [12]

Thrombophilia is associated with COVID-19 and several studies have documented the presence of macrothrombi and microthrombi. Prophylactic anticoagulation is recommended [13].

Several ongoing trials document the efficacy of complement inhibitors [14]. Indeed, the activation of complement component C3 exacerbates disease in SARS-CoV-2 infection.

9. Vaccines

Vaccination is recommended principally in the pre-transplant period. Additionally, in patients already transplanted, vaccination is recommended even if the immune response may be attenuated because of the immunosuppression.

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