Risk Factors of Coronary Artery Calcification in Non-Dialysis Chronic Kidney Disease

Aksika Salin1
Pairoj Chattranukulchai1
Somchai Eiam-ong1

Paweena Susantitaphong2
Kearkiat Praditpornsilpa1

1Department of Medicine, Faculty of Medicine, Chulalongkorn University, King Chulalongkorn Memorial Hospital, Bangkok, Thailand. 2Division of Nephrology, Department of Medicine, Faculty of Medicine, Chulalongkorn University, Bangkok 10330, Thailand

Background: Cardiovascular disease is the major cause of death in chronic kidney disease (CKD). Despite optimal control of traditional cardiovascular risk factors including diabetes mellitus, hypertension, and dyslipidemia, CKD patients are still having non-traditional cardiovascular risk factors, such as anemia, hyperphosphatemia, and vascular calcification.

Objective: To investigate risk factors of coronary artery calcification in non-dialysis chronic kidney disease.

Methods: We performed a cross-sectional analysis to explore the associated risk factors of coronary artery calcification (CAC) in non-dialysis CKD patients. Biochemistry laboratory tests were determined, and the severity of CAC was measured by non-contrast multi-slice computer tomographic.

Results: Twenty-two patients (12 men, mean age 68.8±14.4 years) were enrolled (mean estimated glomerular filtration rate 58.6±11.8 mL/min/1.73m2, mean hemoglobin 12.3±2.1 g/mL, mean HbA1C 6.4±1.3%, mean serum LDL 101.8±26.8 mg/Dl, mean serum albumin 3.8±0.4 g/dL, mean serum calcium 9.0±0.5 mg/dl, mean serum phosphate 3.6±0.6 mg/dl, mean serum intact parathyroid hormone 62.5±25.6 pg/mL, mean serum vitamin D level 23.2±7.5 ng/mL, and mean coronary artery calcification score 728.6±1030.4 Agatston unit). In univariate analysis, only serum phosphate was significantly associated with CAC score (Table1).

Conclusion: Among patients with chronic kidney disease, serum phosphate is significantly associated with vascular calcification. Therefore, the phosphate lowering treatment including phosphate restriction and phosphate binders should be emphasized for the prevention of vascular calcification and cardiovascular disease.

Keywords: Vascular calcification, Phosphate, CKD