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Racial Disparities in Kidney Graft Survival: Does Donor Quality Explain the Difference?

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Racial disparities exist in access to kidney transplantation. Despite a threefold higher rate of end stage renal disease among African Americans (AA) compared to Caucasians (1), AAs face significant barriers in access to transplant referral, waitlisting and transplantation (2). Challenges continue for AAs even after organ receipt. As highlighted in the 2010 SRTR data report, 5-year graft survival for deceased donor (DD) transplants was 74.8% ($\pm 0.4\%$) for Caucasians and 66.3% ($\pm 0.5\%$) for AAs and these differences increase over time (1). The reasons for the disparities are unclear, and are likely multifactorial.

In this issue of the journal, Cannon et al. address this important issue in transplantation (3). The authors hypothesized that one reason for racial disparity in graft survival is that AA patients have a higher likelihood of receiving a poorer quality donor compared to Caucasians. Using the last decade of DD kidney transplant recipients from the United Network for Organ Sharing database, the authors examined the contribution of donor quality to the observed racial differences in 1-, 5- and 10-year renal allograft survival using the continuous kidney donor risk index (DRI). Small racial differences in donor quality were reported, where the mean DRI was 1.27 among AA patients versus 1.17 among Caucasians. This study raises several important questions that need to be addressed if we are to successfully reduce racial disparities in kidney transplantation.

First, what are the reasons for the racial differences in donor quality? The authors identified that the most important contributors to the higher DRI among AA versus Caucasians were increased use of (1) HCV (+) and (2) AA donors among AA recipients. The epidemiology of HCV likely drives this disparity, in that there is a higher prevalence of HCV among AA in the general population (4) and among ESRD patients (5). Essentially all HCV (+) donor kidneys are allocated to recipients with HCV (+); this drives the increased utilization of higher risk AA donors among AA recipients. AA patients may be more likely to receive kidneys from HCV (+) donors because transplantation with HCV (+) kidneys is associated with improved patient survival compared to remaining on dialysis (6). Alternatively, the relative under utilization of HCV (+) donors by non-AAs may contribute to the over utilization by AAs. The reasons for these racial differences in HCV (+) organs are likely multifactorial and may vary widely by center (7). It is unclear the extent to which both patient and provider preferences determine this decision to accept or reject HCV (+) kidneys. If providers are the primary drivers of this decision, research should define the

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basis for this practice to better address these disparities. If patient opinion is a significant contributor to this decision, it is important that providers ensure patients' understanding of the potential for inferior outcomes with HCV (+) kidneys compared to HCV (–) donors, balanced with the knowledge of increased morbidity and mortality risks with persistent dialysis therapy.

Second, does donor quality explain the racial difference in graft failure? The multivariable-adjusted Hazard Ratio (HR) for the effect of AA race on graft failure was 1.4 [95% Confidence Interval (CI): 1.3–1.6] and adjusting for DRI attenuated the HR to only 1.3 (95% CI: 1.2–1.4). This small reduction in the HR and the overlapping CI suggests that donor quality does not explain racial differences in graft failure. What other unmeasured factors may contribute to this disparity? Biologic factors, such as increased immunologic risk and lower absorption of immunosuppressants among recipients (8) or the presence of APOL1 gene variants in AA donors (9) are hypothesized to play a role. Potentially modifiable factors, such as distrust of the healthcare system, transportation barriers, poorer adherence to medications and ability to pay for immunosuppressant drugs (10) that may also influence access to and quality of posttrans-plant follow-up care are unmeasured in this study and could potentially explain the remaining racial disparities in graft survival. Our national registries fail to capture this detailed information, so accounting for these unmeasured factors in disparities research is a challenge. Center- and provider-level factors were also not explored in this analysis and future studies should elucidate the multilevel influence of patient, provider, center and regional factors that could contribute to racial differences in graft survival.

It will be equally important to use our existing knowledge of the multitude of reasons for racial disparities to design potential interventions to target modifiable factors and influence patient outcomes. For example, living donor (LD) transplantation is under used among AA patients, in that only 13.7% of the living donor recipient population is AA (1). Although donor type was not explored in this study, interventions that aim to increase LD transplantation among AA could certainly improve both donor quality and graft survival outcomes.

Although very important to investigate, it seems donor quality explains little of the racial differences in kidney allo-graft survival. Unmet challenges and opportunities remain to address the racial disparities in transplantation.

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