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TO THE QUESTION OF FEATURES OF ATHEROSCLEROTIC CORONARY LESION IN PATIENTS WITH PRIMARY AND REPEATED MYOCARDIAL INFARCTION

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ABSTRACT:

To the article "TO THE QUESTION ABOUT THE FEATURES OF ATHEROSCLEROTIC CORONARY DISEASE IN PATIENTS WITH PRIMARY AND REPEATED MYOCARDIAL INFARCTION" Features of atherosclerotic lesions of the coronary arteries (CA) in patients with myocardial infarction (MI) is the subject of numerous studies. The assessment of the lesion of the coronary stream was carried out according to the results of coronary angiography (CAG) in 50 patients with primary MI (IM primary.) And 30 patients with repeated MI (IM repeated.).

It was found that in patients with both IM primary and IM repeated predominantly multivessel lesions with localization of stenoses in the branches of both coronary arteries. Differences in the localization of coronary artery stenoses are more pronounced in men. The presence of diabetes mellitus (DM) largely neutralized the differences in IMprimary and IM repeated. The most pronounced changes in both coronary arteries and their occlusion were noted with a combination of MI with diabetes mellitus and arterial hypertension (AH).

Keywords: myocardial infarction, coronary arteries, coronary angiography.

INTRODUCTION:

The subject of numerous studies is the study of the nature of atherosclerotic lesions of the coronary arteries (CA) in patients with myocardial infarction (MI) [1,2,3]. Currently, the danger of lesions of the left coronary artery (LCA) trunk and multivessel lesions in patients with coronary artery disease has been proven [3,4]. However, the features of the CA state in patients with repeated MI and associated lesions have not been adequately studied [5,6].

AIM:

The aim of this study was to study the features of coronary lesions according to the results of coronary angiography (CAG) in patients with primary and recurrent myocardial infarction.

Material and methods. We examined 50 patients with primary MI (IMprimary) and 30 patients with repeated MI (IMrepeated). The selection of patients was carried out in the departments of endovascular surgery of the Republican Specialized Scientific and Practical Medical Center of Cardiology of the Republic of Uzbekistan (Tashkent) and the Namangan branch of the RSNPMC of Cardiology (Namangan). The groups of patients with MI are comparable in terms of gender, age, and comorbidities. The percentage of patients suffering from arterial hypertension (AH), diabetes mellitus (DM), a combination of these pathologies in both groups of patients was the same. The characteristics of patients in both groups of patients with MI is presented in Table one.

Table 1. Clinical and anthropometric characteristics of patients with myocardial infarction (MI)

Patient groups	Sex		Age, years	Accompanyingillnesses		
	Men	Women		AH	DM	DM+AH
MI primary (n = 50)	38	12	51,8±9,2	28	10	8
MI repeated (n = 30)	20	10	53,5±9,4	16	9	5

Note: MI - myocardial infarction, AH - arterial hypertension, DM - diabetes mellitus

The material was statistically processed using the Statistica-6 software. The methods of analysis of variance, nonparametric Mann-Whitney test and Wilcoxon test were also used. Differences between groups were considered statistically significant at $p < 0.05$.

RESULTS AND DISCUSSION:

There were examined 80 patients with myocardial infarction, which were divided into 2 groups: patients with primary myocardial infarction were 50 people (group 1) and patients with repeated myocardial infarction were 30 people (group 2) (Table 1). In both groups of patients, men predominated, accounting for 76% and 66.7%, respectively. The age of patients in both groups had insignificant differences ($p > 0.05$). The presence of concomitant pathology was as follows: AH in groups of patients was 56% and 53.3%, respectively, the presence of diabetes was 20 and 30%, and the combination of diabetes and AH was 16% and 16.7%, respectively (Table 1).

Lipid metabolism in both groups of patients was changed. The lipid profile in both groups (Table 2) was characterized by a moderate increase in total cholesterol (TC) levels by 29% and 26.5%; low density lipoproteins (LDL) - by 26.5% and 24%; triglycerides (TG) - by 43.1% and 53.3% and a decrease in high density lipoproteins (HDL) by 13.4% and 15%, respectively.

