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The predictor of heart failure with reduced left ventricular ejection fraction in patients with coronary artery disease

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Relevance: Worldwide, the burden of heart failure (HF) has increased to an estimated 23 million people, and approximately 50% of cases are heart failure with reduced ejection fraction (HFrEF). Multiple conditions can cause HF, including cardiovascular disease and metabolic disorders (diabetes mellitus, insulin resistant, obesity). Coronary artery disease (CAD) is a most common cause of HF in Ukraine and around the world.

The aim of our research was to determine the predictor of HFrEF in patients with CAD.

Materials and methods. Using criteria in accordance with the Heart Failure Guidelines of the European Society of Cardiology, 100 individuals were identified as suspected HF caused by CAD, including 65 patients with obesity. Based on left ventricular EF at the time of diagnosis, HF was classified as reduced, mid-range, and preserved. To determine left ventricular EF category, we applied a hierarchical approach selecting the Simpson's biplane as the method of first choice, followed by visual left ventricular EF estimation, and used qualitative descriptors in the absence of numerical estimates. For multivariate regression analysis, we imported variables which reached significance (p<0.05) in univariate analysis. All analyses were performed using StataIC (version 8.0 software for Windows).

Results: HFrEF was probably more common in patients with CAD and concomitant obesity (40%) than in patients with normal body weight (18%) (χ2=11,753; p<0,001)], mean HF with mid-range EF was detected in 31% of obese patients compared to 51% of non-obese patients (χ2=8.268; p<0.005), and HF with preserved EF was found in 29% of patients with concomitant obesity compared to 31% patients without obesity [χ2=8,360; p<0.005)]. Thus, systolic HF was more common in patients with CAD and concomitant obesity than in patients with normal body weight.

Conclusions. Thus, adverse cardiac remodeling, in particular, HFrEF, is more often observed in patients with CAD and concomitant obesity than in patients with normal body weight, which allows us to consider obesity as a predictor of systolic HF in patients with CAD.