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Comparative Analysis of Cardiac Parameters in Patients with NSTE-ACS Accompanied by Neurovegetative Dysfunction

Abdulloeva Maftuna Dilshodovna [1]

Tanmay Singh Mehta [2]

Abstract: Acute coronary syndrome (ACS) refers to a group of conditions that include ST-segment elevation myocardial infarction (STEMI), non-ST-segment elevation myocardial infarction (NSTEMI), and unstable angina. It is a type of coronary artery disease (CAD) that causes one-third of all deaths in people over 35 years of age. Some forms of CAD may be asymptomatic, but ACS is always symptomatic. Psychosomatics is the transformation of a psychological conflict into a physical (bodily) symptom. For example, a person "does not want to see it" – and his vision deteriorates, or he "cannot hear it" – and his hearing deteriorates. The cause of the disease can also be "frozen" in the body, unexpressed and unprocessed emotions, which gradually turn into a destructive force, causing illness. In acute somatic pathology, for example, in ACS, the opposite situation is formed - the somatic disease and its expected consequences are the generators of psychological conflict (Belyalov F.I., Maltseva L.E., 2010).

[1] Assistant of the Department of Internal Medicine and Cardiology No. 2, Samarkand State Medical University, Samarkand, Uzbekistan

[2] Student of Samarkand State Medical University, Samarkand, Uzbekistan

Aim of study. To study the features of coronary artery damage depending on the etiopathogenetic risk factors for destabilization of coronary heart disease.

Materials and methods. From 2021 to 2024, 114 patients with a diagnosis of acute coronary syndrome without ST segment elevation (NSTE-ACS) were examined at the Samarkand Regional Branch of the Republican Specialized Scientific and Practical Medical Center of Cardiology and the Samarkand Branch of the Republican Scientific Center for Emergency Medical Care (SF RSCEMC). The average age of

patients with NSTE-ACS was 62.85±10.06 years. Of these, 55 (48.2%) patients had ACS without ST segment elevation and without neurovegetative disorders, and 59 (51.2%) patients had ACS without ST segment elevation with neurovegetative disorders, and 30 patients with stable angina formed a comparable group. All patients gave their written informed consent for inclusion in the study. All patients were explained the purpose and objectives of the study, the potential clinical benefit of prophylactic medication, and possible side effects associated with non-compliance with medical recommendations. The study included 35 women and 24 men with NSTE-ACS with NVD, as well as 19 women and 36 men with NSTE-ACS without NVD.

Results and discussion. For a comparative assessment of cardiac parameters of patients with NSTE-ACS with and without NVD, ECG and echocardiography parameters were studied.

From Table 1, it can be seen that among patients with NSTE-ACS, LVEF was statistically reduced than in patients with SA. In patients with NSTE-ACS and NVD, LVEF was slightly reduced than in patients with NSTE-ACS without NVD. And cases with ST segment depression are 20.2% more common in patients with NSTE-ACS and NVD, in contrast to patients without NVD.

The above data indicate that comorbid conditions such as psychosomatic disorders lead to destabilization of coronary heart disease, in turn, destabilized variants of coronary heart disease can increase the incidence of fatal cases.

ECG - the study was performed on the SCHILLER CARDIOVIT AT-2 plus device (Switzerland). All patients in the study groups underwent ECG recording in 12 leads (3 standard, 3 enhanced, 6 chest leads). In the remote period, ECG examination was performed after 1, 3, 6, 9 and 12 months to assess the effectiveness of treatment, as well as in case of recurrence of angina.

Table 01 Echocardiography and ECG indicators in patients with NSTE-ACS depending on presence or absence of NVD.

