Abstract: 1978

Relationship between diastolic dysfunction and cognitive impairment in patients with CAD and HFpEF

Authors:
O Nudchenko¹, I Vivyanik¹, L Yakovenko¹, C Faradzh¹, M Dolzhenko¹, ¹National Medical Academy of Postgraduate Education, Cardiology - Kiev - Ukraine,

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Background/Introduction.

Cognitive impairment (CI) is a well-known predictor of mortality and readmissions in patients with coronary arteries disease (CAD) and heart failure (HF). Arterial hypertension and reduced left ventricle ejection fraction (LVEF) are known predictors of cognitive function worsening. On the other hand, role of diastolic dysfunction (DD) in the development of CI is less studied.

Purpose.

Purpose of the study was to evaluate the relationship between DD, left ventricle filling pressure (LVFP) and CI.

Methods.

For 110 patients with established CAD (prior myocardial infarction (MI), unstable angina (UA), percutaneous coronary intervention or coronary arteries bypass grafting) testing of cognitive functioning by validated scales – MMSE, MoCA, FAB – and echocardiography were performed. By results of echocardiography all patients were divided in three groups: I – normal diastolic function; II – impaired relaxation; III – pseudonormalization or restriction.

Results.

The average age of patients was 60.1 ± 8.74 years. 71.8% male patients, 28.2% of women. In 64.5% of cases, there was prior MI, and in 35.5% - unstable angina. Mean LVEF in I, II and III group consisted 58,3±5.9%, 52,1±8.2% and 53,1±10.2%, respectively. There are no differences in age, diabetes mellitus prevalence, office blood pressure levels, smoking status, lipids and BNP levels between groups were noted. LVEF was significantly lower and left atrium volume index and left ventricle mass index (LVMI) were significantly higher in II and III group in comparison with I group. Mean score by MMSE scale in I group was 25,45±2,62; II – 24,95±2,69, III– 22,30±3,17. Comparison of groups showed that mean score by MMSE was significantly lower in III group (p1,3<0.00001, p2,3=0.0004). Mean score on the MoCA scale was in the first group 23.58 ± 3.47, in the second group - 22.33 ± 3.72, in the third - 22.07 ± 5.48. Significantly worse values were also noted in III group (p1,3 = 0.003, p2,3 = 0.04). There were no differences in FAB scores between groups. Negative correlation between E/e’ ratio – that reflects LVFP – and MMSE, MoCA and FAB scores were noted (r=-0.50, -0.27, -0.24, respectively; p<0.05). Multivariable logistic regression analysis showed that among others (age, LVEF, indexed left atrium volume, LVmi, Hb1Ac, total cholesterol) only E/e’ value (OR=1.28, 95% CI 1.11 to 1.47, P=0.0007) –was significantly associated with CI by MMSE score.

Conclusions.
In HFpEF patients with grade II-III DD there are significantly lower rates of cognitive function than in patients with normal diastolic function or grade I DD. A negative correlation ($r = -0.50, r=-0.27, r=-0.24$) between E/e’ and MMSE, MoCA and FAB points, respectively, were noted. Multivariable logistic regression analysis showed that E/e’ ratio (OR=1.28, 95% CI 1.11 to 1.47, P=0.0007) was the independent predictor of CI by MMSE score.