

Size Matters in Renal Allograft Survival

Ron Shapiro

Department of Surgery, University of Pittsburgh, Pittsburgh, Pennsylvania

J Am Soc Nephrol 21: 891–891, 2010.
doi: 10.1681/ASN.2010040380

The clinical importance of nephron mass is a widely recognized determinant of renal fate and function.¹ Those who are born with adequate numbers of nephrons get through life with less risk for cardiovascular and chronic kidney disease. Size also matters when it comes to selecting a donor for renal allograft transplantation. In their interesting and provocative article in this issue of *JASN*, Giral *et al.*² describe a new clinical marker of allograft success: The ratio of the weight of the renal allograft before implantation to the recipient weight, or Kw/Rw.

Recipients of a kidney with a Kw/Rw of <2.3 g/kg had worse long-term graft survival, worse long-term graft function as measured by the GFR, more proteinuria, more hypertension, and more glomerulosclerosis than recipients of a kidney with a Kw/Rw of >2.3 g/kg. These investigators describe this risk for deterioration in graft function as occurring late, beyond 7 years after transplantation. They based their observations on an analysis of more than 1000 adult patients, virtually all deceased-donor kidney recipients. Not surprising, more female donors and male recipients were associated with lower ratios. The occurrence of acute rejection also had a more detrimental effect in patients with a low Kw/Rw.

These observations represent a new and elegant way of quantifying the potentially negative effect of nephron underdosing and make the additional point that this effect takes a longer time to appear after transplantation than we once thought. Most studies of outcomes after kidney transplanta-

tion suffer from the problem of insufficient follow-up, and, in fact, the authors' previous publication on this subject showed no impact of Kw/Rw on 3-year outcomes.

There are some caveats to consider. Because living donors made up <1% of the case material, it is not clear that these observations hold true in anyone other than recipients of deceased-donor kidneys. Kidneys from very young pediatric donors might also be associated with different outcomes, particularly when transplanted *en bloc*.³ No data in this article address these issues.

One may also speculate whether the current observation would hold true for recipients who were not receiving long-term calcineurin inhibitors. If calcineurin inhibitor-sparing or other avoidance regimens are used in an increasing percentage of patients, it will be interesting to see whether these observations on weight ratios remain relevant. Finally, it will be important to replicate these provocative observations of Giral *et al.*² in other large cohorts of patients with sufficiently long follow-up. In the meantime, the authors are to be congratulated for describing a novel measure that may have important implications for long-term outcomes in renal allograft recipients.

DISCLOSURES

None.

REFERENCES

1. Luyckx VA, Brenner BM: The clinical importance of nephron mass. *J Am Soc Nephrol* 21: 898–910, 2010
2. Giral M, Foucher Y, Karam G, Labrune Y, Kessler M, Hurault de Ligny B, Buchler M, Bayle F, Meyer C, Trehet N, Daguin P, Renaudin K, Moreau A, Souillou JP: Kidney and recipient weight incompatibility reduces long-term graft survival. *J Am Soc Nephrol* 21: 1022–1029, 2010
3. Shapiro R, Vivas C, Scantlebury VP, Jordan ML, Gritsch HA, Neugarten J, McCauley J, Randhawa P, Irish W, Fung JJ, Hakala T, Simmons RL, Starzl TE: "Suboptimal" kidney donors: The experience with tacrolimus-based immunosuppression. *Transplantation* 62: 1242–1246, 1996

See related brief review, "The Clinical Importance of Nephron Mass," on pages 898–910, and related article, "Kidney and Recipient Weight Incompatibility Reduces Long-Term Graft Survival," on pages 1022–1029.

Published online ahead of print. Publication date available at www.jasn.org.

Correspondence: Dr. Ron Shapiro, Department of Surgery, University of Pittsburgh, 4 Falk Clinic, 3601 5th Avenue, Pittsburgh, PA 15213. Phone: 412-648-3200; Fax: 412-648-3085; E-mail: shapiror@msx.upmc.edu

Copyright © 2010 by the American Society of Nephrology