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The renal allograft function is a risk factor of left ventricular remodeling after kidney transplantation

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Objectives : Cardiovascular disease is the leading cause of morbidity and mortality in kidney transplantation (KT) patients. The prevalence of left ventricular hypertrophy (LVH) increases with the progression of renal insufficiency in patients with chronic kidney disease. LVH has been reported to regress in the early period after successful KT; however, limited data are available about whether the progression of graft dysfunction induces the recurrence of LVH in KT patients. Therefore, we investigated the prognostic effects of graft function on LVH after KT.

Methods : We reviewed KT patients at Seoul National University Hospital from January 1973 to December 2009. The creatinine elevation ratio (CER, the percentage change in the creatinine level from 1month to 5 years post-transplant) was calculated as follows: (creatinine level at 5 years – creatinine level at 1 month)/creatinine level at 1 month × 100. The study population was classified into two groups according to the CER achieved: the high CER group included patients with a CER ≥25%, and the low CER group included those with a CER<25%.

Results : One hundred twenty-eight kidney transplant recipients who received an echocardiographic examination before and 1 year and 5 years after KT were enrolled in this study. Mean age of recipients at KT was 43.4 years, and 84 (65.6%) recipients were male. At the time of KT, ischemic heart disease was prevalent in 11 (8.6%), diabetes in 25 (19.5%), hypertension in 113 (88.3%) and cerebrovascular disease in 6 (4.7%) patients. There was no significant difference in the systolic or diastolic blood pressures and the use of anti-hypertensive drugs between the high CER group and low CER group before and 5 years after KT. Creatinine levels at 5 year after KT was significantly higher in the high CER groups than in the low CER group (3.7±3.3 vs.1.3±1.0 mg/dL, p<0.001). The mean left ventricular mass index (LVMI) were 135.7 and 134.7 g/m2 before KT, and 101.7 and 123.7 g/m2 at 5 years after KT in the low CER and high CER groups, respectively. The LVMI before (p=0.917) or 1 year

(p=0.357) after KT was not different between the two groups, but the LVMI at 5 years post-transplant was higher in the high CER group than in the low CER group (p=0.014). The LVMI increased after its initial decrease in the high CER group, whereas its reduction was maintained in the low CER group during the 5 years after KT (p=0.009, repeated-measure ANOVA).

Conclusions : These data suggest that deterioration of renal allograft function is associated with left ventricular remodeling after KT. Careful monitoring of cardiac function and rigorous control of cardiovascular risk factors are needed in patients with renal functional deterioration who undergone KT.

Keywords : kidney transplant, left ventricular remodeling, renal allograft function, serum creatinine