



Association between growth differentiation factor-15 and chronic heart failure in coronary atherosclerosis patients

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ABSTRACT. We explored the association between plasma growth differentiation factor 15 (GDF-15) levels and chronic heart failure (CHF) in coronary heart disease patients. We measured plasma GDF-15 and N-terminal pro-B-type natriuretic peptide (NT-proBNP) levels in 269 untreated coronary heart disease patients (98 with CHF, 84 without CHF, and 87 control patients) using an enzyme-linked immunosorbent assay. All subjects were examined by echocardiography and left ventricular ejection fraction. We found that plasma GDF-15 levels in coronary atherosclerosis patients with CHF [median 1622.48 (25-75th percentile: 887.53-1994.93) ng/L] were higher than those in coronary atherosclerosis patients without CHF [944.99 (856.12-999.78) ng/L] and control patients ($P < 0.05$). NT-proBNP showed the same trend as GDF-15. We also used the New York Heart Association functional classification to subgroup CHF patients and found that the GDF-15 level was higher in all subgroup patients with CHF. After adjusting for covariates, plasma GDF-15 levels were found to be positively related to NT-proBNP ($r = 0.861$, $P < 0.001$) and negatively related to

left ventricular ejection fraction ($r = -0.936$, $P < 0.001$). Furthermore, receiver operating characteristic curves of GDF-15 and NT-proBNP were constructed and the area under the curve for the untransformed GDF-15 and NT-proBNP was 0.804 and 0.795, respectively. Plasma GDF-15 levels and NT-proBNP are associated with CHF in coronary atherosclerosis patients and can be used as biomarkers.

Key words: Association analysis; Chronic heart failure; ROC curve; Growth differentiation factor-15; N-terminal pro-brain natriuretic peptide