Women and Kidney Transplantation

Deborah B. Adey

Kidney transplant is the best kidney replacement treatment for end-stage kidney disease. The first step in moving toward kidney transplantation is referral to a transplant center for transplant evaluation. Education of dialysis staff and health-care providers may help increase referrals for evaluation. Patient education has been shown to enhance patient completion of the evaluation process. Patients have difficulty asking others to donate a kidney, but this process can be improved with home and community education. Living donors are more likely to be women than men, especially spousal donors. Deceased donors are more likely to be males younger than 35 years of age. There is a slight decrease in the rate of transplantation of women as compared with men, although not statistically significant. Pretransplant development of anti-human leukocyte antigen antibodies is more common amongst women and can be a barrier to successful transplantation and may prolong the waiting time for transplant. The long-term management of cardiovascular risk factors, osteoporosis, and age-appropriate cancer screening need to be addressed with posttransplant recipients. Women have an overall increased patient and graft survival as compared with men after transplant.

Key Words: Kidney transplant, Women, Organ donation

Kidney transplantation is considered to be the best option for renal replacement therapy for treatment of ESRD.[1] Kidney transplantation is the only form of renal replacement therapy that actually replaces all aspects of kidney function. Patient survival after transplant is superior to survival on dialysis, although this is somewhat skewed by the fact that those candidates who are not well enough to be listed for transplantation remain on dialysis. However, comparisons of transplant recipients to those actively wait-listed for transplant, and therefore considered a candidate for transplant, continue to show a survival advantage for transplant recipients.[1]

For one to be listed for kidney transplant, a referral must be made to a transplant center for a pretransplant evaluation. The intent of the evaluation process is to determine whether it is in the best interest of the patient to pursue kidney transplantation. The evaluation process typically involves a medical review and examination, an assessment by a social worker, and often a conversation with a financial coordinator. Underlying comorbid conditions such as active ischemic cardiac disease, peripheral vascular disease, active infection, current malignancy, or morbid obesity are factors that may render an individual not a candidate for transplantation. Earlier studies have documented discrepancies in referral rates of men vs women for transplantation.[2] Women were referred for transplantation 25% less than men. A more recent study addressed rates of access to deceased donor transplantation in the United States.[3] Using the United States Renal Data System from 1991 to 1996, data were queried to evaluate factors influencing likelihood of receiving a deceased donor transplant. Women accounted for 45.6% of the population at onset of ESRD, 39.5% of those at wait-listing for transplantation, and 37.2% of those receiving a deceased-donor kidney transplant. In this large study, there was no statistically significant difference between men and women being wait-listed for transplant before the onset of ESRD requiring dialysis, but the likelihood of being wait-listed for transplant after initiation of dialysis was slightly less for women than for men by 16%, although this was not statistically significant. Why the proportion of women referred was less than men is not clear. Speculations have included less interest in pursuing transplant on the part of women, less availability of family support after transplantation, and concerns that the option for transplantation has not been brought up by the medical community. There are also patient barriers to proceeding with evaluation[4] that include the patients perception that they have too many medical problems and would not pass the medical tests, fear of pursuing and undergoing transplant, concerns that they cannot afford the transplant medications, and acceptance by the patient that dialysis is not so bad. Because the initial step toward transplant is having a referral to a transplant center, education of the dialysis staff, who often make the referral, is critical,[5] as is focused education of the patients regarding the option for transplant.[6,7] Physicians also need to be educated about criteria of their referral centers for listing because there may be misconceptions about patient eligibility. Completion of the evaluation process is another common obstacle to proceeding with transplant and can be enhanced by patient education. Geographic barriers to transplantation exist,[8] with areas experiencing a high rate of ESRD having a lower rate of access to transplantation. There are clearly racial disparities with respect to geographic barriers, although no evidence of a gender bias exists.

From Department of Internal Medicine, Kidney and Pancreas Transplant Program, University of California–Davis, Davis, CA.

The author declares no conflicts of interest. The author receives funding from Genentech as a site principal investigator for a multicenter study.

