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Improved Serum Vitamin D level and better cardiovascular disease outcomes after Kidney Transplantation

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Objectives: Vitamin D deficiency increases cardiovascular disease (CVD) risk through both immunologic and non-immunologic mechanisms. Although vitamin D deficiency is common in end stage renal disease patients, causative evidences of vitamin D in suppressing CVD progression are lacking in kidney transplant (KT) patients. This study aimed to investigate an association between vitamin D status and CVD outcomes in KT patients.

Methods: The **K**orea**N** cohort study for **O**utcome in patients **W**ith **K**idney **T**ransplantation (KNOW-KT) is a multicenter, observational cohort study. The subjects that had been followed for at least 3 years after KT were included in this analysis.

Results: A total of 610 patients were analyzed. Serum 25-OH-vitamin D_3 levels were increased after KT (before KT, 12.1±5.4 ng/mL; 1 year after KT, 20.8±10.3ng/mL; 3 years after KT, 23.7±12.1ng/mL; 5 years after KT, 19.0±10.9ng/mL). Vitamin D deficiency was decreased after transplantation, but still persist in 39.5% of KT patients. When we categorized subjects to vitamin D improvement group and non-improvement group according to change of vitamin D levels after KT, aortic calcification score (Kauppila score) was significantly reduced in vitamin D improved group. The vitamin D improvement group showed a better 6-year patient survival (RR= 0.491, 95%CI: 0.189-0.914) and CV outcomes (RR=0.174, 95%CI: 0.066-0.724). Vascular calcification-related factors such as sclerostin, osteoprotegerin, fetuin-A, and FGF23 were decreased after KT and showed negative correlation with serum vitamin D levels. Higher baseline FGF23 level was negative correlation with 25-OH-vitamin D_3 level until 6 years after transplantation.

Conclusions: In conclusion, improvement in vitamin D status has a beneficial role in reducing vascular calcification in KT patients and pre-transplant FGF23 monitoring is beneficial to predict improvement in vitamin D level.