KSN 2017 Abstract

KSN-17-O038

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

Eunjeong KANG[1], Hyo JIN[2], Hyunjin RYU[1], Miyeun HAN[3], Hyunsuk KIM[4], Curie AHN[1], *Kook-hwan OH[1]

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

Objectives : Serum cardiac troponin T (cTnT) is useful methods for detecting cardiovascular disease risk in several population settings. We investigated the relationships between cTnT and cardiac structure and function in chronic kidney disease (CKD) patients in Asian.

Methods : 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-chemilluminescence 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). Left ventricular (LV) mass was calculated by the equation of 0.8 x {1.04[(LVIDd + PWTd + SWTd)3 - (LVIDd)3]} + 0.6 g. (LVIDd, LV internal diameter at diastole; PWTd, posterior wall thickness at end diastole; SWTd, septal wall thickeness at end diastole). Left ventricular hypertrophy (LVH) was defined as LV mass/height2.7 ≥ 47g/m2.7 in female and ≥ 50g/m2.7 in male. Relative wall thickness (RWT) was calculated as 2 x PWTd/LVIDd. RWT was considered to be increased if ≥0.42. LV geometry was categorized 4 groups using LV mass and RWT (normal, concentric remodeling, eccentric hypertrophy, and concentric hypertrophy). Systolic dysfunction was defined as ejection fraction < 50% and diastolic dysfunction was defined as E/E' >15. Demographic and clinical characteristics including age, sex, CKD stage, history of myocardial infarction, body mass index, hemoglobin, and lipid profile were included as covariates.

Results : Total 2,061 patients were included and the mean age was 53.5±12.3 years old. LVH was observed in 24.3% patients. There were only 29 (1.4%) participants with LV systolic dysfunction. Diastolic dysfunction was exhibited in 167 (8.3%). The highest 2 quartiles of cTnT were associated with more than 2-fold odds of LVH after adjustment (>6.0-10.0 pg/mL, odds ratio [OR] 1.240, 95% confidence interval [CI] 0.831-1.850, P = 0.293; >10.0-16.0 pg/mL, OR

2.232, 95% CI 1.443-3.454, P<0.001; >16.0 pg/mL, OR 3.590, 95% CI 2.251-5.724, P<0.001 vs. reference group, ≤6.0 pg/mL). In the multinomial logistic regression model, highest quartile of cTnT was associated significantly with concentric remodeling (OR 2.631, 95% CI 1.586-4.365, P<0.001), eccentric (OR 4.240, 95% CI 2.315-7.765, P<0.001) and concentric LVH (OR 5.613, 95% CI 2.965-10.656, P<0.001). The highest quartile of cTnT was associated significantly with systolic dysfunction after multivariable adjustment (OR 5.070, 95% CI 1.073-23.953, P=0.04), although such associations were not evident with the 2nd or 3rd quartile groups. The higher cTnT level was independently associated with diastolic dysfunction after adjustment (>6.0-10.0 pg/mL, OR 2.523, 95% CI 1.082-5.879, P = 0.032; >10.0-16.0 pg/mL, OR 5.131, 95% CI 2.161-12.184, P<0.001; >16.0 pg/mL, OR 9.622, 95% CI 3.939-23.500, P<0.001 vs. reference group, ≤6.0 pg/mL).

Conclusions : In this large CKD cohort, the highest quartile of cTnT had a relationship with LVH, systolic and diastolic dysfunction. Further studies should elucidate the underlying mechanisms and the role of cTnT as a screening tool for LV structural and functional abnormalities in Asian population.

Keywords : Chronic kidney disease; Troponin T; Left ventricular structure