Address correspondence to Deborah B. Adey, MD, University of California–Davis, Internal Medicine, 2233 Stockton Boulevard, Housestaff Building, Room 2011, Sacramento, CA 95817. E-mail: deborah.adey@ucdmc.ucdavis.edu

1548-5595/$36.00

http://dx.doi.org/10.1053/j.ackd.2013.06.008

There are over 96,000 patients listed for kidney transplantation with United Network Organ Sharing as of June 2013 (optn.transplant.hrsa.org). Listing criteria for transplantation vary somewhat between transplant centers, but they are generally similar. In general, patients need to be healthy enough to undergo the surgery for transplantation. The greatest impediment to being considered healthy enough to undergo surgery is underlying cardiovascular disease. Another major medical exclusion to transplantation is the presence of malignancy because exposure to immunosuppression may result in progression of malignancy because of impaired immune surveillance. Obesity can be an impediment to listing for transplantation, although the body mass index that is acceptable varies amongst centers from 30 to 40 kg/m^2. A history of nonadherence is also a barrier to listing for transplantation and may include ongoing tobacco, alcohol, or recreational drug use or nonadherence to prescribed medical orders such as may be evidenced by missed dialysis runs, cutting dialysis short, or poor compliance with dietary restrictions.

CLINICAL SUMMARY

- Education of dialysis staff may help increase referral of patients for transplant evaluation.
- There are gender and ethnicity differences in living kidney donation.
- Cervical cancer rates are increased 15 fold in renal transplant recipients.
- Fracture risk is increased in women post-transplant, especially those over age 65 years.
- Generally women have a longer patient and graft survival than men.

When facing transplant, the first decision point facing a recipient is whether a living donor is available. Living-donor transplants are a better option for recipients when possible. Patient and kidney allograft survival are typically better with a living donor, and surgery can be scheduled at a convenient time. One of the greatest barriers to a receiving a living-donor transplant is difficulty in asking others to donate a kidney. Patients are often concerned that family and friends will be angry with them for asking, they feel they will be bothering their family members, or they have concerns that they will be jeopardizing the health of others by asking for them to donate a kidney. Patients frequently have had a living-donor offer, but they decline this option because of the above concerns.[9] Women are better at asking others to donate to a loved one as opposed to asking someone to donate a kidney on their own behalf. The best success in locating a living donor typically comes when there is an "advocate" for the recipient. This eases the discomfort of the recipient with directly asking others to give them a kidney. An improvement in transplant rates with a live donor, especially amongst African Americans, has been achieved through home-based donor education sessions.[10]

Antibodies against human tissue (human leukocyte antigens [HLAs]) can develop in response to exposure to human tissue, and this poses another potential barrier to successful kidney transplantation. This commonly occurs after prior organ transplant, blood transfusion, or pregnancy.[11,12] Anti-HLA antibodies are assessed at the time of listing for transplant and are reported as panel reactive antibodies (PRA). Individuals with a PRA of 80% or greater are considered highly sensitized to HLA antigens and less likely to be offered an immunologically compatible organ. Women are at risk for developing anti-HLA antibodies as a result of pregnancy. Multiple pregnancies, especially fathered by different men, are more likely to result in a broader array of HLA antibodies. Even in the absence of detectable anti-HLA antibodies at the time of evaluation for transplant, there is still a risk for an anamnestic response when a woman is exposed to tissue that has common HLA with her children. Blood transfusions, especially in the era before Leukopoor filters, and prior organ transplant are other mechanisms by which patients may be exposed to human tissue and therefore are at risk for the development of anti-HLA antibodies. Prior transplant is more likely to result in a stronger PRA than prior pregnancy or blood transfusion.[13] Women on the wait list are more likely than men to have a positive PRA (60.3% vs 34.2% of men).[13] Offspring or spouses often step forward as potential donors, but they may be incompatible with their mother or wife because of sensitization to the donor HLA from prior pregnancies. Over 30% of individuals on the deceased-donor wait list for a kidney are highly sensitized to HLA antigens (SRTR Annual Report 2011) and therefore are at risk for a prolonged waiting time before receiving an immunologically compatible kidney.

Ultimately, 35.5% of women who are transplanted receive a living donor compared with 34.5% of men (based on OPTN data as of April 22, 2013). The types of living donors vary slightly based on gender and ethnicity (Table 1). Race and ethnicity are reported to United Network Organ Sharing at the time of candidate registration for waitlisting and are often self-reported and broadly categorized as White, Hispanic or Latino, Black or African American, Asian, Native American or Native Alaskan, Native Hawaiian or Pacific Islander, or other. White women are more likely to receive a living donor from a spouse or life partner (3.4%) as compared with minority (Black 1.2%, Hispanic 2.4%, or Asian 3.0%) women. This is in contrast to men, who receive a living-donor kidney from a spouse or life partner consistently more frequently: White men 5.5%, Blacks 2.2%, Hispanics 4.3%, and Asians 4.6%. Women are more likely than men to receive a kidney from their