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VITAMIN K DEPENDENT PROTEINS AFTER KIDNEY TRANSPLANTATION: RESULTS FROM PROSPECTIVE STUDY.

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Background and Aims: Two Vitamin K-dependent proteins (VKDPs) link bone and vasculature in CKD-MBD: Bone Gla Protein (BGP) and Matrix Gla Protein (MGP). In ESKD, Vitamin K deficiency is highly prevalent and leads to increased levels of inactive VKDPs (undercarboxylated (ucBGP and dephosphorylated (dp)-uMGP), which are linked to greater risk of fractures and severity of vascular calcification. We hypothesized that kidney transplantation (KT) would improve Vitamin K status and lower levels of inactive VKDPs.

Method: Between 2014-2017, we conducted a study in 34 patients to assess changes in VKDPs during the 1st year of KT. In a specialized lab we determined VKDPs pre- and 1-year post-KT: total BGP, uc BGP, total MGP, and dp-uc MGP. We determined the prevalence of Vitamin K deficiency based on levels of uc BGP and dp-uc MGP.

Results: Our cohort had a mean +/- SD age of 48 +/- 14 years, 32% were female and 97% were Caucasian. 1 year post-KT, there was a decrease in the levels of all VKDPs and the prevalence of Vitamin K deficiency (**Table 1** and **Figure 1**). Patients with greatest severity of Vitamin K deficiency pre-KT had the largest decreases of inactive VKDPs post-KT.

Conclusion: KT was associated with improvement in Vitamin K status as manifested by decreased levels of inactive VKDPs. These are the first prospective data on VKDPs in CKD patients pre- and post-KT. Studies are needed to assess the impact of improvement in VKDP status after KT on CKD-MBD outcomes.

Variable	Pre-KT	Post-KT	p-value
uc-BGP ng/mL (median; IQR)	8.56 (5.45, 9.55)	3.41 (1.24, 4.80)	< 0.001
Vitamin K deficient by uc-BGP – n (%) (Cut-Off: uc-BGP>=4.5 ng/ml) *	26 (76.5%)	11 (32.4%)	<0.001
Total BGP ng/mL (median; IQR)	132 (79.85, 279.5)	22.55 (18.85, 30.6)	<0.001
Total MGP nmol/L (median; IQR)	29.19 (26.67, 32.30)	20.15 (14.68, 23.23)	<0.001
dp-ucMGP pmol/L (median; IQR)	910.5 (653.3, 1396.5)	637 (517, 777.5)	<0.001
Vitamin K deficient by dp-ucMGP- n (%) (Cut-Off: dp-uc MGP>500 pmol/L)	33 (97.1%)	27 (79.4%)	0.012

Figure 1. Total BGP and MGP levels in patients Pre and Post-KT.