**Discussion**

**Vitamin D deficiency and vascular calcification**

Female gender had been shown to be associated with 25-hydroxyvitamin D (25D) deficiency in hemodialysis patients (1,2). However, the relationship between the serum vitamin D level and vascular calcification scores in hemodialysis patients remained unclear. Chang et al. illustrated a negative correlation of 25D levels with the Kauppila index in 289 hemodialysis patients from a cohort in South Korea (2). Wang et al. revealed a similar result, where 25D levels were negatively related to the Kauppila index in 126 hemodialysis patients from China (3). In both studies, 25D levels lost their significances after adjustment. Kanbay et al. studied 177 patients with CKD stages 2 to 3 (eGFR 30–90 mL/min/1.73m2), in which 25D levels showed no significant correlation with Gensini score in univariate analysis (4). The relationship between 25D and vascular calcification in different genders remained unclear, but the evidences may support some level of association between female gender and vascular calcification.

**Sclerostin and vascular calcification**

**Parathyroid hormone and vascular calcification**

A very low parathyroid hormone (PTH) level (VLPL) is associated with an increased risk of adynamic bone disease, vascular calcification, and mortality in hemodialysis patients (5).

1. Jean G, Charra B, Chazot C. Vitamin D Deficiency and Associated Factors in Hemodialysis Patients. J Ren Nutr. 2008;18(5):395–9.

2. Chang JH, Ro H, Kim S, Lee HH, Chung W, Jung JY. Study on the relationship between serum 25-hydroxyvitamin D levels and vascular calcification in hemodialysis patients with consideration of seasonal variation in vitamin D levels. Atherosclerosis. 2012;220(2):563–8.

3. Wang F, Wu S, Ruan Y, Wang L. Correlation of serum 25-hydroxyvitamin D level with vascular calcification in hemodialysis patients. Int J Clin Exp Med. 2015;8(9):15745–51.

4. Kanbay M, Nicoleta M, Selcoki Y, Ikizek M, Aydin M, Eryonucu B, et al. Fibroblast growth factor 23 and fetuin A are independent predictors for the coronary artery disease extent in mild chronic kidney disease. Clin J Am Soc Nephrol. 2010;5(10):1780–6.

5. Jean G, Lataillade D, Genet L, Legrand E, Kuentz F, Moreau-Gaudry X, et al. Association between Very Low PTH Levels and Poor Survival Rates in Haemodialysis Patients: Results from the French ARNOS Cohort. NEPHRON Clin Pract. 2011;118(2):c211–6.