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FEATURES OF ECHOCARDIOGRAPHIC INDICATORS IN PATIENTS WITH ACUTE CORONARY SYNDROME WITH ACCOMPANYING NEUROVEGETATIVE DISORDERS

Abdulloyeva Maftuna Dilshodovna,
Ablyatifov Aziz Bakhtiyarovich,
Pulatova Kristina Samvelovna
Samarkand State Medical University

Annotation: About 520 thousand cases of acute coronary syndrome (ACS) are registered annually, which is the most severe form of coronary heart disease (CHD) and poses an immediate threat to the lives of patients. The prevalence of depressive disorders among the population also reaches high rates among the population in comorbidity with coronary artery disease. It is important to note the close relationship between depressive and anxiety disorders: depression is almost always accompanied by anxiety symptoms. Over the past 20 years, evidence has shown that depression is approximately three times more common in cardiac patients than in the general population, and depression may be a risk factor for cardiovascular mortality in patients with coronary artery disease.. «Vicious circle», linking depression and cardiovascular disease requires more attention from modern clinicians. However, to date, the mechanisms underlying the relationship between these diseases remain poorly understood. In recent decades, with the help of echocardiography (EchoCG), the processes of cardiac remodeling resulting from the complicated course of coronary artery disease (ACS, acute myocardial infarction) and the influence of extracardiac factors have been actively studied.

Keywords: acute coronary syndrome, echocardiography , anxiety, depression

Purpose of the study: to evaluate functional indicators of the cardiovascular system according to echocardiography in patients with acute coronary syndrome in combination with anxiety and depressive disorders.

Material and methods: 152 patients (80 men and 72 women) were examined in the first 24 hours after the development of ACS. The study included patients aged from 35 to 75 years, average age - (60.3 ± 0.9) years), who did not take antiplatelet agents or anticoagulants before hospitalization and signed informed consent. The diagnosis of ACS, and subsequently unstable angina or acute myocardial infarction, was established according to the recommendations of the All-Russian Scientific Society of Cardiology. Exclusion criteria from the study were: concomitant diabetes mellitus, age under 35 and over 75 years, pregnancy, severe concomitant pathology (renal failure,

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consequences of stroke), stage III heart failure, cardiogenic shock upon admission to hospital, lack of informed consent. The control group consisted of 54 relatively healthy volunteers (28 men and 26 women, average age – (59.6 ± 1.4) years). In the first 72 hours after transfer from the intensive care unit, patients were tested using the Hospital Anxiety and Depression Scale, the Beck Inventory, the US Center for Epidemiological Research Depression Scale, and the Spielberger-Hanin test. When examining patients, anxiety-depressive disorders (ADD) were identified in 88 people (57.9%). No affective spectrum disorders were found in 64 (42.1%) patients. Two groups were formed: the first – patients with ACS with ADD and the second – patients with ACS without ADD. No statistically significant differences were found between the groups in the main indicators. All patients underwent transthoracic echocardiography using a Vivid E9 device (General Electric, USA) in the first 48 hours after hospitalization. The following echocardiographic parameters were analyzed: stroke volume (SV) of the left ventricle (LV), cardiac output (MCV), ejection fraction (EF) of the LV, determined by the Teicholz method, end-systolic volume (ESV) of the LV, end-diastolic volume (EDV)) LV, thickness of the interventricular septum in diastole (TIVSD), thickness of the posterior wall of the LV in diastole (TPLWD), anteroposterior size of the left atrium (LA). Local LV contractility was assessed by the presence of zones of hypo- or akinesia, as well as zones of dyskinesia. LV diastolic function was assessed on Dopplerograms of transmitral blood flow, and the presence of valvular heart pathology was noted In the control group, testing was carried out to identify ADD and echocardiographic examination using a Vivid E9 device (General Electric, USA). Statistical analysis was carried out in the Statistica 7.0 for Windows software package (StatSoft Inc., 2004). Descriptive statistics for qualitative characteristics are presented as absolute values and percentages. Description of quantitative characteristics was carried out by calculating the median Me and interquartile range in the form of the 25th and 75th percentiles (C25 and C75). To determine the nature of the distribution of variables, the Kolmogorov–Smirnov test was used, to study qualitative characteristics, the Pearson & M-L Chi-square test was used. The statistical significance of the differences between the indicators of independent samples (comparison with the indicators of the control group) was assessed using the nonparametric Mann–Whitney U test, the statistical significance of the differences between the indicators of dependent samples - using the nonparametric Wilcoxon T test. Differences were considered significant at $p < 0.05$.

