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SURGICAL TREATMENT AND PROPHYLAXES OFTHECEREBRAL BLOOD CIRCULATION'S DISTURBANCES FOR PATIENTS WITH PATHOLOGY OF CAROTIDS

A.V. Tobokhov, L.A. Popova, V.N. Nicolaev
Medical institute of the North-Eastern Federal University
The Yakut hospital surgery and radiology department

Summary

We have analysed the results of examination and treatment of 168 patients with atherosclerosis affection in the domain of bifurcation of the carotids and inner one. On this basis of instrumental examination methods for all patients were made open and endovascular carotid's reconstructions. The good results of the surgical interferences on the carotids and low percentage of the perioperative complications show advantage of the surgical correction as an instrument of prophylaxes and treatment of the cerebral circulation's ischemic maladies.

Introduction

The cardiovascular diseases take the third place among death reasons in the developed countries and 85 per cent of them have an ischemic character. Besides atherosclerosis affection in the domain of bifurcation of the carotids and inner one is the most frequent reason of the ischemic maladies of the cerebral blood circulation (IC). In 60 per cent cases they are explained by embolism of the intracranial vessels fragments of the ulcerous plaques or thrombogenic material formed in the domain of stenosis. In other cases chronicischemia of the brain has seldom appeared in the result of insufficiency its blood supply, caused by the critical stenosis or occlusion of the IC [1].

The aim of the surgical interferences on the modern stage of problem research of the carotids constriction is the prevention of the cerebral blood flow's ischemic maladies. Nowadays there are two principal approaches for restoration of the blood flow to carotids- surgical endarterectomy and endovascular stenting of the IC that allow to treat patients effectively with denoted pathology, but at the same time they don't decide all problems. In spite of the numerous researches there are still many unsettled questions such as definition of indications for the operation, so peculiarities of the surgical instruments, ways of the perioperative risk's reduction and improvement of the separated results of the surgical treatment on atherosclerosis affection of carotids [6].

The materials and research methods

168 patients at the age from 40 to 75 (at an average 63,1) were operated on carotid in the Republic hospital №1, national medicine centre. Only 206 operations were accomplished, 175 from them on carotids. The sex ratio equaled 140:28 (table 1.).

Table 1

Age and sex description of patients.

Sex/age	To 40 years	41-50 years	51-60 years	From 61years	Total
Female		3	13	12	28
Male	1	22	60	57	140
Total	1	25	73	69	168

We used CICC's clinical classification of the RAMS's academician A.V. Pokrovsky (table 2) in our work, according to:

I rate- asymptomatic affections.

II rate- transiently ischemic attacks or ephemeral disturbances of the cerebral blood flow.

III rate- chronic dyscirculatory encephalopathy.

IV rate- undergoing ischemic strokes.

Table 2

Description of patients by stadium chronic insufficiency of the cerebral blood circulation (CICC) and age

CICC/age	To 40	41-50	51-60	Above 61	Total
I rate		2	9	6	17
II rate	1	13	34	31	79
III rate			5	14	19
IV rate		10	25	18	53
Total	1	25	73	69	168

115 patients were operated before stroke stadium that equaled 68,4%. 53 (31,6%) patients were operated after undergoing stroke.

Doppler ultrasonography is the most convenient diagnostic's method of the carotids stenosis. It allows estimating exactly on acceleration of the blood flow rate of the vessel's constriction and in many cases plaque morphology [6].

We made duplex screening research of the carotids for all patients (100%).

Table 3

Assignment of the operated patients for carotid's stenosis rate.

Rate/age	To 40 years	41-50 years	51-60 years	60 years	Total
Moderate/evident30-69%.		16	35	27	78
Evid./critical 69-99%.	1	9	29	38	77
Occlusion-embolism			9	4	13
Total	1	25	73	69	168

Preoperative and intraoperative monitoring of the blood flow in brain vessels by the transcranial Doppler sonography method (TCDG) allows choosing surgeon more optimum method of the brain's intraoperative protection.

The transcranial Doppler sonography before operation was made for 147 patients (87,5 %).

