Impact of kidney and recipient weight incompatibility on the allograft outcomes in kidney transplant recipients with pre-transplant diabetes mellitus: a single center retrospective cohort study

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Background: The aim of this study was to analyze the impact on the adverse allograft outcome of transplanting relatively small kidneys in patients with pre-transplant diabetes mellitus (DM).

Methods: From January 2010 to December 2018, 1,290 kidney transplants (KTs) were performed in Seoul St. Mary's Hospital. Of these, 793 cases of non-sensitized living donor KT recipients were enrolled. They were divided into four groups (non-DM large kidney, non-DM small kidney, DM large kidney, and DM small kidney) according to the median kidney weight and recipient weight ratio (2.9 g/kg) and presence or absence of pre-transplant DM. The primary outcome of this study was death censored graft loss (DCGL) rate.

Results: There was no significant difference in the biopsy-proven acute rejection rate among the four groups. DM small kidney group showed the highest DCGL rate (18/131 [13.7%], $P=0.004$) and was to be the independent risk factor for DCGL (adjusted hazard ratio, 2.829; $P=0.003$). Moreover, renal function after 4 years of transplantation worsened faster in the DM small kidney group compared to other groups, and allograft survival decreased after 1 year of transplantation.

Conclusions: Our results suggest that transplanting large kidneys rather than small kidneys is considered to have an advantage in terms of allograft outcome in pre-transplant DM patients, and this should be considered in donor selection.

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