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DIAGNOSTICS AND RESULTS OF SURGICAL TREATMENT OF ISCHEMIC HEART DISEASE OF YOUNG PEOPLE

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The resume

Research objective – to study the peculiarities of the disease activity and possibility of surgical treatment of an ischemic disease (IHD) of patients of young age.

Materials and methods. 95 patients with IHD younger 45 years areexamined, the control group was made with people older than 50. Objective research, an electrocardiography (electrocardiogram), echocardiography (EhoCS), angiocardigraphy are made to all patients included in the research. According to indications done the surgical operation is performed. Statistical processing of the investigated material was by programmer Statistika 6.0.

Results and discussion. Among IHD 45 patient younger 45, males dominate, with increase in level of atherogenous lipids and level triglycerides in particular in comparison with patients of the senior age groups. Tendency to dilatation cavities of the left ventricle (LV) and decrease in the general contractile ability of myocardium is a characteristic feature for IHD patients of young age at ischemic remodeling. The endovascular technique of a straight line

revascularization prevails in an arsenal of surgical possibilities of correction of infringements of a coronary blood-groove.

Keywords: IHD, young age, myocardium revascularization.

Introduction.

The social and medical importance of IHD problem is defined by growth of disease and deterioration of indicators of death rate and disabled people [2]. The increase in number of patients occurs substantially at the expense of able-bodied people [3, 7, 8, 9]. Studying of IHT peculiarities of people of young age was based on W.M.Yater's et al works. (1948, 1951) [21, 22]. Among traditional risk factors of development IHD of young patients heredity occupies the first place [6, 12]. Family dyslipidemia leading to early development of a coronary atherosclerosis are a consequence of genetically certain infringement of level of lipids [11].

A number of researchers notices that, first, young men more often than in other age cohorts have the first display of illness which is the heart attack of a myocardium (HIM) with the subsequent postinfarction remodeling LV [1, 2, 5]; secondly, among them painless IHD is form widely spread [10, 13]. Pathogenesis developments of an ischemia of a myocardium at young age defines. The changed coronary arteries (CA) [20]. A number of authors testifies that atherosclerotic CA defeat at young patients can reach considerable degree [17, 18].

Against prompt growth of achievements of endorevascular methods and traditional coronary shunting (CSh) a question of a choice of this or that myocardium revascularization method continues to remain debated in particular if the situation concerns the young man. Many authors well estimate direct results at various techniques of rendering assistance to such patients [4, 16, 19]. At research of a condition of patients in the remote period we can't see similar unanimity any more, especially in comparison with patients of older age groups [14, 15]. The solution of this question lies in a plane of the further studying both direct, and the remote results of various kinds of operative IHD treatment at the obligatory account of peculiarities of young age.

Research objective – to study the peculiarities of the disease activity and possibility of an ischemic disease (IHD) of patients of young age.

Materials and methods.

From 2005 to 2008 in Rostov Regional Center of Cardiology and Cardiovascular Surgery passed treatment 101 patients younger 45 received treatment that has made 11,1 % from total amount of patients suffering IHD. 95 clinical cases are analysed. Criterion for inclusion in investigated group (IG) were [anamnestic](#) data, the electrocardiogram registered signs of an ischemia of a myocardium, presence of cicatricial changes LV. Results are made for the hospital

period. For revealing of prominent IHD peculiarities of people of young age this group is compared with indicators of older age group (50 years old and older) - control group (CG). Selection of patients as a part of 100 clinical cases in comparison group is carried out by chance, IHD presence confirmed with angiocardiology (AKG) results was obligatory.

All patient defines the lipidic exchange status, the basic electrocardiograms and EhoCS indicators (device Philips Sonos 7500), including in dynamics after revascularization procedure are estimated. The condition of a coronary channel and LV came to light by means of carrying out AKG selective left and right angiocardiology, left [ventriculography](#), AKG internal chest arteries (ICA) and bypass angiography (device Philips Allura) was carried out if necessary. According to indications the surgical interventions directed to revascularization of a myocardium and reconstruction changed LV were carried out. The Part of patients was made [angioplasty](#) with implantation procedure is with a medicinal covering or without it. CS was carried out in the conditions of artificial blood circulation (ABC). Device connection was carried out by means of cannula an ascending aorta and the right auricle. Cardioplegia - introduction of solution «custodiol» in quantity to two liters in an aorta root, at significant defeats of a trunk of the left coronary artery (TLCA) it was supplemented with retrograde introduction of cardioplegia a solution in a coronary sine. The left departments of heart drainage through the right top pulmonary vein. Left ICA is used as transplants, autovein (the big hypodermic Vein), a beam artery. Its plasticity with use endorevascular patches (synthetic material, autoPericardium) was carried out in aneurysmatic LV changes cases. Single cases of Csh of a forward interventricular branch (FIVA) were carried out on working heart. Direct results of surgical treatment were estimated according to parameters of the nearest postoperative period and the data a functional condition of patients when they were discharged from hospital.

