

Long-Term Outcomes in Kidney Donors

By Scott Reule and Hassan N. Ibrahim

As donor nephrectomy is entirely performed for the beneficence of the recipient, minimizing surgical morbidity and preserving long-term mortality is a priority. Currently, laparoscopic nephrectomy is associated with less pain, shorter hospital stay and faster return to work, and a calculated mortality rate of 3.1 per 10,000 donors, controlled for age, race, and sex (1,2).

Does kidney donation, with its associated loss of glomerular mass, impart a risk profile similar to that of patients with chronic kidney disease (CKD)? Many studies have demonstrated no significant increase in mortality among donors in comparison to variably matched controls and variable follow-up times. In a larger study, Ibrahim et al. reported on the vital status of approximately 3700 kidney donors, matched for age, sex, race, and BMI over a 40-year time frame. In their analysis, there appeared to be no significant decrease in lifespan and in fact, the donors seemed to outlive their controls (3). Segev et al. demonstrated no significant change in overall survival among more than 80,000 kidney donors compared to age- and comorbidity-matched controls using national registry data (2). Studies in older donors demonstrate similar findings. Berger et al. demonstrated no significant increase in mortality among donors older than 70 years of age (4).

In general, kidney donors are in excellent health as

they undergo extensive medical and surgical screening; however, the evidence suggests that reduced GFR may be an independent predictor of all-cause and cardiovascular mortality. Although GFR decline due to nephrectomy versus GFR decline in the setting of comorbid disease are mechanistically different, concerns regarding kidney donation and a possible increased cardiovascular risk remain. Mjoen et al. followed 2269 Norwegian donors for a median of 14.3 years and revealed that overall as well as cardiovascular mortality was lower in donors than the general population matched for age and gender (5). More recently, Garg et al. used extensive exclusion criteria to select for “the healthiest segment” of the general population for comparison with kidney donors. They were able to demonstrate no increased risk of death or cardiovascular event in kidney donors over a median follow-up of 6.5 years with maximum follow-up of 18 years (6).

Current literature suggests that donor outcomes are excellent and the appropriate screening of candidates may contribute to the decreased risk observed. Regardless, considerable interest remains in long-term outcomes among kidney donors as efforts are being made to expand the donor transplantation pool, including use of non-ideal donors. Creation of prospective studies of the less than ideal donors is crucial. ●

Scott Reule, MD, and Hassan N. Ibrahim, MD, MS, are affiliated with the division of renal diseases and hypertension at the University of Minnesota in Minneapolis, MN.

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Outcomes of Living Kidney Donation in Racial and Ethnic Minority Donors

By Krista L. Lentine and Dorry L. Segev

The expansion of kidney transplantation from living donors over the last several decades has included greater racial and ethnic diversification of the donor population. In the United States, the fraction of non-white living kidney donors rose from 24 percent in 1988 to 30 percent in 2011, representing more than 1700 donors. Currently, 12 percent of living kidney donors in the United States are African American and 13 percent are Hispanic. Because most countries, including the United States, do not currently maintain national registries that effectively track long-term donor outcomes, much of the information on postdonation health has been drawn from single-center, retrospective studies. The largest cohort study of living kidney donors published to date found no adverse impacts of donation on survival or end stage renal disease (ESRD) compared with general population registry controls (1), but notably, more than 98 percent of the sample was white. Racial differences in the burden and consequences of health complications among non-white persons in the general U.S. population are well documented. However, disparities in health after kidney donation have only recently raised attention.

In addition to more complete national collection of postdonation follow-up data, strategies to expand the evidence base for donor counseling and informed consent include database integration projects. Recent linkage of Organ Procurement and Transplantation Network (OPTN) registry data with the Social Security Death Master File demonstrated that while surgical and long-term mortality were higher in African American donors compared with white donors, long-term mortality did not exceed that of matched healthy non-donor

controls (2).

Race-related differences in the frequency of ESRD and medical comorbidity after donation are also becoming apparent. Integration of OPTN donation records with Centers for Medicare & Medicaid Services (CMS) ESRD reporting forms revealed that while ESRD is uncommon after kidney donation, the ESRD rate in African American donors is nearly five times that of white donors (3). We linked administrative data from a private insurance provider with OPTN donor registration data and found that compared with white donors, African American donors had a 50 percent higher risk for postdonation hypertension and more than twice the risks of medication-treated diabetes and chronic kidney disease (CKD) diagnoses. Hispanic donors also had twice the risk of CKD and nearly three times the risk of drug-treated diabetes (4). Preliminary data presented at ASN Kidney Week 2012 using similar methods also support consistently higher rates of medical complications in African American and Hispanic donors compared with white donors regardless of sample or payer source (5). While novel methods of risk stratification such as apolipoprotein L1 genotyping in African Americans hold promise for identifying certain high-risk donors in the evaluation phase, the direct impact of donation on medical and renal outcomes after donation remains uncertain.

As policies for the informed consent, medical evaluation, and follow-up of living organ donors are receiving more attention and formalization by the organizations that guide and regulate transplantation practice, continued efforts to strengthen the evidence that underlies best practices applicable to donors with diverse demographic

profiles are needed. These efforts should include assembly of healthy controls for assessment of risks directly attributable to donation as an important priority. In the meantime, practitioners should be frank with potential donors about what is currently known and what remains unknown about health outcomes after living donation across racial and ethnic groups. ●

Krista L. Lentine, MD, MS, is affiliated with the Center for Outcomes Research and the Abdominal Transplant Program at the Saint Louis University School of Medicine in St. Louis, MO. Dorry L. Segev, MD, PhD, is affiliated with the Abdominal Transplant Program, Department of Surgery, Johns Hopkins University, Baltimore, MD.

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