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Donor-Recipient Weight and Sex Mismatch and the Risk of Graft Loss in Renal Transplantation

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Abstract

Background and objectives Relatively smaller kidney donor to recipient size is proposed to result in higher graft loss due to nephron underdosing and hyperfiltration injury, but the potentially additive effect of sex and weight mismatch has not been explored in detail. The purpose of this study was to determine if concurrent donor and recipient absolute weight and sex mismatch was associated with graft loss in a cohort of deceased donor kidney transplant recipients.

Design, setting, participants, & measurements The association of kidney donor and recipient absolute weight and sex difference with death-censored graft loss was explored using a cohort of United States deceased donor recipients between 2000 and 2014 through the Scientific Registry of Transplants Recipients. Donor-recipient sex pairings (male donor-male recipient; female donor-female recipient; male donor-female recipient; female donor-male recipient) were further stratified by donor and recipient absolute weight difference (>30 or 10-30 kg [donor<recipient; donor>recipient] or <10 kg [donor=recipient]) resulting in 20 weight and sex pairings. Time to death-censored graft loss for each pairing was evaluated using multivariable Cox proportional hazards models adjusting for donor, immunologic, surgical, and recipient predictors of graft loss compared with the reference group of male donor-male recipients with no weight mismatch (<10 kg difference).

Results Of 115,124 kidney transplant recipients, 21,261 developed death-censored graft failure (median graft survival time was 3.8 years; quartile 1 to 3, 0.0 to 14.8 years). After multivariable adjustment, the highest relative hazards for graft failure were observed for female recipients of male donor kidneys and male recipients of female donor kidneys in situations where the recipient was >30 kg larger than donor (hazard ratio, 1.50; 95% confidence interval, 1.32 to 1.70; hazard ratio, 1.35; 95% confidence interval, 1.25 to 1.45, respectively).

Conclusions A concurrent mismatch in donor-recipient weight (donor<recipient) and donor-recipient sex is associated with a higher risk of death-censored graft loss in kidney transplantation.

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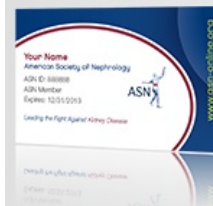
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