Recoverability of diabetic nephropathy of donor kidney after kidney transplantation

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Background: The effect of diabetic donors on the outcome of kidney transplantation (KT) is controversial. This study aimed to analyze the changes in pathologic lesions in the diabetic donor kidney after KT by performing biopsy at 2 weeks and 1 year after KT. Further, the difference in the change according to the recipient's diabetes mellitus (DM) status, glycemic control status, and severity of donor kidney diabetic nephropathy (DN) was also determined.

Methods: This retrospective study included 103 patients who underwent KT, with kidneys from donors with a history of DM, between 2013 and 2018 at Samsung Medical Center. Of these 103 patients, 37 underwent biopsy at 2 weeks and 1 year after KT, of which, the data of 34 patients were reviewed. Biopsy specimens were reviewed by light microscopy and electron microscopy. Glomerular basement membrane (GBM) thickness at 2 weeks and 1 year was compared using paired t-test and Wilcoxon signed-rank test. Statistical significance was set at $P < 0.05$.

Results: Biopsy showed that DN occurred in 29 of the 34 patients. However, 17 (50%) of them were classified as having class I, a mild case with an increase in GBM thickness. Extremely small histological changes were observed in 22 patients (64.7%), including 5 patients who did not show DN. At 1 year after transplantation, there was no change in the DN histologic class in 26 patients (76.5%), and there was no statistically significant difference in the change in GBM thickness. This pattern was observed regardless of the recipient's DM or fasting blood sugar control status.

Conclusions: Donor DN was mostly stable for 1 year after KT, and this pattern did not depend on the recipient's DM or FBS control status. With this understanding, clinicians can easily use kidneys from DM donors, thereby reducing the kidney discard rate.

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