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Impact of Serum Vitamin D Status on Vascular Calcification 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 **KoreaN** cohort study for **Outcome in patients With Kidney Transplantation (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 420 patients were analyzed. Serum 25-OH-vitamin D₃ levels were increased after KT (before KT, 12.6±7.4; 1 year after KT, 20.7±9.4; 3 years after KT, 24.7±11.1 ng/mL). Vitamin D deficiency was present in 79.1% just before KT, whereas it was decreased to 57.1% and 30.8% at 1 and 3 years after KT, respectively. 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. 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. On the other hand, klotho levels were positively correlated with vitamin D levels. Vitamin D supplementation was more common in the vitamin D improvement group. However, there was no difference in either acute rejection rate or CVD occurrence according to vitamin D status. PWV, ABI, and 5-year patient survival rate seemed to be better in the improvement group, but difference was not statistically significant.

Conclusions: Improvement in vitamin D status has a beneficial role in reducing vascular calcification in KT patients and therefore regular vitamin D supplementation can be recommended.