A decreased level of serum soluble Klotho is a biomarker associated with vascular calcification in peritoneal dialysis patients

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Introduction and Aims: Low serum Klotho levels are related to the prevalence of cardiovascular diseases in community-dwelling adults. However, it is unclear whether the serum Klotho levels are associated with vascular calcification in peritoneal dialysis patients.

Methods: We determined the levels of serum soluble Klotho in 58 continuous ambulatory peritoneal dialysis (CAPD) patients using ELISA and investigated the relationship between the level of Klotho and markers of CKD-mineral and bone disorder (CKD-MBD) and the abdominal aortic calcification score (AAC), a marker of vascular calcification.

Results: Fifty CAPD patients (86.2%) had abdominal aortic calcification. The serum Klotho level significantly correlated with the 25-hydroxyvitamin D level and inversely correlated with AAC, serum phosphorus and FGF23, not correlated with the parathyroid hormone, bone-specific alkaline phosphatase (BAP), and serum calcium levels. There were significant decreases in serum Klotho in patients with abdominal aortic calcification of ACI>8. Multivariate Logistic regression analysis showed that lower serum soluble Klotho level and FGF23 were independent risk factor for abdominal aortic calcification. ROC-AUC of serum soluble Klotho for abdominal aortic calcification was 0.81 (cut-off 153.78 pg/mL, accuracy 87.5%, specificity 58.0%).

Conclusions: Decreases in the serum soluble Klotho levels are independently associated with vascular calcification in peritoneal dialysis patients. Further research exploring whether therapeutic approaches to maintain or elevate the Klotho level could improve vascular calcification in peritoneal dialysis patients is warranted.