UNSTABLE CAROTID PLAQUES IN PATIENTS WITH MYOCARDIAL INFARCTION: MORPHOLOGICAL ASPECTS AND CLINICAL IMPLICATIONS OF SYSTEMIC VULNERABILITY

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Background
Multifocal atherosclerosis in patients (pts) with myocardial infarction (MI) is associated with severe coronary arteries lesion, multiple risk factors and it is an independent predictor of development of atherothrombotic complications, included stroke. The risk of atherothrombosis is not associated only with the degree of carotid stenosis, but also with structural features of plaques. Therefore, research of morphological characteristics and prognostic value of unstable plaques (UP) is an important problem.

Objective
The aim of this study is to evaluate morphological characteristics of carotid UP in pts with MI and its impact on death, acute coronary syndrome, stroke or heart failure decompensation during the one year after MI.

Methods
The study included 142 pts with MI: 74 pts with ST-elevation MI (STEMI), 68 pts without ST- elevation MI (nonSTEMI). All pts were examined and treated according to National guidelines. Triplex scanning of carotid arteries were performed in all cases. Pts with MI were divided into two groups: 1st group – pts with ultrasound signs of carotid UP and / or more than 50% stenosis of carotid arteries (n=46, age 72±12 years, male 27), 2nd group – pts without similar ultrasound characteristics (n=96, age 68±9 years, male 56). In 15 in-hospital fatal cases a morphological study of carotid atherosclerotic lesions (n=48) was performed. Tissue specimens stained with hematoxylin-eosin, Mallory trichrome. Immunohistochemistry was performed with antibodies to collagens I, III, IV, and VI types, CD68, CD138, CD45RO, Ki67. Thickness of the fibrosis cap, number of micro-vessels and number of immune and proliferating cells were measured.

Results
Carotid UP or stenosis more than 50% among pts with MI was correlated with age (r=+0.48, p=0.00037), MI in anamnesis (r=+0.36, p=0.0098) and higher SYNTAX score in STEMI (p=0.035) and nonSTEMI (p=0.044). In 1st group were more frequently in-hospital complications (p=0.02). During morphology study carotid UP were detected in 22.9% of case. In 4 cases asymptomatic carotid UP with complicated lesions were found. Carotid UP were associated with high number of micro vessels (r=+0.79, p=0.012), increase infiltration of immune cells (r=+0.68, p=0.037) and with decreasing of the fibrous cup thickness and degradation of the collagen matrix (r=-0.83, p=0.035). Endpoints were more frequent among patients from 1st group than pts from 2st group both for pts with STEMI (p=0.031) and nonSTEMI (p=0.043). Stroke occurred in 2 cases only among 1st group.

Conclusion
Morphological study confirms the role of neoangiogenesis, inflammatory and destructive processes in the fibrous cap and lipid core in the development of carotid

UP. Carotid plaques with ultrasound signs of vulnerability or more than 50% stenosis of pts with IM associated with increased frequency of death, acute coronary syndrome, stroke or heart failure decompensation during a 1 year after MI. Detection of ultrasonic characteristics of unstable carotid plaques will help to identify the risk group for stroke in patients with myocardial infarction.