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**CONCENTRIC HYPERTROPHY AND ITS RISK FACTORS IN PATIENTS WITH  
STABLE CORONARY ARTERY DISEASE**

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**Rationale:** Structural remodeling of the left ventricle (LV) occurs secondary to many diseases or as an adaptation to chronic haemodynamic overload. Based on left ventricle mass and relative wall thickness we distinguish four basic geometric patterns: normal geometry, concentric remodeling, concentric hypertrophy and eccentric hypertrophy. Concentric hypertrophy is a state in which the Cardiac Mass Index is increased without enlargement of an organ. It is known as a risk factor of many life-threatening conditions and it is connected with increased both total and cardiovascular mortality. The study of factors affecting the development of left ventricle concentric hypertrophy will help us improve the quality of prophylactic measures and treatment.

**Objective:** The aim of our study was to determine the risk factors and outcomes of concentric hypertrophy.

**Material and methods:** The study population consisted of 1031 patients admitted into Department of Invasive Cardiology of University Hospital in Białystok for invasive treatment or diagnostic process. Average age was equal  $66.71 \pm 10.06$  y. Men constituted majority (68.57%). Patients were divided into four groups: normal geometry, concentric remodeling, eccentric hypertrophy and concentric hypertrophy. In our study we compared two groups: normal geometry (23.18%) vs. concentric hypertrophy (20.85%). The patients were categorized using criteria from Recommendations for Cardiac Chamber Quantification by Echocardiography in Adults (2015). We performed retrospective analysis of patients' medical documentation. Statistical test U Mann-Whitney, t-test, odds ratio (OR) were used. P value  $\leq 0.05$  was considered as significant.

**Results and discussion:** Our study shows that patients with concentric hypertrophy were elderly, more often female, had higher prevalence of hypertension, diabetes mellitus and chronic renal disease. In patients with this left ventricle phenotype tricuspid regurgitation, mitral regurgitation, aortic stenosis and aortic regurgitation were more common. We observed higher systolic blood pressure, mean arterial pressure, pulse pressure, body mass index and heart rate among patients with concentric hypertrophy. Moreover angiographic assessment showed higher prevalence of multivessel coronary artery disease in group with this structural change of the heart muscle. From outcomes, we also noticed increased frequency of atrial fibrillation and increased length of stay in hospital.

**Conclusions:**

Based on our research, we suspect that multivessel coronary artery disease may lead to left ventricular concentric hypertrophy. Therefore, in clinical practice we should focus on proper treatment of this disease to avoid adverse structural changes of the ventricular. This approach may help us lower cardiovascular mortality. Patients with valve diseases complicated with concentric hypertrophy must be checked for indications to surgery cause invasive treatment may be beneficial for left ventricular structure. The cyclic echocardiographic evaluation should be consider in patients with diabetes mellitus and chronic kidney disease. The intensive treatment of hypertension maintains crucial part of prophylactic measurements.