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Impact of Recipient-Donor Body Mass Index Mismatch on Deceased donor kidney transplantation

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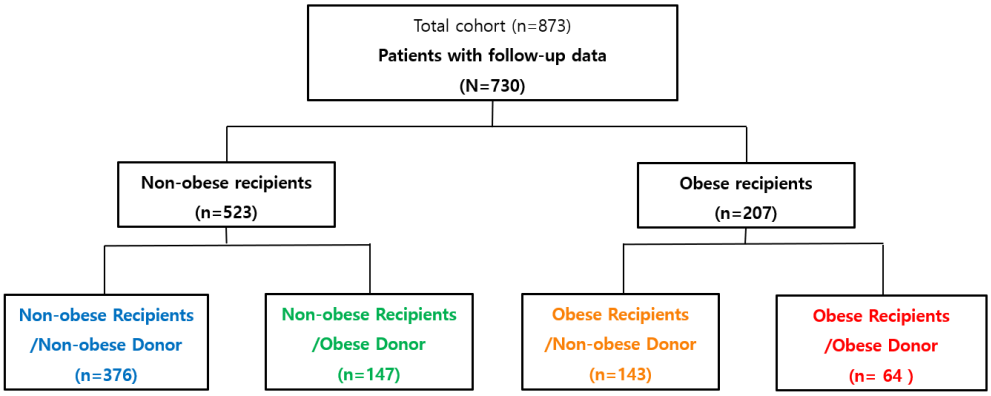
Objectives : We aimed to describe the interactive effect of recipient-donor body mass index (BMI) pairing after deceased donor kidney transplantation (DDKT) on short & long-term graft survival in multi-center cohort. We also explored whether recipient-donor obesity status implies appropriate recipient-donor selection measures in DDKT.
Methods : A total of 730 patients receiving DDKT between 2006 and 2021 among 3 multi-centers were included in the study. Patients were divided according to their recipient-donor (RD) obesity. Obesity was defined as having a BMI of 25 or over. Non-obese Recipients/Non-obese Donor (NOR/NOD; N=376), Non-obese Recipients/Obese Donor (NOR-OD; N=147), Obese Recipients/Non-obese Donor (OR-NOD; N= 143) and Obese Recipients/Obese Donor (OR-OD; N=64) groups. Death-censored graft loss (DCGL), delayed graft function (DGF), and acute rejection (AR) were analyzed retrospectively.
Results : Examining the effect of RD obesity status on DCGL (relative to NOR-NOD), the adjusted relative hazard was highest in the OR-OD pairing (HR 2.19, 95% CI 1.21–3.89). This was followed by OR-NOD (HR 1.23, 95% CI 1.12–2.04). OD-NOR pairing was not associated with risk of DCGL. In analysis of DGF and AR, OR-OD group showed significantly higer incidence compared with other 3 groups (p=0.025). Death-censored graft survival rate was notably lowest in OR-OD group (p=0.018). In analysis of graft function, donor obesity alone didn't have significant impact. On the other hand, recipient obesity alone and combined obesity have significant impact on kidney function(eGFR) since post-DDKT 3month till 3year.
Conclusions : Combined recipient-donor obesity has intensified negative impacts on early and late post-DDKT outcomes. It is not only significant risk factor for DGF and allograft function, but also leads to increased DCGL. Utilization of obese donors' kidney to obese recipient in DDKT should be considered more cautiously. Since we can't control deceased donor obesity in advance, our study highlights the importance of controlling potential recipients' pre-transplant obesity to optimize post-transplant outcomes in DDKT.

KSN 2024 patient flow chart (fig1.).png

Patient flow chart

Obesity : BMI >=25



KSN 2024 patient flow chart (fig1.).png

Table2. Adjusted risk for post-transplant adverse outcomes for each DR obesity pairing.

Group	DCGL	All-cause graft loss	DGF	Acute rejection
	Hazard ratio (95% CI)	Hazard ratio (95% CI)	Odds ratio (95% CI)	Odds ratio (95% CI)
NOR-NOD	Ref.	Ref.	Ref.	Ref.
NOR-OD	1.05 (0.54-1.33)	1.07 (0.78-1.39)	1.05 (0.64-1.53)	1.45 (0.93-2.26)
OR-NOD	1.23 (1.12-2.04)	1.94 (1.25-3.0)	1.25 (0.79-1.98)	1.12 (0.59-2.14)
OR-OD	2.19 (1.21-3.98)	2.21 (1.24-3.94)	2.10 (1.18-3.73)	1.84 (1.19-2.85)

Yellow (HR 1.2-1.6), *Orange* (HR 1.6-2.0), *Red* (HR >2.0) (colors only apply to significant results).
CI, confidence interval; DCGL, death censored graft loss; DGF, delayed graft function; NOR, non-obese recipient; NOD, non-obese donor; OR, obese donor; OD, obese donor; Ref, reference.