Changes in recipient body mass index for the first year after kidney transplantation are associated with inpatient variability of tacrolimus concentration and long-term graft function

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Background: The aim of this study was to investigate the 5-year outcome of kidney transplant recipient according to the weight changes for the first year after kidney transplantation.

Methods: Data were retrospectively collected for 289 kidney transplant recipients between January 2012 and December 2014 in Seoul National University Hospital. Body mass index (BMI) was assessed at pre-transplant and before discharge, 1-month, 3-month, 6-month, and 12-month post-transplant. Inpatient variability (IPV) was calculated as a coefficient of variation (CV), and outcome was evaluated as graft survival, estimated glomerular filtration rate (eGFR), and viral infection. The two groups according to the BMI changes during 1 year were divided as follows: group I (BMI change ≤ -1.5 kg/m² or $\geq +1.5$ kg/m²) and group II (-1.5 kg/m² < BMI change < $+1.5$ kg/m²).

Results: BMI declined to its lowest level at discharge (21.04 ± 3.59 kg/m²) and gradually increased to one year (22.38 ± 3.18 kg/m²). There was no significant correlation between IPV and BMI change ($\rho = 0.19$, $P = 0.757$). However, the proportion of patients with high IPV (CV > 25%) was higher in group I ($P = 0.008$). There was no difference in graft survival between the two groups ($P = 0.646$). The amount of change in eGFR (5-year eGFR to 1-year eGFR) tended to decrease to -3.29 ± 25.65 mL/min/1.73 m² ($P = 0.185$) in group I, whereas it tended to slightly increase to 0.78 ± 18.38 mL/min/1.73 m² ($P = 0.583$) in group II. However, there was no statistically significant difference between the two groups ($P = 0.154$). There was no significant difference between the two groups in the incidence of viral infection (any virus, $P = 0.928$; cytomegalovirus, $P = 0.830$).

Conclusions: Our data demonstrated that recipients were more likely to have high IPV when the change in BMI was greater than ± 1.5 kg/m² during 1 year after kidney transplantation. In addition, there was a tendency for the 5-year eGFR to decrease in those patients.

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