Statistical processing of an investigated material was spent by program Statistika 6.0. Results are presented in the form of $M \pm m$. At definition of authentic distinctions between analyzed indicators we used the nonparametric dispersive analysis - criterion of Kruskal-Wallis that represent summarizing of Man-Whitney's criterion. At normal distribution the t-criterion of Student was applied to a mark of statistical distinctions between two groups of quantity indicators. For a mark of reliability of a difference of a share of an analyzed sign in studied groups used z-criterion. Authentic distinctions of studied indicators considered $p < 0,05$.

Table# 1

Results and discussion.

The basic kliniko-demographic indicators of compared groups are presented in table #1. There is an authentic distinction in groups by the basic criterion of selection - to age of the patient, and also on logically explainable, durations of the anamnesis of disease. Prevalence of male patients in IG pays attention. Considering the previous myocardium revascularization procedures, it is necessary to notice that in IG 3 (3,2 %) have transferred the patient coronary stent (CS) and 2 (2,1 %) CSh, in CG 4 (4 %) had patients CS in the anamnesis, 4 (4 %) CSh, 1 (1%) the patient has transferred both kinds of intervention. In structure of an accompanying pathology hypertensive illness occupies a leading place both groups, diseases of a gastroenteric path 26 (27,4 %) sick IG and 38 (38 %) CG (0,10). Chronic diseases of lungs have met in 3 (3,2 %) cases of IG and in 13 (13 %) CG ($p < 0,001$). Clinically significant defeats of arteries of other pools are diagnosed at 4 (4,2 %) patients of IG against 20 (20 %) in CG ($p < 0,01$), and in IG at 3 (3,2 %), and in CG at 16 (16 %) patients were available consequences of the transferred sharp infringement of brain blood circulation. The diabetes complicated made the basic disease more complicated at 2 (2,1 %) patients of IG and at 22 (22 %) CG ($p < 0,001$).

At research lipid exchange at patients of IG and CG it is revealed that level of the general cholesterol $5,82 \pm 1,6$ mmol/l, $5,92 \pm 1,82$ mmol/l ($> 0,10$), lipoproteins low density $4,7 \pm 1,62$ mmol/l, $4,99 \pm 1,8$ mmol/l (0,10), an index aterogenety $4,82 \pm 2,44$ mmol/l, $5,77 \pm 2,73$ the mmol/l (0,10) is raised in both groups, but authentically didn't differ, accordingly. It is necessary to notice that level of lipoproteins of high density $1,04 \pm 0,3$ mmol/l and level triglycerides $2,32 \pm 1,37$ mmol/l authentically above at young patients in comparison with control group $0,94 \pm 0,26$ mmol/l, $1,93 \pm 1,11$ mmol/l. Among IHD patients of young age dislipidemia IIa and IIb type meet equally often in 46 % of cases. Thus, dislipidemia III and IV type are observed less often – 2 (2,1 %) and 5 (5,3 %) a case accordingly. In the old age group dominates dislipidemia IIa type – 60 (60 %) supervision, follow further dislipidemia IIb type – 28 (28 %), IV type – 5 (5 %), III type – 2 (2 %) a case.

Table# 2

The majority of compared electrocardiograms - criteria equally often meet in both groups of patients (table #2), and in particular: infringements of a rhythm of heart, changes of intraventricular conductivity, presence of a hypertrophy of myocardium LV. It is necessary to notice that localization postinfarction cardiosclerosis (PICS) in both groups had similar character: defeat of a forward wall (FW) LV and an interventricular partition (IVP) is in 8 (13,8 %) cases of IG against 6 (9,8 %) CG; changes on PS LV, IVP with involving of a top of heart (TH) and a lateral wall (LW) 20 (34,5 %) cases of IG against 25 (40,3 %) CG, a back wall (BW) has suffered at 30 (51,7 %) sick IG and at 31 (50 %) CG ($p < 0,10$). From all indicators in

investigated groups there is an authentic difference on frequency of supervision paroxysm fibrillations of auricles (FA) and presence of signs of an ischemia of myocardium LV.