Table 4

Description of the operated patient's cerebral blood flow before operation.

TCDG	N-number of patients	% correlation
Strength from 2 sides	53	36%
Strength from 1 side	36	24,4%
Unfoundedness from 2 sides	23	15,6%
No window from 2 sides	21	14,2%
No window from 1 side	14	9,5%
Total	147	100%

The TCDG before operation was made for 147 patients (87,5%) from 168 operated patients. The strength of the collateral blood flow from both sides was noted for 53 patients. The given category of patients is considered more favourable in respect of brain's intraoperative protection choice method.

The TCDG has enormous role for definition of conduct's tactics, individual way for each patients and choice of the method intraoperative protection of brain (controlled hypertension, pharmacological methods, mounting of temporary intravascular bypass- TIB) [4].

The carotid angiography which is preferable method of the diagnostic visualization was made for 139 patients (82,7%). The others were operated on the facts of ultrasonography that is possible and it practices in many clinics.

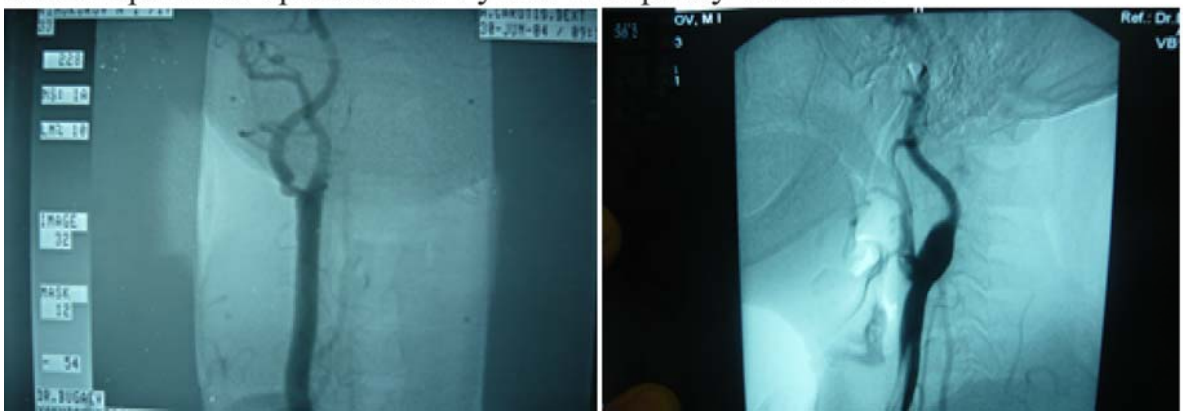
Table 5

The angiography facts on lesion localization of vessel's brain.

% of stenosis	<70%	>70%	occlusion	Total
To the right	30	35	8	73
To the left	29	33	4	66
Total	59	68	12	139

Pict.1. Angiogram of patient before operation operation in 4 years with plasty of mouth.

Pict.2. Angiogram after



The magnetic resonance tomography is in angio regime.

Table 6

Description on stage CICC

CICC	N-number of patient.
I	6
II	33
III	8
IV	33
Total	80

80 patients underwent the magnetic resonance tomography (MRT) in angio regime that equaled 47,6% from the general number.

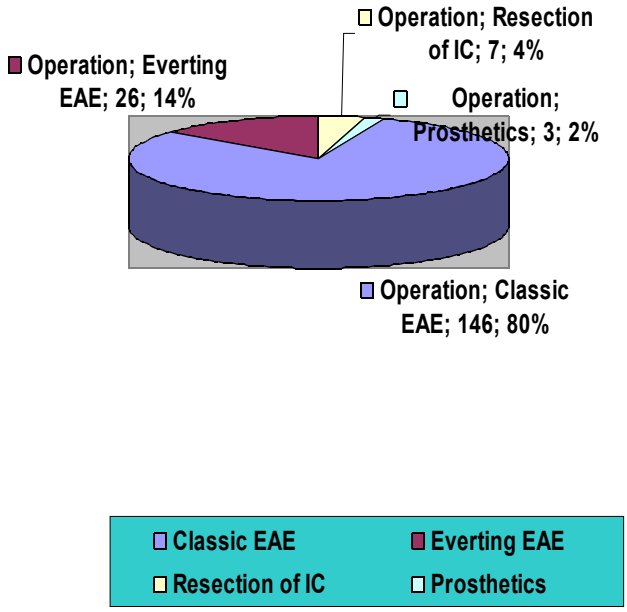
Table 7

The results of angio research- MRT.