Indicators of Echo	ACS + NVD (N=59)	ACS without NVD (N=55)	SAP (N=30)	P-value
LVEF %	$51,2 \pm 10,2$	$54,3 \pm 10,08$	$55,6 \pm 11,2$	0,001
LP diameter(cm)	$3,2 \pm 0,64$	$3,1 \pm 0,62$	$3,0 \pm 0,6$	0,052
MRL (cm)	$1,2 \pm 0,24$	$1,15 \pm 0,23$	$1,10 \pm 0,2$	0,015
ZSLZ (cm)	$1,2 \pm 0,24$	$1,14 \pm 0,22$	$1,10 \pm 0,2$	0,014
DRC (cm)	$5,8 \pm 1,16$	$5,4 \pm 1,08$	$4,8 \pm 0,9$	0,047
KSR (cm)	$4,3 \pm 0,26$	$4,0 \pm 0,8$	$4,1 \pm 0,82$	0,014
Aorta (cm)	$3,0 \pm 0,6$	$3,08 \pm 0,61$	$2,9 \pm 0,6$	0,097

Table 02

Indicators of EKG	ACS + NVD (N=59)	ACS without NVD (N=55)	SAP (N=30)	P - value
Heart rate (min)	$86,4 \pm 17,2$	**$74,1 \pm 14,8$**	**$75,7 \pm 15,1$**	**0,021**
PQ (sec)	$0,16 \pm 0,03$	$0,16 \pm 0,03$	$0,16 \pm 0,03$	0,052
QRS (sec)	$0,08 \pm 0,016$	$0,08 \pm 0,016$	$0,08 \pm 0,016$	0,015
QT (ms)	$411,6 \pm 82,3$	$409,7 \pm 81,9$	$404,6 \pm 80,9$	0,031
S V1 + R V5 (mm)	$21,2 \pm 4,24$	$21,5 \pm 4,3$	$18,5 \pm 3,7$	0,047
R V6 (mm)	$12,7 \pm 2,54$	$12,4 \pm 2,481$	$10,2 \pm 2,04$	0,014
R aVL + S V3 (mm)	$16,6 \pm 3,32$	$15,3 \pm 3,06$	$12,2 \pm 2,4$	0,097
R aVL (mm)	$8,6 \pm 1,72$	$5,2 \pm 1,04$	$4,8 \pm 0,96$	0,001
Depression ST segment	$71,1 \pm 14,2$	$50,9 \pm 10,18$		0,052
Inversion T wave	$28,9 \pm 5,78$	$49,1 \pm 9,82$		0,015

Note. *^#- Significantly compared with NSTE-ACS + NIH and without it, as well as with stable angina (* - P1<0.05, ** - P1<0.01, *** - P1<0.001, ^ - P2<0.05, ^^ - P2<0.01, ^^^ - P2<0.001, # P3<0.05, ## - P<0.01, ### - P<0.001).

When conducting an ECG study, ST segment elevation is 20.2% more common among patients with ACS + NVD.

