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High Parathyroid Hormone Associated with Lower Calcidiol Serum in Pre-dialysis Diabetic Kidney Disease Patients

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Objectives : Diabetic Kidney Disease (DKD) is one of the most common forms of chronic kidney disease (CKD) and accounts for 50% of requiring renal replacement therapy end-stage renal disease in developing countries. Impairment of kidney function in mineral homeostasis risking patients with DKD to higher cardiovascular morbidity and mortality. Parathyroid hormone and Vitamin D deficiency are thought to worsen the progression of kidney damage. Nevertheless, there are no guidelines for routine checks of vitamin D and iPTH levels and appropriate time for vitamin D supplementation in DKD patients. This study aims to investigate the relationship between calcidiol (25[OH]D3) and intact parathyroid hormone (iPTH) levels in predialysis DKD patients.

Methods : This cross-sectional study was carried out in the internal medicine outpatient department at Dr. Soetomo General Academic Hospital from July to December 2019. Sixty-five DKD pre-dialysis patients were included. Levels of calcidiol and iPTH were measured using enzyme-linked immunosorbent assay (ELISA) and statistically analyzed using a correlational method.

Results : The majority of subjects (60%) are male, with a mean of age 55,68 ± 8,9 years old and have stage 3 CKD with the highest degree of proteinuria is +2. The duration of T2DM in the majority is < 5 years with a mean of HbA1c 7.86 ± 1.9. Vitamin D deficiency occurred in 55 (84.6%) patients with a mean of calcidiol level 14.12 ± 8.3 ng/ml. An increase in iPTH levels was found in 53 (81.5%) patients with a mean of iPTH level 122.98 ± 106.99 pg/ml. The level of iPTH was negatively correlated (p <0.05) with calcidiol.

Conclusions : Vitamin D deficiency increases parathyroid hormone levels through inhibition of the PTH inhibitor gene and decreases calcium absorption in the intestine which triggers PTH production. It is important to maintain vitamin D levels at optimal levels to prevent further disease progression due to secondary hyperparathyroidism.

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Variable	Correlation Coefficient	P Value
iPTH & Calcidiol Levels	-0,246	0,048

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