Table 2. Indicators of lipid metabolism in patients with myocardial infarction (MI)

Patientgroups	TC (mmol / l)	LDL (mmol / l)	TG (mmol / l)	HDL (mmol / l)
MI primary (n = 50)	5,21±1,53	2,91±0,78	1,56±0,52	1,03±0,43
MI repeated (n = 30)	5,11±1,34	2,85±0,72	1,67±0,58	1,01±0,42
Control (n=20)	4,04±0,97	2,30±0,54	1,09±0,32	1,19±0,38

Note: TC - total cholesterol, LDL - low density lipoproteins, TG - triglycerides, HDL - high density lipoproteins

The results of diagnostic coronary angiography were assessed according to the degree of coronary artery stenosis (Yu.S. Petrosyan, LS Zingerman, 1973): I degree - up to 50%; II degree - 50-75%; III degree - more than 75%; IV degree - CA occlusion [1,7]. Also, the degree of CA narrowing was assessed at 3 levels: proximal, middle and distal parts [1,7]. MI patients were compared according to the degree of narrowing of the most stenotic coronary artery and localization of stenoses [1,7]. Comparison of groups of patients with primary and recurrent myocardial infarction by the number of stenotic arteries is shown in Fig. 1. Thus, the absence of significant stenosis was rare, amounting to 8% in group 1 of patients, and in group 2 it was not registered. In both groups, multivessel lesions predominated. At the same time, damage to 3 vessels or more is detected significantly more often with repeated MI, amounting to 66.7% (Fig. 1).

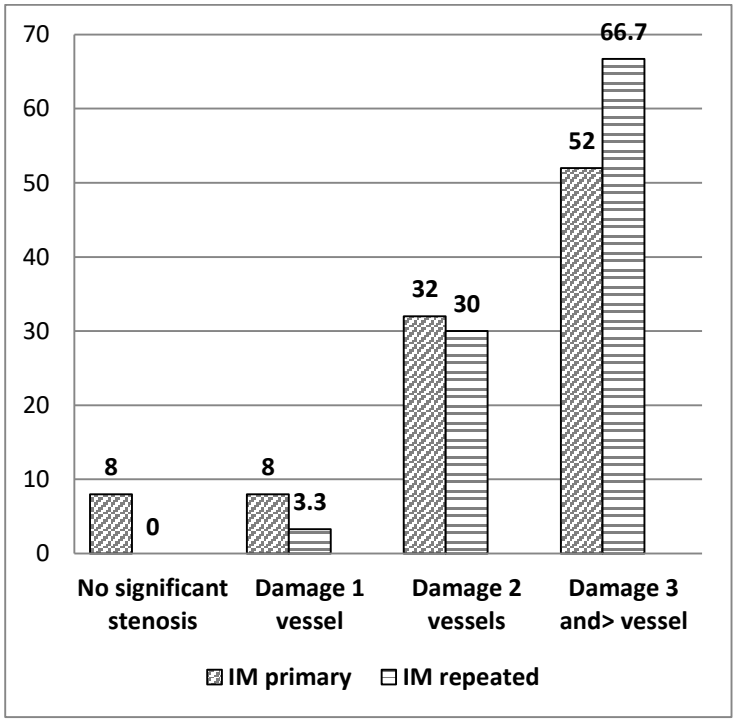

Fig. 1. Prevalence of vascular lesions in patients with myocardial infarction (MI,%)

The incidence of coronary artery disease in patients with MI, depending on the presence of concomitant diseases, was as follows (Table 3).

Table 3.The incidence of coronary artery disease (CA) in patients with myocardial infarction (MI) with concomitant diseases

Patientgroups	Significant CA stenosis No	Number of affected Coronary Arteries		
		1	2	3 and>
IM primary + DM (n = 10)	0	1 (10%)	3 (30%)	6 (60%)
Men (n = 7)	0	0 (0%)	2 (28,6%)	5 (71,4%)
Women (n = 3)	0	1 (33,3%)	1 (33,3%)	1 (33,4%)
IM repeated + DM (n = 9)	0	1 (11,1%)	3 (33,3%)	5 (55,6%)
Men (n = 7)	0	1 (14,3%)	2 (28,6%)	4 (57,1%)
Women (n = 2)	0	0 (0%)	1 (50%)	1 (50%)
IM primary + AH (n = 28)	2 (7,1%)	4 (14,3%)	10 (35,7%)	12 (42,9%)
Men (n = 20)	1 (5%)	3 (15%)	8 (40%)	
Women (n = 8)	1 (12,5%)	1 (12,5%)	2 (25%)	8 (40%) 4 (50%)
MI repeated + AH (n = 16)	0	2 (12,5%)	4 (25%)	10 (62,5%)
Men (n = 10)	0	1 (10,0%)	3 (30%)	
Women (n = 6)	0	1 (16,7%)	1 (16,7%)	6 (60%) 4 (66,7%)
IM primary + DM + AH (n = 8)	0	0	3 (37,5%)	5 (62,5%)
Men (n = 7)	0	0	2 (28,6%)	5 (71,4%)
Women (n = 1)	0	0	1 (100%)	0 (0%)
MI repeated + DM + AH (n = 7)	0	0	1 (14,3%)	6 (85,7%)
Men (n = 5)	0	0	0 (0%)	5 (100%)
Women (n = 2)	0	0	1 (50%)	1 (50%)

