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Clinical Significance of Vitamin D level on Preexisting and Post-transplant Diabetes Mellitus for 6 Years After Kidney Transplantation: KoreaN Cohort Study for Outcome in Patients With Kidney Transplantation (KNOW-KT)

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Objectives: An association between vitamin D and diabetes mellitus (DM) has been reported, but there are few reports for impact of vitamin D on preexisting DM and post-transplant DM (PTDM). Therefore, this study aims to investigate clinical significance of vitamin D based on diabetic status in KTRs.

Methods: A total of 995 KTRs were enrolled in KoreaN cohort study for Outcome in patients With Kidney Transplantation (KNOW-KT) between July 2012 and August 2016. KTRs were categorized into 3 groups: nondiabetic, preexisting DM and PTDM. Vitamin D status at KT was defined to deficiency (<10 ng/ml), insufficiency (10-30 ng/ml), and normal (\geq 30 ng/ml).

Results: Nondiabetic group was 643 (64.6%), preexisting DM group, 267 (26.8%), and PTDM group, 85 (8.5%). In all groups, vitamin D levels gradually increased after KT, then showed equilibrium at 2 years, and decreased after 4 years, but there was no significant difference of vitamin D levels. However, the proportion of vitamin D deficiency at KT was the highest in preexisting DM group compared with other groups. Death-censored graft survival rate was significantly lower in preexisting DM group compared with other groups ($P=0.049$). Especially, the group with preexisting DM and vitamin D deficiency showed the lowest rate, and it showed the significant synergistic effect on the allograft outcome ($P=0.022$). In the multivariate analysis, older age was an independent risk factors for allograft failure (HR 1.045, 95% C.I. 1.005-1.087, $P=0.026$). Patient survival rate was significantly lower in preexisting DM group compared with other groups ($P=0.008$).

Conclusions: The prognosis of KTRs with preexisting DM and vitamin D deficiency was the worst comparing nondiabetic and PTDM groups. Therefore, careful monitoring after KT of candidates with pre-transplant DM and vitamin D deficiency is required.