Abstract: **P4565**

Galectin-3 and ST-2: association with oxidative stress and renal dysfunction in patients with heart failure

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Topic(s):
Basic mechanisms

Citation:
European Heart Journal (2016) 37 (Abstract Supplement), 912-913

Purpose: To estimate the connection between plasma level of galectin-3, ST-2 and biomarkers of oxidative stress and renal dysfunction in patients with chronic heart failure (CHF).

Methods: 172 patients (age, 62.3±3.7 years) with documented prior myocardial infarction were included in the study. Patients were divided into 3 basic groups according functional class (FC) NYHA. 1 group (n=56) – patients with II FC CHF, 2–64 patients with III FC, and 3 group (n=52) – IV FC. The control group (CG) – 36 healthy people (age, 54.7±4.4 years). There was valued the level of ST-2, galectin-3, and cystatin-C by immunoassay analysis. The estimated glomerular filtration rate (e-GFR) was calculated using CKD-EPI equation. We also measured the level of oxidized low density lipoproteins (ox-LDL), 3-nitrotyrosine (3-NT) as biomarkers of oxidative stress. Continuous variables were described by median. Comparisons of continuous variables were performed using Mann-Whitney, U-test. Spearman's rank correlation coefficient was calculated to measure dependence between two variables.

Results: Galectin-3 values increased in parallel with the clinical severity of CHF (NYHA classification): II FC - 9.5 ng/ml, III FC - 18.2 ng/ml, the highest levels being reached in class IV patients 34.6 ng/ml. We observed significant difference between groups ($p<0.001$). We found an increase in level of 3-NT in patients (2.4, 3.3 and 4.8 nmol/ml accordingly) in comparison with CG. We also demonstrated a significant positive correlation between galectin-3 and 3-NT in all groups of patients: $r1=0.61$, $r2=0.63$, $r3=0.69$ ($p<0.01$). Plasma levels of ox-LDL were significantly elevated in all groups compared with healthy control ($p<0.01$). There was a significant positive correlation between galectin-3 and ox-LDL in groups: $r1=0.52$, $r2=0.55$, $r3=0.62$ ($p<0.01$). The plasma levels of ST-2 in the 1st, 2nd and 3d groups were 21.7, 26.5, 37.1 ng/l accordingly with a significant difference between groups ($p<0.01$). The correlation analysis showed the following significant correlations: ST-2 correlated with NYHA FC ($r=0.35$; $p=0.009$), with concentration of 3-nitrotyrosine ($r=0.36$; $p=0.005$) in the cohort of observed patients. We also found an increase in the level of cystatin-C: 1800, 2800, 4600 pg/ml accordingly with a significant difference between groups ($p<0.01$). Strong correlations were also observed between galectin-3-cystatin C ($r1=0.58$, $r2=0.62$, $r3=0.68$, $p<0.01$.) and galectin-3–GFR ($r1= -0.51$, $r2= -0.57$, $r3= -0.71$, $p<0.01$.).

Conclusion: Biomarkers of fibrosis in heart failure patients with prior myocardial infarction were closely associated with indicators of oxidative stress, renal dysfunction beyond NYHA functional class.