Thus, in all cases of combined pathology, the predominance of multivessel lesions was noted, especially pronounced in the presence of diabetes mellitus and hypertension. In particular, with a combination of MI + DM, the frequency of IM primary accounted for 60%, and IM repeated 55.6%, with a large predominance in men (71.4% and 57.1%, respectively). With a combination of IM primary + AH in patients, there was generally a lower percentage of coronary artery disease and even the absence of significant coronary artery stenoses, but with IM repeated these changes are leveled towards an increase in the multivessel coronary artery disease (62.5%), and more pronounced in women (66.7%). Multivessel lesions significantly prevailed in patients with IM repeated regardless of the level of blood pressure in the anamnesis. The most pronounced changes were noted with MI in combination with diabetes mellitus and hypertension. So, with IM primary in combination with diabetes mellitus and hypertension, multivessel lesions were found in 62.5% of patients, with a greater predominance in men - 71.4%. The most pronounced changes were noted in patients with UTI. in combination with diabetes and hypertension, accounting for 85.7%, and in men the lesions were in 100% of cases, and in women - 50% of cases.

Localization of hemodynamically significant coronary artery stenoses in MI is shown in Fig. 2. The isolated lesion of the right coronary artery (RCA) in patients with IM primary and IM repeated. Isolated lesion of the left coronary artery (LCA) was found in 35.5% of patients with IM primary, whereas with IM repeated it was 2 times less common. In both groups, combined lesion of the basins of both CA prevailed, however, if with IM primary it was found only in 50% of patients, then in case of IM repeated - already in 81% of patients. This difference was due to the more frequent lesion of RCA in patients with UTI. (fig. 2).

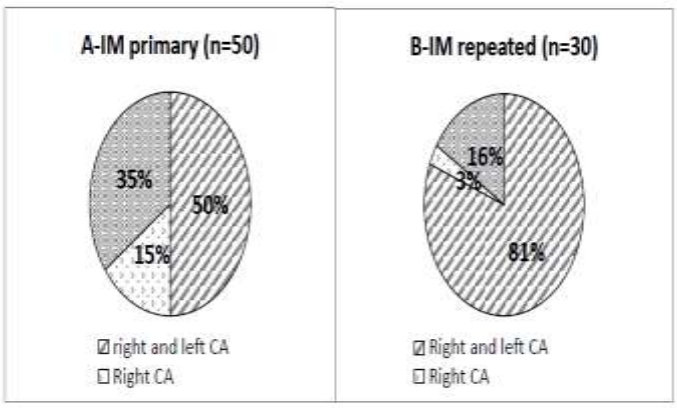

Fig. 2. Localization of coronary artery (CA) stenosis in patients with MI (MI,%)

Comparison of the percentage and degree of CA lumen narrowing in MI patients (Table 4) showed that the proportion of patients without hemodynamically significant CA stenoses is very small in MI primary (8%), and with IM repeated. there is none of them. In patients with UTI. CA occlusions were more common ($p < 0.05$), and the incidence of grade II and III stenoses did not differ significantly between groups.

Table 4. Percentage and degree of narrowing of the most stenotic coronary arteries (CA) in patients with myocardial infarction (MI)

Percentage of narrowing of stenotic coronary arteries	The degree of narrowing of the CA	IM primary (n = 50)	IMrepeated (n = 30)
Lessthan 50%	I	4 (8%)	-
50-75%	II	6 (12%)	2 (6,6%)
>75%	III	18 (36%)	11 (36,7%)
Completeocclusion	IV	22 (44%)	17 (56,7%)

Comparison of the localization of stenosis and the degree of coronary artery disease in patients with MI confirmed the similarity of coronary artery changes in patients with primary and recurrent MI (Table 5).

Table 5. Localization of stenosis and the degree of stenosis of coronary arteries (CA) in patients with myocardial infarction (MI)

Patientgroups	Stenosisdegree	LCA	AIVB	DA	CA	PIVB	PLB	IA	RCA
MI primary (n = 50)	I	48	20	47	30	46	43	45	38
	II	1	7	2	7	1	3	1	4
	III	1	18	3	6	1	2	1	9
	IV	0	8	1	2	1	1	0	6
IMrepeated (n = 30)	I	28	7	28	17	28	27	28	13
	II	1	8	7	8	3	1	1	14
	III	1	15	3	8	2	0	2	11
	IV	0	13	1	5	1	1	0	17

