Kidney transplantation to minority patients with a different blood types is safe

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Minority patients achieve the same outcomes if they receive donor kidneys that are fully immunologically compatible compared with patients who receive the organs from fully compatible donors, according to study findings from Vanderbilt University Medical Center, Nashville, Tenn. Three years after transplantation, patient and graft survival rates were the same for minorities who received a donor kidney with the same blood type as for those that received a donor kidney that carried a different blood type but had compatible immune system markers. Study findings are published as an "article in press" on the *Journal of the American College of Surgeons* website ahead of print.

This is the first single-center study to evaluate long-term patient outcomes since the United Network for Organ Sharing (UNOS) in 2014 altered blood type eligibility criteria in the hope of increasing availability of donor organs and reducing wait times for kidney transplantation among African American and Hispanic populations. The investigators anticipate that results from their study may encourage other kidney transplantation programs to expand blood type eligibility guidelines for minority patients.

The study is also the first to show that post-transplantation titers (indications of a possible immune system reaction to the transplanted kidney) do not require expensive follow up. "Some anecdotal reports in the literature associated high post-transplant titers with graft failure, rejection, and poor overall outcomes," said lead study author David Shaffer, MD, FACS, chief of kidney and pancreas transplantation. "Our

study is the first one to show that association is basically untrue. Titers after transplantation fluctuate widely, but even if they are high, there is no need to proceed to a biopsy or another test that would increase cost."

African Americans and Hispanics have a higher risk of end-stage renal disease than other ethnic or racial groups, yet the supply of suitable organs is limited by blood type disparities. Kidneys and other organs are allocated on the basis of blood type compatibility between donor and recipient. For example, donor organs with type A blood are destined for recipients with the same blood type, and those with type B are slated for type B recipients. Only 20 to 25 percent of the population has type B blood. The majority of these individuals are African American or Hispanic. Minority patients historically, therefore, have had less access to donor kidneys or waited longer periods of time for a donated organ than Caucasians.

To rectify this disparity and more effectively use available organs, in December 2014 UNOS altered the nationwide Kidney Allocation System (KAS) so transplantation centers could offer kidneys from blood group A2 individuals to type B recipients. Approximately 20 percent of the population has type A2 blood, which behaves like the universal donor type O.

At the end of November 2016, UNOS found that because of the new policy African Americans and Hispanics were receiving kidney transplants at the same rate as Caucasians.

Nevertheless, the policy has not been universally adopted by transplantation centers. Only 18 percent of transplantation centers were performing these types of organ transplantations at the end of 2017. A UNOS survey found that transplantation centers had difficulty establishing a standard protocol for determining which type B patients were suitable for transplantation of a type A2 organ.

In the current study, researchers at Vanderbilt Medical Center established a consistent method for determining patient eligibility for transplantations between type A2 and B organs based on regular pre-transplantation blood titer measurements described in previous studies. "The transplant community may not have been aware of these prior studies or were unsure what to do. What we found in the literature and in our study was, yes, quarterly monitoring of pre-operative anti-A titers was feasible and straightforward and identified those B recipients in whom it was safe to proceed with A2 donor transplants," Dr. Shaffer said.

The study compared outcomes for 29 patients who received an A2 to B kidney transplant and 50 who received a B to B donor organ. Patients were followed for three years. There was no difference in patient or graft survival at one or two years and no difference in renal function.

There was, however, a significant difference in cost. Pre-transplantation titer screening added more than $76,500 over the three-year period. Total hospital costs were higher for type B patients who received A2 organs than for patients who received a B to B organ, by approximately $23,000.

Dr. Shaffer explained that costs may fall as transplantation centers gain experience. "This was the first study to report on the costs associated with A2 to B transplantation. One of our next steps is to look at costs over a broader period of time. We also plan to study ways of bringing down costs," he said.

"Our study shows that the UNOS policy to increase access to kidney transplantation for minorities works. Transplantation centers should consider offering this type of organ to their blood type B patients," he concluded.

More information: A2 to B Kidney Transplantation in the Post-KAS Era: A 3-year Experience with Anti-A titers, Outcomes, and Costs. *Journal of the American College of Surgeons*. Available at: doi.org/10.1016/j.jamcollsurg.2018.12.023