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The Association between Cardiac Troponin T and Coronary Artery Calcification in Chronic Kidney Disease: Result from the KoreaN Cohort Study for Outcomes in Patients With Chronic Kidney Disease (KNOW-CKD)

Eunjeong KANG¹, Hyo jin KIM², Hyunjin RYU¹, Miyeun HAN³, Hyunsuk KIM⁴,
Curie AHN¹, *Kook-hwan OH¹

¹Internal Medicine, Seoul National University Hospital, Korea, South, ²Internal Medicine, Dongguk University Gyeongju Hospital, Korea, South, ³Internal Medicine, Busan National University Hospital, Korea, South, ⁴Internal Medicine, Chuncheon Sacred Heart Hospital, Korea, South

Objectives : Although cardiac troponin T (cTnT) is one of the preferred biomarkers for the diagnosis of acute coronary syndromes, the association between cTnT and coronary artery calcification (CAC) in chronic kidney disease (CKD) patients are less well known, especially in Asian population.

Methods : We conducted a cross-sectional study and data were collected from the KoreaN Cohort Study for Outcome in Patients With Chronic Kidney Disease (KNOW-CKD, NCT01630486 at <http://www.clinicaltrials.gov>). cTnT was measured using an electro-chemiluminescence immunoassay on the ElecSys 2010 and were categorized 4 groups by quartiles (≤ 6.0 , $>6.0-10.0$, $>10.0-16.0$, >16.0 pg/mL). CAC was evaluated through Agatston score which was calculated based on the extent of CAC detected by an electron-beam computed tomography scanner. CAC scores were divided into 3 groups: 0-100 (reference), $>100-400$, and >400 . We conducted multinomial logistic regression to evaluate the relationship between cTnT and coronary artery calcification. Age, sex, CKD stage, diabetes, body mass index, hemoglobin, low density lipoprotein, and high density lipoprotein were included as covariates.

Results : Total 2,061 patients were included. Among patients, the mean age was 53.5 ± 12.3 years old; 61.0% of patients were men, 5.3 % were diabetic and 1.4% were had history of myocardial infarction. Mean CAC scores was 183.2 ± 523.1 . After multivariable adjustments, compared to the lowest cTnT group, the highest cTnT group tended to had higher CAC scores (multinomial odds ratios for CAC score $>100-400$, >400 versus 0-100, 2.331; 95% CI, 1.310-4.150; p value 0.004, 8.149; 95% CI 3.748-17.717, P value <0.001 , respectively). Higher cTnT associated with an incrementally higher risk for CAC.

Conclusions : Elevated concentration of cTnT was independently associated with the degree of severity of CAC in the CKD population of Korea. Further

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efforts are warranted to confirm the evaluation CAC through cTnT in CKD patients.

Keywords : Chronic kidney disease; Troponin T; Coronary artery calcification