DOI: 10.1111/ajt.15970

Preliminary data on outcomes of SARS-CoV-2 infection in a Spanish single center cohort of kidney recipients

To the Editor:

Since the first cases of coronavirus disease 2019(COVID-19) were identified on December 12, 2019, the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection has dramatically spread worldwide becoming a pandemic with devastating consequences.[1] This exponential increase in COVID-19 cases also includes vulnerable populations such as kidney recipients.[2,3] Although scarce, preliminary information in this population suggests a serious course with a mortality of up to 25%.[4] Herein, we report the outcomes of a cohort of 33 kidney transplant recipients from a single center focusing on hospital and intensive care (ICU) admission and mortality.

Our center has performed an average of 145 isolated and combined kidney transplants per year over the last 10 years. Since February 1, 2020, we have provided our kidney transplant population with a direct 24-hour contact telephone number with the transplant team to identify potential cases of COVID-19 quickly and take immediate therapeutic measures (especially related to the immunosuppression management). Since March 10, 2020, we have not performed any kidney transplantations, and almost all follow-up outpatient visits have been made by telephone. As of April 13, 2020, 33 kidney transplant recipients have been diagnosed with COVID-19 (73% with pneumonia). 57.6% were male, age of 57.3 ± 17 years, median transplant vintage of 10.7 [4-14.7] years and under immunosuppression with prednisone (78.8%), calcineurin inhibitor (CNI) (87.8%), mycophenolate (62.5%), or mammalian target of rapamycin (mTOR) inhibitors (42.4%). Two were pancreas recipients (6%). Seven (21%) patients were managed as outpatients, 26 (79%) required hospital admission, and 13 (52%) ICU admission (6% with mechanical ventilation). No recently transplanted patients (<3 months) were diagnosed with COVID-19.

According to our protocol, 14% and 29% of the outpatients were treated with an azithromycin and hydroxychloroquine combination and azithromycin monotherapy, respectively. Of the inpatients, 80.8% were treated with a lopinavir/ritonavir, azithromycin, and hydroxychloroquine combination; 3.8% with an azithromycin and hydroxychloroquine combination; 7.7% with hydroxychloroquine; and 3.8% with azithromycin monotherapy. In addition, 73% of the inpatients required COVID-19 treatment intensification (50% tocilizumab, 7.7% interferon beta, 50% steroid pulses, 11.5% anakinra). Our policy is to temporarily discontinue immunosuppressants in admitted patients (mycophenolate and/or mTOR inhibitors in all patients, and CNI if lopinavir/ritonavir is prescribed due to interactions). Maintenance immunosuppression is based on prednisone (15-20 mg/d) until improvement. Thus, in 78.8% of all patients ≥1 immunosuppressants were withdrawn. No clinical or biopsy-proven rejection episodes occurred during follow-up.

For the identification of adverse events in inpatients, clinical interview and physical examination was performed daily, and an electrocardiogram every other day. The most frequent adverse event was diarrhea, which made it necessary to discontinue lopinavir/ritonavir in 14% of patients. No arrhythmic events, opportunistic infections, or other adverse events were detected. Outpatients were not subjected to any specific cardiological follow-up during treatment, because the risk of arrhythmic events associated with short-term treatment with hydroxychloroquine (without lopinavir/ritonavir) was assumed to be low.

The current average ICU stay is of 11 ± 7.2 days. Two patients (an 87-year-old woman and a 72-year-old man) (6%) died after 13 and 22 days from admission, respectively, although there still are 2 patients in the ICU (with noninvasive mechanical ventilation). Another graft was lost in a patient with chronic graft dysfunction. Twenty-one patients (81%) were discharged after 12.2 ± 7.1 days from admission. To reduce hospital pressure, our center has enabled a medicalized hotel for early hospital discharges of patients with a favorable course. With this system, 10 patients (38%) were discharged to the adapted hotel (mean hotel stay of 7.7 ± 2.7 days).

With this letter we would like to provide preliminary information about a single center kidney transplant population in Spain. Remarkably, the mortality in our cohort was lower than that previously reported[4] and similar to the general population,[5] even though some patients are still admitted. Larger studies are underway to provide robust information on the prognosis and management of kidney transplant recipients with COVID-19.

DISCLOSURE

The authors of this manuscript have no conflicts of interest to disclose as described by the *American Journal of Transplantation*.

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REFERENCES

1. Callaway E. Time to use the p-word? Coronavirus enters dangerous new phase [published online ahead of print 2020]. *Nature*. https://doi.org/10.1038/d41586-020-00551-1.
2. Gandolfini I, Delsante M, Fiaccadori E, et al. COVID-19 in kidney transplant recipients [published online ahead of print 2020]. *Am J Transplant*. https://doi.org/10.1111/ajt.15891.
3. Remuzzi A, Remuzzi G. COVID-19 and Italy: what next? *Lancet*. 2020;395(10231):1225-1228.
4. Alberici F, Delbarba E, Manenti C, et al. A single center observational study of the clinical characteristics and short-term outcome of 20 kidney transplant patients admitted for SARS-CoV2 pneumonia [published online ahead of print 2020]. *Kidney Int*. https://doi.org/10.1016/j.kint.2020.04.002.
5. Baud D, Qi X, Nielsen-Saines K, Musso D, Pomar L, Favre G. Real estimates of mortality following COVID-19 infection [published online ahead of print 2020]. *Lancet Infect Dis*. https://doi.org/10.1016/S1473-3099(20)30195-X.