Abstract: P3433

Growth differentiation factor 15 predicts subclinical left ventricular dysfunction: Data from the Akershus Cardiac Examination 1950 Study

Authors:
M N Lyngbakken¹, C Sithiravel¹, BA Kvisvik¹, EN Aagaard¹, T Berge², MO Pervez¹, J Brynildsen¹, A Tveit², K Steine¹, H Rosjo¹, T Omland¹, ¹Akershus University Hospital - Lorenskog - Norway, ²Bærum Hospital, Vestre Viken Hospital Trust, Department of Medical Research - Drammen - Norway,

Topic(s):
Prevention – Cardiovascular Risk Assessment: Biomarkers

Citation:
Background: Growth differentiation factor 15 (GDF-15) is upregulated in response to both acute and chronic cardiac injury, and concentrations of GDF-15 are increased in acute myocardial infarction and acute heart failure. Associations between GDF-15, left ventricular structure and preclinical stages of left ventricular dysfunction in the general population remain unclear.

Methods: We measured GDF-15 in 1237 women and 1158 men participating in the prospective observational Akershus Cardiac Examination (ACE) 1950 Study, which included community dwellers aged 63-65 residing in Akershus county, Norway. All study participants were free from known coronary heart disease and underwent extensive cardiovascular phenotyping at baseline, including detailed echocardiography. Regression models were constructed on global longitudinal strain (GLS), left ventricular mass index (LVMI), and left ventricular ejection fraction (LVEF), and adjusted for demographics, established cardiovascular risk factors, hs-cTnT and NT-proBNP.

Results: Concentrations of GDF-15 were measurable in 98.1% of study participants, and were positively associated with male sex, age, BMI, current smoking, diabetes mellitus, as well as concentrations C-reactive protein, hs-cTnT and NT-proBNP. Higher education, alcohol consumption, eGFR and concentrations of total cholesterol were all associated with lower concentrations of GDF-15. Concentrations of lnGDF-15 were significantly associated with GLS (B -0.44 [95% CI -0.70 to -0.18]; Figure) and LVEF (B 0.72 [95% CI 0.14-1.29]), but not LVMI (Table).

Conclusion: Concentrations of GDF-15 are inversely associated with GLS, a highly sensitive index of subclinical myocardial dysfunction. In healthy subjects free from known cardiovascular disease, GDF-15 appears protective and promotes beneficial cardiac function.
Growth differentiation factor 15 predicts subclinical left ventricular dysfunction: Data from the Akershus Cardiac Examination 1950 Study

Authors: M N Lyngbakken 1, CS Sithiravel 1, BA Kvisvik 1, EN Aagaard 1, T Berge 2, MO Pervez 1, J Brynildsen 1, ATveit 2, K Steine 1, H Rosjo 1, T Omland 1

1 Akershus University Hospital - Lorenskog - Norway, 2 Bærum Hospital, Vestre Viken Hospital Trust, Department of Medical Research - Drammen - Norway

Topic(s): Prevention – Cardiovascular Risk Assessment: Biomarkers

Citation: Background: Growth differentiation factor 15 (GDF-15) is upregulated in response to both acute and chronic cardiac injury, and concentrations of GDF-15 are increased in acute myocardial infarction and acute heart failure. Associations between GDF-15, left ventricular structure and preclinical stages of left ventricular dysfunction in the general population remain unclear.

Methods: We measured GDF-15 in 1237 women and 1158 men participating in the prospective observational Akershus Cardiac Examination (ACE) 1950 Study, which included community dwellers aged 63-65 residing in Akershus county, Norway. All study participants were free from known coronary heart disease and underwent extensive cardiovascular phenotyping at baseline, including detailed echocardiography. Regression models were constructed on global longitudinal strain (GLS), left ventricular mass index (LVMI), and left ventricular ejection fraction (LVEF), and adjusted for demographics, established cardiovascular risk factors, hs-cTnT and NT-proBNP.

Results: Concentrations of GDF-15 were measurable in 98.1% of study participants, and were positively associated with male sex, age, BMI, current smoking, diabetes mellitus, as well as concentrations of C-reactive protein, hs-cTnT and NT-proBNP. Higher education, alcohol consumption, eGFR and concentrations of total cholesterol were all associated with lower concentrations of GDF-15. Concentrations of lnGDF-15 were significantly associated with GLS (B = -0.44 [95% CI -0.70 to -0.18]; Figure) and LVEF (B = 0.72 [95% CI 0.14-1.29]), but not LVMI (Table).

Conclusion: Concentrations of GDF-15 are inversely associated with GLS, a highly sensitive index of subclinical myocardial dysfunction. In healthy subjects free from known cardiovascular disease, GDF-15 appears protective and promotes beneficial cardiac function.

Associations between GDF-15 and indices of left ventricular structure and function

![Graph showing associations between GDF-15 and indices of left ventricular structure and function](image-url)