One of the objectives of our study was to assess the degree of coronary artery damage in patients with coronary artery disease depending on the presence of NIH. After admission to hospital, patients with acute coronary syndrome without ST elevation underwent diagnostic coronary angiography. To diagnose the localization and extent of coronary artery damage, we performed coronary angiography by catheterization of the femoral artery (25.2%) and radial artery (74.8%).For this purpose, we examined 92 patients with NSTE-ACS; in 18 patients (19.5%), no hemodynamically significant lesions of the coronary arteries (CA) were detected. Lesions of one CA were detected in 27 (29.34%) patients, lesions of two CAs in 12 (13.04%), three CAs in 16 (17.39%), and more than 3 CAs were detected in 19 (20.65%) patients.
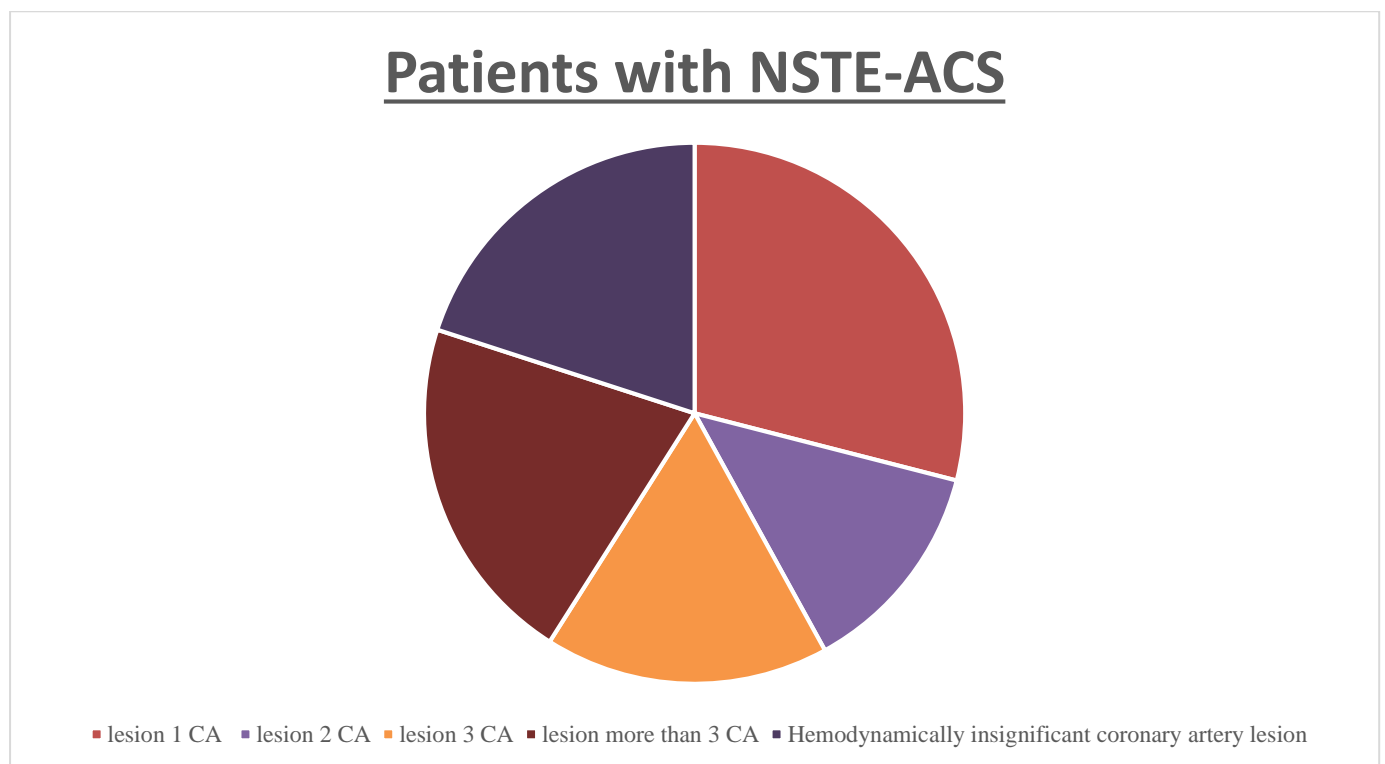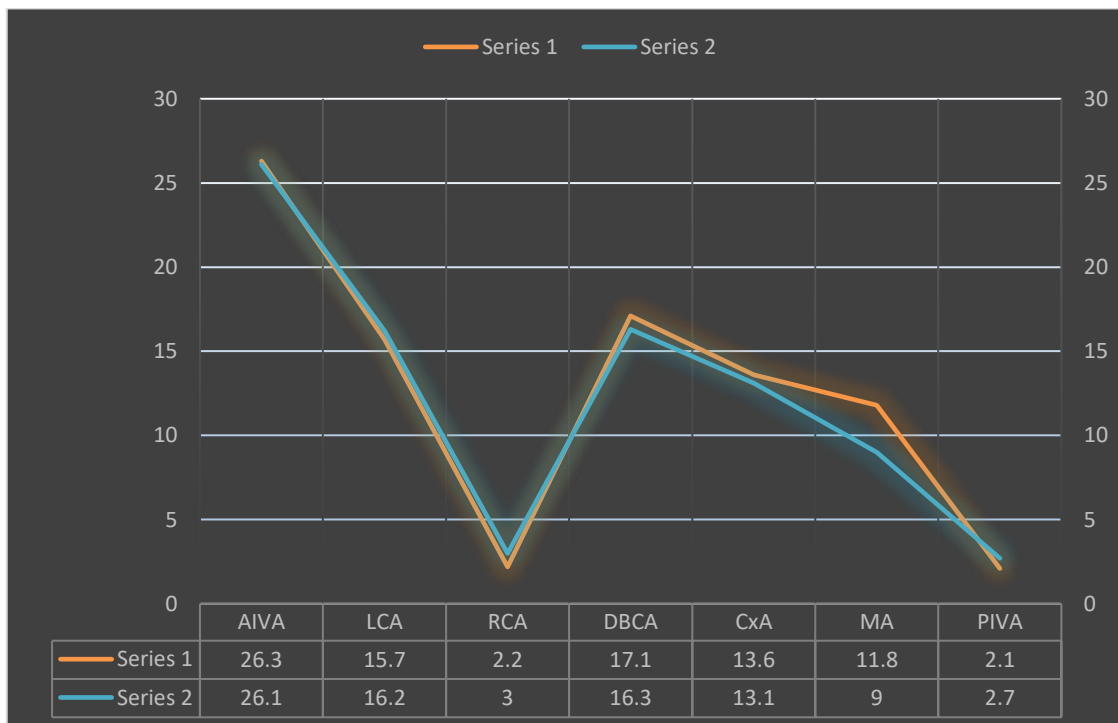