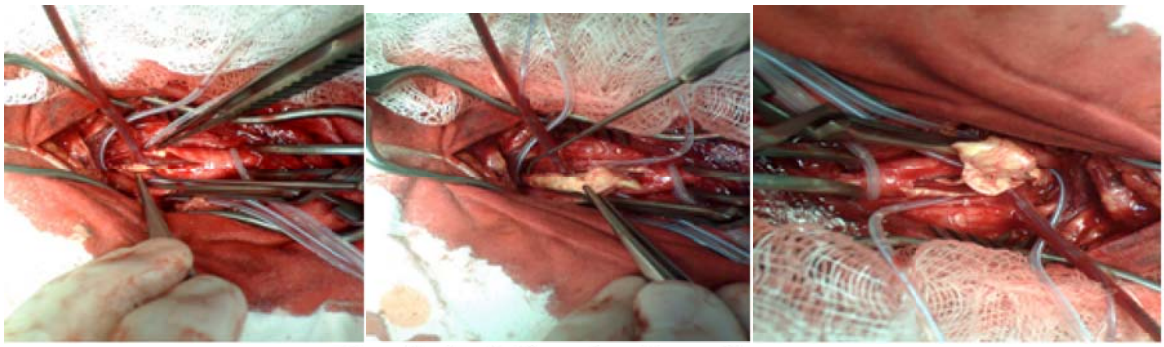
	I	II	III	IV	Total
Without pathology	4	10	1	1	16
Dyscirculatory encephalopathy			5		5
Postischemic changes		2		9	11
Lacunar cysts	1	6		6	13
Cysts		1		6	7
Intracranial lesion	1	11	1	5	18
Aneurysm				3	3
Adenoma of ephippium				1	1
Hematoma			1		1
Pituitary adenoma				1	1
Arnold-Chiari		1			1
Retrotserebny cyst		2		1	3
Total	6	33	8	33	80

The results of research and their discussion.

The classic endarterectomy (EAE) from the general number of interferences on the IC was made in 146 cases (83,4%) (pict. 4), 7 patients (4%) were made duplex carotid endarterectomy. The mounting of the temporary intravascular bypass was used in 54 cases (30,8%). The plasty of carotid's mouth for patients with short diameter of the IC was used in 36 cases (20,5%), from them vein was used in 22 cases (12,5%) and artificial patch in 14 cases (8%). Everting method was made in 26 cases (14,8%), from them 7 resections of the IC. The everting method has some advantages in front of "classic" EAE: initial anatomy of carotids keeps and the normal sizes of the IC restore without plastic material.



Pict.3 The operation's varieties on the IC.

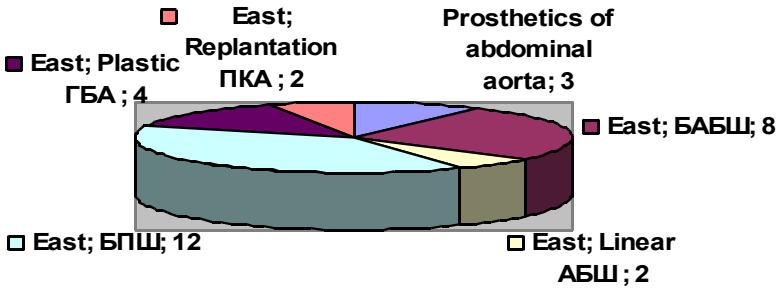


Pict.4, 5, 6.The classic endarterectomy.

