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High pretransplant FGF-23 level is associated with poor graft survival and persistent vitamin D insufficiency in kidney transplant patients

Jung Hwa Ryu[1], Hee Jung Jeon[2], Tae Yeon Koo[3], Jaeseok Yang[4]
[1]Department of Internal Medicine-Nephrology, Ewha Womans University School of Medicine, Korea, Republic of
[2]Department of Internal Medicine-Nephrology, Hallym University College of Medicine, Korea, Republic of
[3]Department of Internal Medicine-Nephrology, Seongnam Citizens Medical Center, Korea, Republic of
[4]Department of Surgery-Transplantation, Seoul National University College of Medicine, Korea, Republic of

Objectives: Vitamin D [25(OH)D] insufficiency and FGF-23 elevation in chronic kidney disease (CKD) is usually ameliorated after kidney transplantation (KT). However, post-transplant vitamin D insufficiency are associated with poor graft outcome. This study aimed to investigate the effect of pretransplant FGF-23 level on post-transplant vitamin D status and clinical outcomes.

Methods: The KoreaN cohort study for Outcome in patients With Kidney Transplantation (KNOW-KT) is a multicenter, observational cohort study. Four hundred subjects for whom serum FGF-23 measurement was available were included in this study. Annual serum 25(OH)D and clinical outcomes; all-cause mortality, cardiovascular event, graft survival, and fracture were assessed according to baseline FGF-23 levels.

Results: Median followup was 6.7 years. Serum 25(OH)D levels were increased after KT (before KT, 12.6±7.4; 1 year after KT, 22.6±6.4; 3 years after KT, 24.3±5.8 ng/mL). However, they were declined to 20.6±8.1 ng/mL at 6 years after KT. Vitamin D deficiency was present in 79.1% just before KT, then it was decreased to 30.8% at 3 years after KT, whereas it was increased 37.8% at 6 years after KT. Serum FGF-23 level was decreased after KT [2140.6 (391-9277) pg/ml before KT vs. 50.0 (23.6-94.6) pg/ml at 3 years after KT, P=0.001]. The FGF-23 level showed negative correlation with serum vitamin D levels. When we categorized subjects into tertile according to baseline FGF-23 level; low, middle, high FGF-23 groups. The 25(OH)D in the low baseline FGF-23 group was lowest at any point during the followup. High baseline FGF-23 level was a risk factor for poor graft survival (HR 2.098, 95% C.I.; 1.201-3.664, P=0.009).

Conclusions: Increased FGF-23 could interfere vitamin D activation even after KT and is a risk factor for graft survival.