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MYOCARDIAL INFARCTION WITH NON-OBSTRUCTIVE CORONARY ARTERIES: A RETROSPECTIVE STUDY

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Relevance. MINOCA (Myocardial Infarction with Non-Obstructive Coronary Arteries) refers to myocardial ischemic necrosis with angiographically non-obstructive coronary arteries (stenosis <50%). Etiologies include plaque rupture, coronary dissection, vasospasm, microvascular dysfunction, and thromboembolism. According to the IHSА, MINOCA accounts for 5-15% of all myocardial infarctions (MI), typically affecting younger patients (mean age 55 years) with a female predominance. Diagnosing MINOCA requires meeting the Fourth Universal Definition of MI (mostly non-ST-segment elevation MI (NSTEMI), demonstrating non-obstructive arteries on angiography, and excluding alternative diagnoses. Troponin elevation is typically lower with blunted kinetics compared to MI in coronary artery disease (CAD), and biomarkers like C-reactive protein (CRP) and interleukin-6 (IL-6) have limited utility due to MINOCA's heterogeneity, reinforcing the need for a comprehensive imaging-based strategy.

Aim: To determine the characteristics of patients with MINOCA admitted to cardiology departments of the Minsk City Clinical Emergency Hospital.

Materials and methods. Initially 50 cases were collected in which the diagnosis upon admission was acute coronary syndrome (ACS), of whom 22 met the “MINOCA” criteria. However, coronary angiography confirmed non-obstructive coronary arteries in all 22 patients (100%). These 22 patients were then filtered through and 14 patients who fit the actual MINOCA criteria due to MI type 2 were selected. The data was organized and analyzed based on age, gender, cardiovascular risk factors, co-morbidities, primary complaints, laboratory and instrumental findings, initial and final diagnosis.

Results and their discussion. The initial diagnosis was ACS in 100% of cases where ST-elevation was revealed in 64% of cases and all other cases (36%) were recognized as NSTEMI-ACS. Among 22 consecutive patients with suspected acute MI and non-obstructive coronary arteries on angiography, only 14 persons (64%) met the final MINOCA criteria after exclusion other cardiac causes. 14 patients who fit the criteria for MINOCA (type 2 MI) were further analyzed to study the characteristics of the disease. The MINOCA cohort was predominantly female (n=11, 79%), with a mean age of 70 years (range 50-88). All patients had arterial hypertension (100%), while dyslipidemia (92%), obesity (54%), and type 2 diabetes mellitus (23%) were the most frequent co-morbidities. Atypical presentations such as the absence of anginal chest pain occurred in 77% of patients, with weakness and dyspnea being the leading complaints whereas the remaining 23% portrayed typical complaints for MI. Significant valvular disorder like aortic stenosis was diagnosed in two patients. The final diagnosis of MINOCA was established by integrating elevated troponin levels (mean peak 9,820 ng/L), dynamic ECG changes (71% with ST-depression, 29% with ST-elevation), and the absence of significant coronary stenosis, after systematically excluding myocarditis and other alternative diagnoses. The prevalence of hypertension, left ventricular hypertrophy (77%) suggests that Type 2 MI due to supply-demand mismatch was the predominant underlying mechanism.

Conclusions. Our study indicates that MINOCA constitutes 64% of suspected MI cases with non-obstructive coronary arteries, predominantly affecting women (79%). Factors like microvascular dysfunction and coronary vasospasm contribute to this phenomenon. The presence of arterial hypertension and high rates of left ventricular hypertrophy (77%) suggest chronic pressure overload as a critical factor. This condition heightens myocardial oxygen demand, leading to Type 2 myocardial infarction (64%). Atypical symptom presentations (77% without chest pain) further support this, as demand-driven ischemia commonly lacks classic symptoms.