



Kidney Transplantation during the Coronavirus Pandemic

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Although kidney transplantation (KT) confers improved quality of life and survival to the majority of patients with kidney failure, organ shortage has led to an exponential rise in the number of patients on the waiting list and deaths while waiting for an organ. According to the World Health Organisation, 90306 KT, which constitutes 65% of all transplanted organs, was performed in the year 2017 in 81 countries worldwide. Of these, 36% were from living kidney donors.¹ The process of KT, in a nutshell, involves identifying the recipient and the selection of a compatible kidney donor (living or deceased), retrieving the donor kidney, implantation in the recipient, administration of immunosuppressive agents in the recipient to prevent rejection and long-term follow-up of both donor and recipient to ensure their well-being and complication-free survival.

The unprecedented Coronavirus disease-2019 (COVID-19) pandemic has negatively impacted the KT programme globally because of the concern of transmission of the virus from the donor to the recipient and from the community to both donor and recipient, leading to compromised outcomes, including death. The KT recipients are at high risk of critical COVID-19 illness due to chronic immunosuppression and associated co-morbidities. The other concern is that hospitals may not have the staff and equipment resources to care for the recipients after KT, who typically need intensive care and multispecialty management.² This short communication highlights the issues surrounding kidney donation, transplantation and the measures adopted by the transplant community to sustain the KT programme safely during the pandemic.

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DONOR ISSUES

Although there are concerns regarding the transmission of COVID-19 from the donor to the recipient, there is no published report of transmission after KT. The virus is primarily isolated from the respiratory tract, but has been isolated from blood in 15% cases, which increases the potential for transmission. Therefore, screening donors from both clinical and laboratory perspectives is an important consideration. Rapid RT-PCR testing of nasopharyngeal swabs is important for the safety of the organ procurement team and the recipient. The high rate of false-negative result leads to underdiagnosis of the virus in asymptomatic donors and recipients with increased risk of COVID-19 after KT. For living donor KT (LDKT), the donors should self-isolate 14 days before the date of transplant RT-PCR should be negative on the first day of isolation and within 48 hours of donation.³

At present, LDKT remains suspended in the UK. For the deceased kidney donors, the nasopharyngeal swab for SARS-CoV-2 must be negative on the day of donation. It is important to check their clinical history and carry out a thorough physical assessment because negative swab results does not definitively rule out infection and must be interpreted in the context of other assessments. The aftercare of living donors is paramount

and every effort should be made to mitigate the risk of exposing them to the virus, which can be achieved by adopting telemedicine and virtual health care pathways.

RECIPIENT ISSUES

Unlike heart and liver transplantation, KT is not a life-saving transplantation as the patients with kidney failure can survive on dialysis. In a report published from New York, a high early mortality rate of 28% at 3 weeks among KT recipients with Covid-19 was observed as compared with 1% to 5% mortality among patients with Covid-19 in the general population and 8 to 15% mortality among patients with Covid-19 who were older than 70 years of age.⁴ Therefore, KT should be offered to patients with problematic vascular access experiencing difficulties in dialysis and highly sensitised patients, where the benefits outweigh the risks.

During the resumption phase, only low-risk transplant recipients (first transplant, body mass index of <30, patients with minimal cardiorespiratory co-morbidities, normal vascular anatomy of the blood vessels) should be activated on the waiting list. A low-risk immunosuppression regimen with avoidance of depleting antibodies (anti-thymocyte globulin, alemtuzumab and rituximab) should be adopted to prevent excessive immunosuppression with increased risk of infection. Face-to-face consultation should be minimised and use of telemedicine should be adopted as much as possible.³

LOGISTICS

Minimisation of the risk of exposure of the transplant recipients to Coronavirus before, during and after KT is essential. Patients should be admitted to a COVID-19 secure area for dialysis if needed and for recovery after surgery. The staff attending the patient should have their nasopharyngeal swabs tested for SARS-CoV-2 on a weekly basis and if there is any suspicion of their exposure to the virus, they should isolate. During surgery, appropriate PPE should be used by staff to prevent cross-infection. Allocation of organs to the recipients with the highest chance of primary function should be an important consideration, which can be achieved by maintaining shortest possible cold ischaemia time, best possib-



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-le human leucocyte antigen mismatch and a negative cross-match

COVID-19 in KT RECIPIENTS

The course of COVID-19 illness in KT recipients has been reported widely. In a large study involving KT recipients at 12 transplant centres in the USA, Italy and Spain, 144 patients were hospitalised due to COVID-19. Of these, 52% developed acute kidney injury, ventilation was required for respiratory failure in 29% and the mortality was 32%. The 44 patients who died were older, had lower lymphocyte counts and eGFR, higher LDH, prolactin and IL-6 levels. In addition to general support, discontinuation of tacrolimus and mycophenolate mofetil and administration of increased dose of steroids were the mainstay of treatment.⁵

IMPACT of COVID-19 on KT

The risks associated with COVID-19 has led to cessation of KT in the majority of transplant centres globally and a pronounced negative effect on worldwide organ donation and transplantation has been observed. There has been a reduction in utilisation of scarce sources of available organs and expansion of patients with ESRD on the waiting list and mortality. In a recent analysis employing a model by using the UK Renal Registry and NHS Blood and Transplant data, it was reported that there was a missed opportunity of 1670 kidney transplants over a period of six months starting 5 March 2020 due to the COVID-19 pandemic. This would lead to 1324 additional patients on dialysis who would otherwise have been transplanted.⁶ The overall reduction in deceased donor transplantation since the COVID-19 outbreak was 90.6% in France and 51.1% in the USA, respectively.⁷

In a review that included clinical transplantation practice guidelines of 22 international transplant societies, the majority consensus was to temporarily suspend nonurgent transplant procedures and living donation programmes.⁸ In the UK, during the peak of pandemic, all KT patients were suspended in the national waiting list and the KT programme was put on hold in the majority of transplant centres from March till end of June 2020. With the decline in the number of patients with COVID-19 in the hospital and community, KT is being re-introduced gradually in the majority of transplant centres, under close vigilance.

CONCLUSION

The experience of KT during the COVID-19 pandemic is evolving and there is insufficient evidence to consider KT as a safe procedure in COVID-19 pandemic areas. Therefore, decision to transplant should be made on a case-by-case basis after discussion involving the entire transplant team with assessment of the risks and benefits. The recipients for the KT must be involved in the discussion and an informed consent must be obtained. Research should be conducted to evaluate possible solutions to reduce the risk of KT during the COVID-19 pandemic and to address the sensitivity of diagnostic tests for COVID-19.

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