

Endothelial dysfunction, left ventricular diastolic dysfunction and the Systematic Coronary Risk Evaluation² algorithm – a cross-sectional study

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Goal: The goal of this study was to determine the relationship between the occurrence of left ventricular diastolic dysfunction (LVDD), the value of asymmetric dimethylarginine (ADMA) as a biomarker of endothelial dysfunction and estimated Systematic COronary Risk Evaluation² algorithm (SCORE²).¹⁻³

Patients and Methods: A cross-sectional population study that included 178 adult people (79 women, 99 men) aged 40 to 65, was conducted in the period from November 15, 2019 to May 25, 2022. Sociodemographic, anthropometric characteristics and cardiovascular risk factors were recorded. Laboratory evaluation was performed. ADMA was determined by the ELISA method. Transthoracic echocardiography was used to assess left ventricular diastolic function. Chi-square test and Kruskal-Wallis test were used to evaluate the correlation between LVDD severity, SCORE² value and plasma concentration of ADMA. Significance level p set at Alpha = 0.05.

Results: Subjects with any degree of LVDD had a significantly higher SCORE² compared to those with normal left ventricular diastolic function ($p < 0.001$). Subjects with an estimated SCORE² >10 developed LVDD grade 2 and 3 ($p < 0.001$) and took medication significantly more often ($p < 0.001$). They also had significantly lower plasma ADMA values ($p < 0.001$). Using Fisher's exact test, we determined that angiotensin-converting enzyme inhibitors, beta-blockers, statins ($p < 0.001$), mineralocorticoid receptor antagonists, aspirin ($p = 0.001$), angiotensin receptor-neprilysin inhibitor ($p = 0.004$), proton pump inhibitors ($p = 0.007$), sodium-glucose transport protein 2 inhibitors, insulin and diuretics ($p = 0.01$) had a favorable effect on lowering the concentration of ADMA in plasma.

Conclusion: In our study we confirmed a positive correlation between LVDD and SCORE² severity. Surprisingly, we obtained a negative correlation between biomarkers of endothelial dysfunction and severity of LVDD and SCORE². We believe that the reason for this is the effect of drugs on endothelial dysfunction.

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LITERATURE

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