At EhoCS research of IHD patients of young age some features have been revealed. Thus, estimated following parameters: the aorta basis - $33,5 \pm 3,8$ mm, an ascending aorta - $32,8 \pm 4,5$ mm, signs of fibrous change of shutters of the aortal valve (AV) 59 (62,1 %) cases, regurgitation I degrees AV 5 (5,3 %) supervision, a peak gradient on AV $5,2 \pm 2,6$ mm mercury. Diameter of a fibrous ring mitral the valve (MV) $30,1 \pm 4,5$ mm, signs of consolidation of shutters MV at 37 (38,9 %) patients, significant (above 2 degrees) regurgitation on MV at 2 (2,1 %) patients. In one case of morphological changes of shutters tricuspid the valve (TV) it is not revealed, significant (above 2 degrees) regurgitation on TV it is found out at 1 (1,05 %) patients. The sizes of the left auricle $39,1 \pm 4,0$ mm, the sizes of the right ventricle $25,5 \pm 2,8$ mm. According to given EhoCS condition LV looks as follows: The final diastolic size LV $57,8 \pm 8,8$ mm, final systolic size LV $40,4 \pm 10,8$ mm, a thickness IVP in diastolic $1,1 \pm 3,3$ mm, a thickness IVP in a systole $13,5 \pm 4,0$ mm, a thickness of ZS LV in diastolic $10,8 \pm 2,7$ mm, a thickness of ZS LV in a systole $13,6 \pm 4,1$ mm. Number of warm reductions during research $75,7 \pm 13,7$ blows in a minute. Final diastolic volume (FDV) LV $171,6 \pm 61,9$ ml, final systolic volume (FSV) LV $86,9 \pm 55,8$ ml, shock volume LV $80,2 \pm 20,6$ ml, minute volume LV $7,0 \pm 3,0$ l/mines, fraction of emission LV $52,0 \pm 11,7$ %. Diastolic dysfunction LV of I degree is revealed at 82 (86,4 %) the patient, II degree at 11 (11,6 %), III degree at 2 (2,1 %). Some indicators of EhoCS of research at sick KG are resulted more low: regurgitation on MV 2 degrees at 6 patients ($> 0,10$), KDR LV $53,8 \pm 7,5$ mm ($p < 0,05$), KDO LV $146,1 \pm 48,3$ ml ($> 0,05$), fraction of emission LV $54,1 \pm 9,2$ % ($p < 0,01$), diastolic dysfunction LV of III item 5 of cases ($> 0,10$).

Table# 3

In table #3 comparative characteristic AKG at studied patients is resulted. AKG - research is executed 74 (77,9 %) to young patients, and in 11 (14,9 %) cases at AV haven't been revealed haemodynamics significant (50 % and more) defeats CA. By results of AKG in both groups there are no distinctions in type of blood supply of heart. At studying of features of a coronary channel of patients of the senior age group changes TLCA, proximal departments FIVA and envelope branch left CA, and also systems OV left CA were more often observed. At young age atherosclerotic process was localized in FIVA left CA and right CA. All cases postinfarction aneurysm LV, considered in this research, were localized within PS LV, TH. At young age postinfarction LV aneurysms develops more often though according statistics to our research it is doubtful. Authentic is thrombus cavities postinfarction LV aneurysm of young patients. Considering postinfarction remodelling features in this category of the patients is possible to explain formation of more extensive LV aneurysm.

Table# 4

Key parameters about character of surgical treatment in both groups are presented in table #4. To twenty one (22,1 %) to the patient it is executed [angioplasty](#) and KS. In three (14,3 %) cases procedure is made under urgent indications, in 18 (85,7 %) at a stable condition of patients. Stent FIVA is executed 11 (52,3 %) by the patient, branches of stupid edge (BSE) 2 (9,5 %), the right coronary artery (RCA) 7 (33,3 %), FIVA in a combination with RCA 1 (4,8 %). Operation CS is executed 29 (30,5 %) by the patient. In 4 (13,8) cases operative intervention was carried out without ABC, access - a lobby sternotomy at the left in 4th intercostals space, was FIVA shunted in an average third, as a transplant was used left ICA. In 25 (86,2 %) cases operative intervention was carried out through full median sternotomy with ABC application. More often 29 (100 %) cases was shunted FIVA, as a transplant it is used left ICA 28 (96,6 %) interventions, in 1 (3,4 %) autovein; a diagonal branch (DB) shunting 3 (10,3 %) to patients, a transplant autovein; BSE 9 (31 %), the transplant autovein, at shunting BSE in 7 (24,1 %) cases is imposed sequential the shunt with formation anastomosis on type the end sideways; back branch 4 (13,8 %), a transplant autovein; BIVP16 (55,2 %), a transplant autovein 14 (48,3 %) operations and autoartery (beam) 2 (6,9 %).

LV reconstruction concerning its aneurysms is executed 12 (41,4 %) cases to patients, in 7 (58,3 %) aneurysm cases is regarded as extensive frontbarrier, the thrombosis of a cavity aneurysms has met at 11 (91,7 %) interventions. LV plasticity in all cases was carried out with the help of endoventricular patches.