Figure 1. Distribution of patients with NSTE-ACS by the number of coronary artery lesions.

It should be noted that when examining the affected branches of the coronary artery, it was found that the lesion of the anterior interventricular artery (AIVA) was the most common and was detected in 65 (52.4%) patients with NSTE-ACS, lesion of the left coronary artery was found in 12 (31.9%) patients, while lesion of the RCA was found in only 6 (5.2%) patients, lesion of the diagonal branch (DB) was also common and was detected in 46 (33.4%) patients, lesion of the circumflex branch was found in 54 (26.7%) patients, the obtuse marginal branch in 32 (20.8%) patients, and lesion of the posterior interventricular artery in 13 (4.8%) patients (Fig. 2).
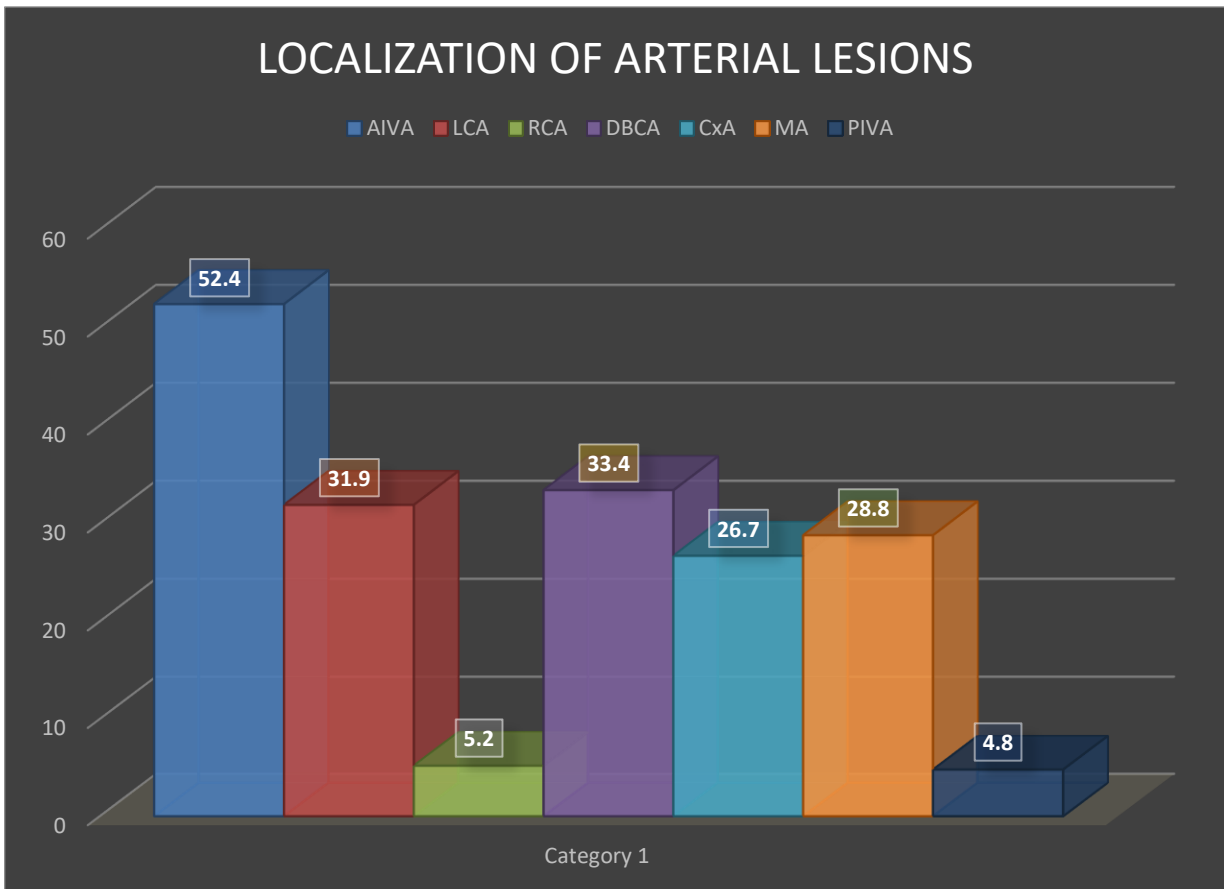
Figure 2. Localization of coronary artery lesions.

When distributing the damage to the coronary artery depending on the presence of NVD, we did not identify any reliable data as such, i.e. the localization of the damage to the coronary artery did not depend on the presence of NVD (Fig. 3).

	AIVA	LCA	RCA	DBCA	CxA	MA	PIVA
Series 1	26.3	15.7	2.2	17.1	13.6	11.8	2.1
Series 2	26.1	16.2	3	16.3	13.1	9	2.7

Figure 3. Localization of coronary artery lesions depending on the NVD.

Thus, the most vulnerable coronary arteries were the left LA, left coronary artery, diagonal and circumflex arteries.

Conclusion. In our study, when comparing coronary artery lesions among patients with NSTE-ACS with NIH (n=34) and patients with NSTE-ACS without NIH (n=23), significantly more frequent and multiple coronary artery lesions were detected. Thus, among patients with NSTE-ACS and NVD, lesion of the 1st coronary artery occurred in 22 (17.2%) patients, lesion of 2 coronary arteries in 8 (16.1%), lesion of 3 coronary arteries in 4 (10.6%) and lesion of more than 3 coronary arteries in 27 (32.7%) patients. Then, among patients without NIH, lesion of the 1st coronary artery was detected in 16 (17.9%) patients, lesion of 2 coronary arteries in 11 (12.3%) patients, lesion of 3 coronary arteries in 2 (2.2%) patients and lesion of more than 3 coronary arteries was detected in 7 (7.8%) patients, which indicates a direct relationship between atherosclerotic lesions coronary arteries and the development of NVI and requires further consideration to identify the main etiological factors of their relationship.

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