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

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Background: 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 still associated with poor graft outcome. This study aimed to investigate the effect of pre-transplant 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 follow-up 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 21.2 ± 8.4 ng/mL at 6 years after KT, 20.6 ± 8.1 ng/mL. 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 ($2,140.6$ pg/mL [391–9,277] before KT vs. 50.0 pg/mL [23.6–94.6] at 3 years after KT; $P=0.001$). The FGF-23 showed negative correlation with serum vitamin D levels. When we categorized subjects into tertile according to baseline GFG-23 level; low, middle, high FGF-23 groups. However, the 25(OH)D in the low baseline FGF-23 group was lowest at any point during follow-up. High baseline FGF-23 level was a risk factor for poor graft survival (hazard ratio, 2.098; 95% confidence interval, 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.

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