In group of young patients «re-do» operation took place - to the patient is earlier shunted FIVA and diagonal branch. In 4 years owing to a thrombosis of shunts there were stenocardia phenomena that have demanded KSH FIVA and BIVP. In other case CS it has been added by prosthetics MV and plastic arts TV.

To CG of 13 patients myocardium revascularization was not carried out, in 8 cases coronary [angioplasty](#) is executed with stent and 79 patients are carried out CS. Operation is performed in ABC conditions. In all cases it is shunted FIVA - a transplant left ICA. Thees 4 surgical interventions on working heart of people young age are executed. It is necessary to pay attention that the quantity of coronary [angioplasty](#) with stent and CS is authentic more in investigated group of patients. Indicators: a postoperative bleeding, preoperative myocardial infarction, infringements wound process, stroke in the specified table are presented at patients after CS.

Conclusions

1. Increase of level of atherogenous lipids and triglycerides is observed in the geroup of IHD patients of young age in comparison with older age groups.

2. At ischemic remodelling of patients of young age, propensity to dilatation cavities LV and to decrease in the general reduction abilities of LV myocardium. Defeat of a proximal and average third of forward interventricular branch of the left coronary artery, and also the right coronary artery is observed. In large part cases there is an extensive development of postinfarction LV aneurysms grasping forward wall LV, an interventricular partition, a top of heart to formation of a thrombosis of a cavity aneurysms that further is reflected in the adverse forecast of disease.
3. The endovascular technique of a straight line myocardium revascularization of people of young age with IHD prevails in an arsenal of surgical possibilities of correction of infringements of a coronary blood-groove.

Table # 1

The clinic - demographic characteristic of compared groups of patients of ischemic heart disease

Indicator	IG	CG	p
Middle age, years	40,7±4,7	62,3±5,0	<0,001
Parity of men and women, n/n	94/1	85/15	<0,01
Average duration of the anamnesis, month	21,7±8,3	54,2±25,6	<0,001
Procedure revascularization in the anamnesis, n (%)	5 (5,3)	9 (9)	>0,10
Urgent hospitalization, n (%)	21 (22,1)	22 (22)	>0,10
Middle class of a stable stenocardia	2,4	3,0	-
Patients with CHI 2A, n (%)	25 (26,3)	36 (36)	>0,10
Presence of postinfarctioncardiosclerosis, n (%)	58 (61,1)	62 (62)	>0,10

Table #2

Features electrocardiography researches of patients of an ischemic heart trouble.

Indicator	IG	CG	p
Constant FA, n (%)	1 (1,05)	5 (5)	>0,10
Paroxysm FA, n (%)	1 (1,05)	9 (9)	<0,01
VEx III-IV class Lown, n (%)	3 (3,16)	6 (6)	>0,10
Infringement of intraventricular conductivity, n (%)	17 (17,9)	26 (26)	>0,10
Hypertrophy LV, n (%)	69 (72,6)	75 (75)	>0,10
Ischemia of myocardium LV, n (%)	14 (14,7)	28 (28)	<0,05
Postinfarktkardiosklerose, n (%)	58 (61,1)	62 (62)	>0,10

Table #3

Results angiocardiology researches of patients
Ischemic heart disease.

Indicator		Quantity, n (%)		p
		IG	CG	
Blood supply type	The balanced	61 (82,4)	81 (81)	>0,10
	The left	6 (8,1)	10 (10)	>0,10
	The right	7 (9,5)	9 (9)	>0,10
TLCA		2 (2,7)	21 (21)	<0,01
UGFIVA	Proximal third	33 (44,6)	82 (82)	<0,001
	Average third	16 (21,6)	17 (17)	>0,10
DB		10 (13,5)	17 (17)	>0,10
OV		18 (24,3)	51 (51)	<0,001
BSE		9 (12,2)	28 (28)	<0,01
ZBB		2 (2,7)	14 (14)	<0,01
RCA	Proximal third	24 (32,4)	40 (40)	>0,10
	Average third	21 (28,4)	29 (29)	>0,10
BIVP		2 (2,7)	7 (7)	>0,10
Aneurysm		9 (12,2)	4 (4)	>0,05
Thrombosis		9 (12,2)	3 (3)	<0,05

Table №4

The characteristic of results and complications of surgical treatment

Patients of an ischemic heart Disease.

Indicator	ИГ	КГ	p
Changes CA (indications to surgical treatment), n	63	100	-
Coronary angioplasty with stent, n	21	8	<0,001
CSh, n	29 (4)	79 (0)	<0,001
Successful coronary stent, n	21	8	-
Hospital lethality, n	0	0	-
Postoperative bleeding, n	1	3	-
The reoperational myocardium heart attack, n	0	1	-
Infringements wound process, n	0	3	-
Stroke, n	0	1	-

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