

0113

Analysis of predictors affecting the primary endpoint in patients with ischemic etiology chronic heart failure in combination with prediabetes

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Abstract

Background: The addition of type 2 diabetes mellitus in patients with chronic heart failure (CHF) leads to a significant worsening of the prognosis, placing a heavy burden on the practical health care of all countries. **Objective:** to assess what clinical indicators were predictors of the development of combined primary endpoint (rehospitalization for heart failure (HF), acute coronary syndrome (ACS) and mortality). **Methods:** A statistical analysis of 76 patients with CHF and prediabetes was carried out. The average age was 62 (57.5-65), body mass index (BMI) values were 29.8 ± 4.4 with an average left ventricular ejection fraction of 44% (34% -52.5%). The follow-up period was 12 months with prospective fixation of the combined endpoint. For statistical data processing SPSS (IBM Inc USA, 23 version) software was used. **Results:** When conducting a simple logistic analysis, it was found that such indicators as gender (female), Metformin intake, Asian nationality, BMI, heart rate (HR), low-density lipoprotein cholesterol, glomerular filtration rate had a significant relationship with the clinical combined endpoint. Of which influencing the development of the combined endpoint indicators were: gender (female) ($p = 0.001$), Metformin intake ($p = 0.006$), BMI ($p = 0.006$), HR ($p = 0.003$) (Nagelkerke coefficient 0.484). Further, when conducting multiple logistic regression analysis with the inclusion of the above indicators, it was revealed that female sex and HR were predictors of the development of the endpoint in patients with ischemic etiology CHF in combination with prediabetes (OR 22.2, 95% CI 3.4-145.3, $p = 0.001$; OR 1.06 95% CI 1.02-1.1, $p = 0.003$). The use of Metformin was associated with a significant improvement related to combined primary endpoint (OR 0.066, 95% CI 0.01-0.46, $p = 0.006$, $R^2 = 0.48$). **Conclusion:** Our findings strongly suggesting a potential cardioprotective properties of metformin in patients with CHF – as a therapeutic tool, positively influencing on primary clinical endpoint. Moreover, a reliably significant influence of HR, as a surrogate marker for the activation of the sympathetic nervous system, on the prognosis of patients with CHF, should focus the attention of the scientific community on adequate control of this clinical indicator.

Keywords: chronic heart failure, impaired glucose tolerance, prognosis, predictors, endpoint

Abbreviations: CHF – chronic heart failure, HF – heart failure, ACS – acute coronary syndrome, BMI – body mass index, HR – heart rate.

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