Note: CA - coronary artery; MI - myocardial infarction; LCA - left coronary artery; AIVB - anterior interventricular branch; DA - diagonal artery; CA - circumflex artery; PIVB - posterior interventricular branch; PLB - posterior lateral branch; IA - intermediate artery; RCA - right coronary artery

Revealed significant differences in the frequency of occlusions and the state of the RCA.Occlusion in UTI.occurs significantly more often than with IM primary, both with lesions of RCA and LCA (Fig. 3). 52% have IM primary RCA lesion was not observed or was hemodynamically insignificant. With impulse.a similar state of RCA was recorded 2 times more often. Significantly greater lesion of RCA was noted in IM primary in men and women with double combined pathology - 100% and 50%, respectively. In women, the RCA was the only artery, the differences in the incidence of which in IM primary and IMrepeated proved to be reliable. In men with UTI, in addition to RCA, a significantly higher percentage of stenosis was noted in AIVB, DA, and CA.

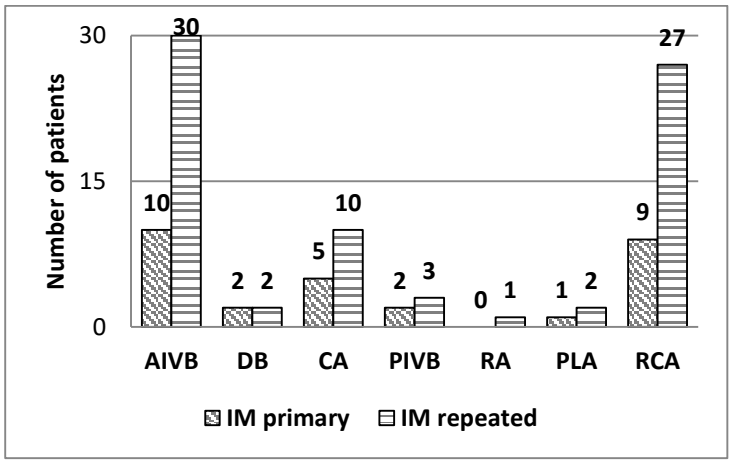

Fig. 3. Occlusion of coronary arteries (CA) in patients with myocardial infarction (MI)

When assessing the extent of the lesion, local (in the proximal, middle, or distal third of the coronary artery) and diffuse lesions affecting 2 parts of one vessel or more were identified (Fig. 4). Diffuse lesions were more

often detected in patients with UTI. In the LCA basin, diffuse stenoses were found in approximately the same number of patients with IM primaryand IM repeated ($p < 0.05$), while in the RCA basin, diffuse lesions were detected in 16 patients with UTI. and only in 10 patients with IM primaryCA occlusions were significantly more frequent in patients of group 2.

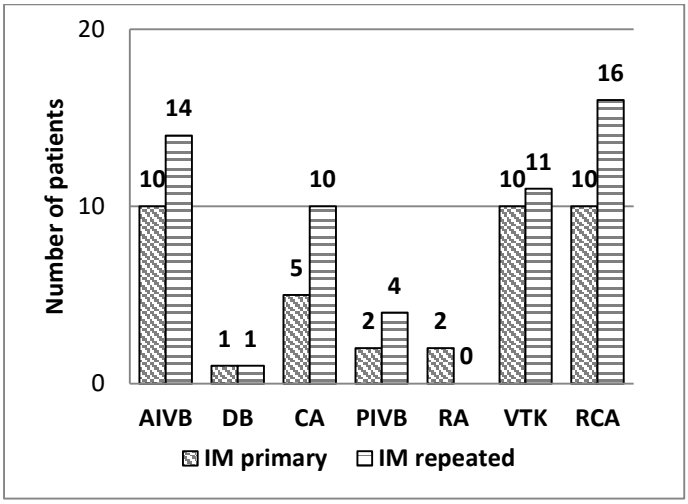

Fig. 4. Local and diffuse lesions of coronary arteries (CA) in patients with myocardial infarction (MI)

CONCLUSIONS:

1. In patients with primary and recurrent myocardial infarction, the results of CA were characterized by the predominance of multivessel lesions and localization of stenoses in the branches of both the right and left coronary arteries.
2. Men with primary and recurrent myocardial infarction showed more pronounced coronary angiographic changes in coronary artery.
3. With repeated myocardial infarction, more severe lesions of the RCA and a higher frequency of occlusions and diffuse lesions of the coronary bed were recorded.
4. The presence of diabetes aggravates coronary artery disease and eliminates differences in both primary MI and repeated MI.
5. The presence of diabetes and hypertension causes the most pronounced multivessel lesions of both coronary arteries and their occlusion.

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