Iron deficiency biomarkers in chronic heart failure with reduced ejection fraction: relations to clinical variables

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TITLE

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PURPOSE

Purpose. To compare clinical variables of CHF patients (pts) with ID and without ID ((-) ID); to evaluate the clinical significance of plasma F and TSAT in CHF patients with reduced left ventricular ejection fraction (LVEF).

METHOD

Methods. 104 stable CHF patients, NYHA class II-IV, with LVEF < 40% were examined. Plasma F, IL6 and NTproBNP were determined by immunoassay, TSAT - by colorimetric assay. Beside routine clinical and laboratory examination, 6 min walk test (6MWT), standardized endurance leg extensor test and flow-mediated vasodilation (FMD) of the brachial artery were performed. Statistical calculations were made by Spearman’s rank correlation coefficient, Student’s t-criteria and Pearson’s chi-squared test.

RESULTS AND CONCLUSIONS

Results. In 104 pts with CHF, NYHA class II-IV and LVEF < 40% ID was observed in 65 pts (62.5%).

No differences were observed between groups in regard to age, systolic blood pressure, heart rate, myocardium mass index, LVEF, glomerular filtration rate.

Nevertheless, pts with ID are characterized by significantly higher NYHA class, NTproBNP and IL6 levels, lower Hb level, lower GFR, worse quality of life and leg extensor endurance test, reduced functional capacity (table 1).
Nevertheless, pts with ID are characterized by significantly higher NYHA class (76.2% pts with ID in NYHA class III-IV vs. 23.8% (-) ID pts, p = 0.003), NTproBNP (1044.4 ng/dl with ID vs. 332.4 ng/dl (-) ID, p = 0.016) and IL6 levels (11.7 pg/ml with ID vs. (-) ID 3.3 pg/ml, p = 0.040), lower Hb level (138.7 g/l with ID vs. 147 g/l (-) ID, p = 0.004), lower GFR (61 ml/min/1.73m2 with ID vs. 69 ml/min/1.73m2 (-) ID, p = 0.043), worse quality of life (the Minnesota Living With Heart Failure Questionnaire (MLHFQ) score 50 in pts with ID vs. score 40 (-) ID, p = 0.031) and leg extensor endurance test (ID pts 31.3 times vs. (-) ID pts 43.4 times), reduced functional capacity (6MWT 304,5 m in ID group vs. 376 m in (-) ID group).

Conclusions. Only 1/3 CHF patients do not have an ID; they are characterized by the better functional capacity, lower NTproBNP levels and better FMD response in comparison to the ID patients. Patients with ID are characterized by the lower Hb level and lower GFR, and by the higher value of IL6 and NTproBNP. Unlike F concentration, TSAT shows statistically significant correlations with the main parameters that represent the quality of life, patient's functional capacity and the NTproBNP level.