Abstract: P5507

Growth differentiation factor-15 and mortality in suspected or known coronary heart disease patients with chronic kidney disease: a subanalysis of the ANOX study

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Background: Chronic kidney disease (CKD) is an independent risk factor for the development and progression of coronary heart disease (CHD). Growth differentiation factor-15 (GDF-15), a distant member of the transforming growth factor-? cytokine superfamily, plays a role in the initiation of inflammation in atherosclerotic lesions. Elevated GDF-15 was found in various diseases including CKD and stable CHD, and was reported to predict mortality and cardiovascular events in general or established CHD population. However, the prognostic value of GDF-15 in suspected or known CHD patients with CKD is unknown.

Methods: Serum GDF-15 levels were measured in 999 suspected or known CHD patients with CKD undergoing elective coronary angiography, enrolled in the development of novel biomarkers related to angiogenesis or oxidative stress to predict cardiovascular events (ANOX) study, and followed up for 3 years. The primary outcome was all-cause death. The secondary outcomes were cardiovascular death, and major adverse cardiovascular events (MACE) defined as a composite of cardiovascular death, nonfatal myocardial infarction, and nonfatal stroke.

Results: During the follow-up, 154 patients died from any cause, 61 died from cardiovascular disease, and 96 developed MACE. After adjustment for established risk factors, GDF-15 levels were significantly associated with all-cause death (hazard ratio [HR] for 1-SD increase, 1.78; 95% confidence interval [CI], 1.57–2.00), cardiovascular death (HR, 1.88; 95% CI, 1.58–2.25), and MACE (HR, 1.54; 95% CI, 1.32–1.79). Even after incorporation of N-terminal pro-brain natriuretic peptide, contemporary sensitive cardiac troponin-I, and high-sensitivity C-reactive protein into a model with established risk factors, the addition of GDF-15 levels further improved the prediction of all-cause death (continuous net reclassification improvement [NRI], 0.401; 95% CI, 0.231–0.571; P<0.001; integrated discrimination improvement [IDI], 0.041; 95% CI, 0.021–0.062; P<0.001) and cardiovascular death (NRI, 0.297; 95% CI, 0.039–0.555; P=0.024; IDI, 0.032; 95% CI, 0.010–0.055; P=0.005), but not that of MACE (NRI, 0.138; 95% CI, -0.070-0.347; P=0.194; IDI, 0.012; 95% CI, -0.000-0.024; P=0.053).
Conclusions: In suspected or known CHD patients with CKD undergoing elective coronary angiography, elevated GDF-15 levels may predict all-cause and cardiovascular mortality independent of established risk factors and cardiovascular biomarkers.