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P196 -Differences exist in kidney graft survival among female recipients stratified by donor sex and recipient age: a population cohort analysis from the United Kingdom

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Prior studies exploring sex differences in kidney graft survival have been inconclusive. A recent registry analysis from the United States by Lepeyre and colleagues (JASN 2017) has suggested kidney graft outcomes for kidney transplant recipients are influenced by both donor-sex and recipient-age. However, graft survival outcomes in the United States are not comparable to other countries and no international comparative analysis exists to ascertain the validity of these findings. The aim of this study was to replicate this analysis in a population-cohort analysis utilising registry data in the United Kingdom.

Our analysis included all patients receiving a kidney transplant between 2000 and 2016 in the United Kingdom (excluding multiple-organ transplants), using data obtained from the UK Transplant Registry. Death-censored graft survival was compared between male and female recipients. Analyses were performed separately for male and female donors to control for this factor. Initially, univariable Cox regression models were produced to measure the overall effect of recipient gender. Further models additionally contained recipient age and a recipient gender by age interaction term, to test whether the effect of recipient gender differed with age. Recipient age was divided into ordinal categories, and treated as a time-dependent covariate to account for the fact that recipients would move between age categories over the period of follow up. The model was then evaluated within each recipient age category.

Data were analysed for a total of 25,140 transplant recipients. Of these, 13,414 (53.4%) used organs from male donors, and a total of 15,690 (62.4%) recipients were male. Recipients were divided into categories by their age at transplant, namely 0-14 (N=771; 3.1%), 15-24 (N=1272; 5.1%), 25-44 (N=7602; 30.2%) and 45+ years (N=15,494; 61.6%). Univariate analysis found no significant association between recipient gender and death-censored graft failure, with hazard ratios for female vs. male recipients of 1.00 (95% CI: 0.92 – 1.08, p=0.977) and 1.07 (95% CI: 0.98 – 1.16, p=0.131) within the male and female donor subgroups, respectively. Comparably, among recipients of female donors, no significant interaction between recipient age and gender (p=0.119) was found. However, a significant interaction term was observed within the male donor subgroup (p=0.009). Among recipients of male donors, younger female recipients tended to have higher rates of graft failure than male recipients, with hazard ratios of 1.20 (p=0.492), 1.25 (p=0.131) and 1.16 (p=0.037) for recipients aged 0-14, 15-24 and 25-44 years, respectively. However, for those aged 45+ years, female recipients had a significantly lower rate of graft failure than males, with a HR of 0.90 (95% CI: 0.81 – 0.99, p=0.036).

Among recipients of male donors, the association between recipient gender and kidney graft failure risk differed significantly by recipient age. Younger female recipients had shorter graft survival than younger males, but the opposite effect was observed in older recipients. No significant effect of recipient gender was observed for female donor organs. Putative explanations for differential sex-specific results include influence of sex hormones, male-specific minor histocompatibility antigens and gender-specific differences in medication adherence and kidney size.