COMORBIDITY AND BIOMARKERS OF HYPOXIA AND INFLAMMATION IN ELDERLY PATIENTS WITH CHRONIC HEART FAILURE

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Background:

Comorbidity increases with age and affects the clinical course and prognosis of chronic heart failure (CHF). A patient-centered approach involves the use of biomarkers in comorbid patients, including chronic kidney disease (CKD).

Objective:

The aim of this study was to investigate relationships between comorbidity and biomarkers of hypoxia and inflammation in elderly patients with chronic heart failure.

Methods:

80 elderly patients with CHF (32 males and 48 females, mean age 70.7±8.7 years) were examined. CHF was defined according to Acute and Chronic Heart Failure ESC Guidelines, 2016. Chronic kidney disease (CKD) was diagnosed and classified according to the KDIGO guidelines (2012). Charlson comorbidity index (CCI) was calculated. High comorbidity was considered more than 6 points. Serum levels of N-terminal propeptide of type B natriuretic hormone (NT-proBNP), cystatin C,hypoxia-inducible factor 1-alpha (HIF-1α), endogenous erythropoietin (eEPO), interleukin-6 (IL-6), interleukin-8 (IL-8), interleukin-18 (IL-18), vascular endothelial growth factor (VEGF)were assessed. The follow-up period was 12 months; the primary endpoint was total mortality.

Results:

CKD with estimated glomerular filtration rate (eGFR) < 60 ml/min/1.73m2 was diagnosed in 49 (61.3%) elderly patients with CHF. CCI was higher in patients with CHF and CKD compared with patients without CKD: 6 (IQR 4;6) and 4 (IQR3;5) scores,p =0.001. Patients with high comorbidity compared with low comorbidity had higher levels of eEPO (7.5(IQR 3.1; 16.2) 4.9 (IQR 1.6; 8.6) mIU/ml , p=0.03) , NT-proBNP 1042.2 (IQR 225.5; 2065.0) 143.7 (IQR 134.5; 205.2) pg/ml , p=<0.0001), cysteine C (1.70 (IQR 0.99; 1.92) 0.84 (IQR 0.69; 1.01) mg/l, p<0.0001). There was not detected for HIF-1α (p=0.82) and VEGF (p=0.17). Among pro-inflammatory biomarkers, only IL-6 was higher in patients with high comorbidity compared with low comorbidity group: 13.7

(IQR 8.4; 32.9) 7.8 (IQR 4.8; 12.7) pg/ml, p=0.0015. There were correlations between the total number of nosologies and IL-6 (and r=0.46, p<0.0001).

Conclusion:

Elderly patients with chronic heart failure and comorbidity had higher level of biomarkers of myocardial and renal dysfunction (NT-proBNP, cysteine C), hypoxia biomarkers (eEPO) and inflammation biomarker (IL-6).