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Pre-transplant Cardiovascular Risk Factors Affect Kidney Allograft Survival: A Multi-center Study in Korea

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Background: Pre-transplant cardiovascular (CV) risk factors affect the development of CV events even after successful kidney transplantation (KT). However, the impact of pre-transplant CV risk factors on allograft failure (GF) has not been reported.

Methods: We analyzed the graft outcomes of 2,902 KT recipients who were enrolled in a multi-center cohort from 1997 to 2012. We calculated the pre-transplant CV risk scores based on the Framingham risk model using age, gender, total cholesterol level, smoking status, and history of hypertension.

Results: Vascular disease (a composite of ischemic heart disease, peripheral vascular disease, and cerebrovascular disease) was noted in 6.5% of the patients. During the median 6.4 years follow-up, 286 (9.9%) patients had developed GF. In the multivariable-adjusted Cox proportional hazard model, pre-transplant vascular disease was associated with an increased risk of GF (HR 2.51; 95% CI 1.66-3.80). The HR for GF (comparing the highest with the lowest tertile regarding the pre-transplant CV risk scores) was 1.65 (95% CI 1.22-2.23). In the competing risk model, both pre-transplant vascular disease and CV risk score were independent risk factors for GF. Moreover, the addition of the CV risk score, the pre-transplant vascular disease, or both had a better predictability for GF compared to the traditional GF risk factors.

Conclusion: In conclusion, both vascular disease and pre-transplant CV risk score were independently associated with GF in this multi-center study. Pre-transplant CV risk assessments could be useful in predicting GF in KT recipients.

Keywords: cardiovascular disease, risk factors, kidney graft survival, competing risk analysis