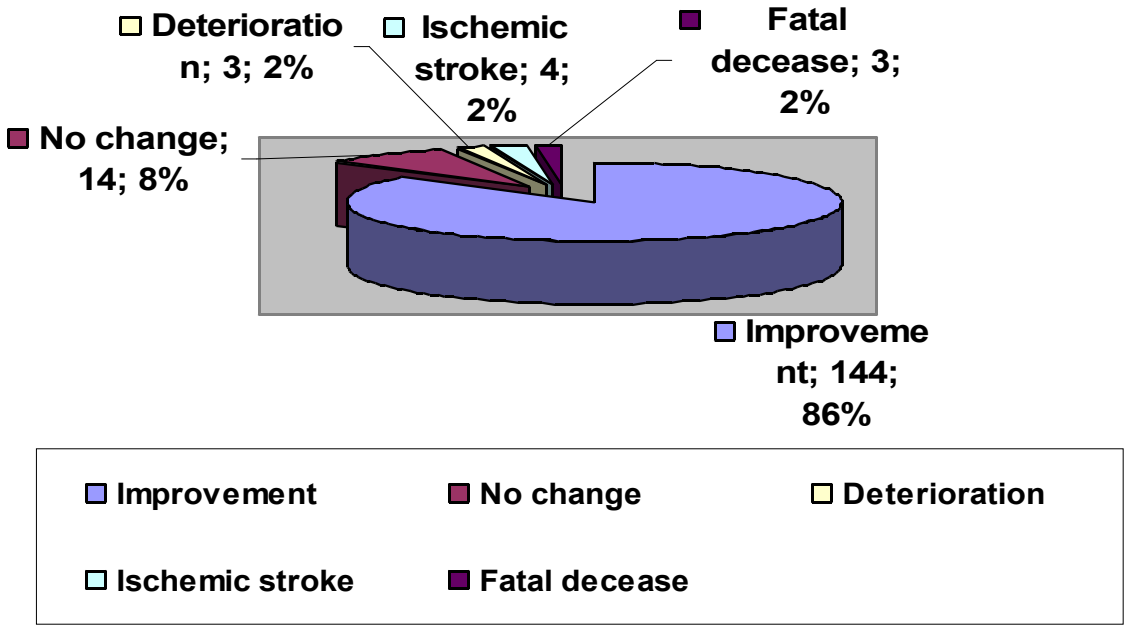
Pict.7, 8, 9. Finished operation with plasty of IC's mouth and extractedatherosclerosis plaque.

The atherosclerosis is generalized process. The combinedlesions of some arterial system's regions are often for patients, that increases risk of the perioperative and postoperative complications. The ischemic heart disease (IHD) was observed for 121 patients (72,5%), myocardial infarction in the past underwent 22 patients (13%). The chronic obliterating illnesses of the underextremities

vessels were observed for 56 patients (33,3%), for 5 (2,9%) was pathology of aorta's abdominal section.



Pict.10 Single-stage operations.



Pict.11 The results of surgical interferences.

3 patients (1,7%) died in postoperative period. The reason of the fatal decease was ischemic stroke in all cases.

After operation 14 patients (8,3%) remained without essential positive clinical changes in the neurologic status that is observed for 11 patients (6,5%)with duplex lesions.

Deterioration was for 3 patients: ephemeral disturbance of the cerebral blood flow with motion's disturbance in the left extremities was in one case, that was over at the end of a day, 2 patients had light neurologic ephemeral disturbances. 4 patients underwent the ischemic stroke in early postoperative period.

Conclusion

Thus, good results of the surgical interferences on the carotids and low percentage of the perioperative complications show advantage of the surgical correction as an instrument of prophylaxes and treatment of the cerebral circulation's ischemic maladies.

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About authors: Tobohov Alexander Vasilevitch, head of hospital surgery and radiodiagnostics department, doctor of medical science of MI NEFU. E-mail: avtobohov@mail.ru
Nikolaev Vladimir Nikolaevitch, candidate of medical science, associate professor of hospital surgery and radiodiagnostics department of MI NEFU. E-mail: w.nik@mail.ru
Popova Lyudmila Afanasevna, candidate of medical science, the doctor-surgeon of branch of vascular surgery of RH №1 – NCM.