Feldman Diana, Ryndina Natalia

Prognostic value of asymmetric dimethylarginine for the course of acute myocardial infarction combined with type 2 diabetes mellitus

Kharkiv National Medical University Department of Internal Medicine No.2, Clinical Immunology and Allergology named after academician L.T.Malaya

Kharkiv, Ukraine

Scientific advisor: prof. Kravchun Pavel

Introduction. Today, acute myocardial infarction (AMI) is the leading cause of death and disability of the able-bodied population in most countries of the world. The course and prognosis of AMI depend on the presence of comorbid pathology. Type 2 diabetes mellitus (DM) is the cause that determines the unfavorable AMI course. The risk of death is increased in patients with AMI and concomitant type 2 DM. Asymmetric dimethylarginine (ADMA) is the marker of endothelial dysfunction that plays an important role in the process of myocardial tissue revascularization in AMI.

The objective of our study was to determine the prognostic value of asymmetric dimethylarginine in the clinical course of acute myocardial infarction combined with type 2 diabetes mellitus. Study materials and methods. The study design included 120 patients, who were divided into 2 groups: group 1 consisted of patients with AMI and type 2 DM (n=69), group 2 consisted of AMI patients without type 2 DM (n=51). Patients were stratified into 3 terciles according to ADMA. All patients underwent clinical, instrumental examinations, and enzyme immunoassay to measure ADMA levels.

Study results. Patients suffering from AMI combined with type 2 DM had higher levels of ADMA compared to patients without concomitant type 2 DM. The mean level of ADMA was 1.57±0.11 µmol/L and 0.61±0.06 µmol/L, respectively (р<0.05). The examination results according to ADMA terciles in terms of qualitative indicators were as follows: the mean GRACE score was 116.38 in patients from the 1st tercile group, 143.56 in patients from the 2nd tercile group, and 160.88 in patients from the 3rd tercile group; the mean left ventricular ejection fraction was 42.2%, 45.5%, and 46%, respectively; the mean troponin I level was 1.61 ng/mL, 2.81 ng/mL, and 2.44 ng/mL. The examination results according to ADMA terciles in terms of qualitative indicators were as follows: Q-positive MI was found in 40% of patients from the 1st tercile group, in 30% of patients from the 2nd tercile group, and in 77.78% of patients from the 3rd tercile group; Killip class IV was observed in 0%, 10%, and 33.33%, respectively; relapse of AMI was reported only in patients assigned to the 3rd tercile (in 11.11%). The ADMA level greater than 0.76 µmol/L predicted the likelihood of cardiovascular death during a 6-month follow-up period.

Conclusions. Thus, the above evidence suggests a significant prognostic value of asymmetric dimethylarginine in patients with acute myocardial infarction combined with type 2 diabetes mellitus, in respect to the rapid development of endothelial dysfunction, combining the development of atherosclerosis and type 2 diabetes mellitus. Asymmetric dimethylarginine acts as a predictor of an unfavorable course of acute myocardial infarction combined with type 2 diabetes mellitus. There are good reasons to further study indicators of the endothelial function as predictors of the unfavorable course of acute myocardial infarction combined with concomitant type 2 diabetes mellitus.