Results and discussion: As a result of a study of echocardiographic parameters in patients with ACS in combination with ADD, the value of LV SV was 68 (60.0–88.0) ml and did not differ from the values of this indicator both in the control group and in patients without affective disorders, where SV LV was 70.0 (60.0–81.0) ml. CO

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in patients with ACS was significantly lower than in the control group: in patients with ADD it was 4.1 (3.8–5.3) l/min, in the group without ADD – 4.2 (3.6–4. 9) l/min (p = 0.001). In addition, CO in patients with concomitant affective disorders was lower than in the ACS group without ADD (p = 0.017). In both groups of patients, LVEF was lower than control values; in patients without ADD it was 56.0 (48.0–64.0)% (p = 0.001), and in patients with concomitant ADD it was even lower – 53.0 (47.0–60.0)%, (p = 0.001 compared with the control group and p = 0.039 with the group without ADD). In this study, we considered LVEF values below 55% to be a violation of global LV contractility, thus, in patients with ACS without affective disorders, no significant decrease in left ventricular EF was detected. Volume indicators in the group of patients with ACS in combination with ADD significantly exceed not only the control values, but also the data of patients without concomitant ADD: ESV and EDV of the left ventricle in patients in this group were 60.0 (47.0–78.0) and 126. 0 (108.0–157.0) ml, respectively (p = 0.001 compared with the control group), while in patients without concomitant ADD – 53.0 (39.0–74.0) and 114.0 (93.0) 0–148.0) ml (significance of differences with patients of group 1 p = 0.015 and p = 0.023, respectively). In both groups, the LA size exceeded the control values: in patients with ADD it was 4.6 (4.1–4.9) cm (p = 0.001) and 4.3 (4.0–4.7) cm in patients without TDR (p = 0.001). Moreover, in patients with ACS and affective disorders, the size of the left atrium exceeded the values in patients without ADD (p = 0.037).

In both groups of ACS patients, regardless of concomitant anxiety and depressive disorders, left ventricular myocardial hypertrophy was detected. Echocardiographic parameters in patients with ACS depending on the presence or absence of ADD (number of patients, %) Indicator ACS patients with ADD (n = 88) without ADD (n = 64) Impaired local contractility of the LV 46 (52.3) 24 (37.5) p1 = 0.001 p1 = 0.001 p2 = 0.045 Areas of LV dyskinesia 9 (10.2) 2 (3.1) p2 = 0.049 Aortic valve sclerosis 78 (88.6) 46 (71.9) p1 = 0.001 p1 = 0.001 p2 = 0.007 Mitral valve sclerosis 40 (45.5) 20 (31.3) p1 = 0.001 p1 = 0.001 p2 = 0.041 LV diastolic dysfunction type I 81 (92.0) 49 (76.5) p1 = 0.001 p1 = 0.001 p2 = 0.003.

Conclusion: As a result of the study, patients with ACS in combination with anxiety and depressive disorders revealed a significant increase in volumetric parameters of the left ventricle in comparison with patients without ADD**.** In addition, in this group there was an increase in LA size, CO and LV myocardial hypertrophy as measured by VSD compared with the group without affective disorders. According to echocardiography, in patients with ACS and ADD, areas of impaired local contractility of the LV, areas of dyskinesia, as well as sclerotic lesions of the aortic and mitral valves and disturbances in LV diastolic function of the “delayed relaxation” type are more often visualized in comparison with patients with ACS without ADD. Consequently,

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in patients with ACS, the presence of concomitant ADD has a negative impact on the functional parameters of the cardiovascular system, which may be one of the reasons for the poor prognosis in this category of patients.

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