SURGICAL TREATMENT OF PATIENTS WITH CHRONIC VASCULAR CEREBRAL FAILURE IN MULTIFOCAL ATHEROSCLEROSIS LESION

170 patients with different combinations of multifocal atherosclerosis have been examined. An availability of chronic cerebral vascular failure in patients with lesion of other arterial basins served as selection criterion. Aimed at determination of treatment tactic non-invasive visualization methods of vessels were used by us and preliminary staining of vessels was used only with therapeutic goal. Depending on staging of surgical interventions the operated patients were divided into two groups: depending on clinical prevalence of disturbed arterial basins and staged revascularization of various basins of arterial system by using of rengenoendovascular interventions.

Keywords: Multifocal atherosclerosis, simultaneous operations, staged operations.
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Introduction

Surgical treatment of patients with extended atherosclerosis especially in involvement of carotid arteries (CA) retains rather complicated problem of cardiovascular surgery (Pokrovsky and Sapelkin, 2008; Kadoglouab et al., 2010). Therefore, surgical treatment of ischemic disturbances of cerebral blood circulation took a leading position among priority problems of angiology in the last years. According to statistical data of the Ministry of Public Health in 2009 in the Republic of Uzbekistan blood circulation system diseases took the leading position among death causes (55.5%) because of an increase of an average duration of life of men (70.9 year) and women (75.4 year). Annually more than 40 thousand of insults are fixed that makes 148.1 to 100 thousand of population (Gafurov, 2010).

Taking into consideration a high distribution of this disease its diagnosis and surgical treatment remain one of the complicated tasks of modern angiosurgery. But a number of works devoted to role of brachiocephal basin especially CA combined with other arterial basins is absolutely not enough (TerMAkopyan et al., 2010; Shaarafeev, Akberov and Korobov, 2009).

Atherosclerosis is a systemic disease, and, therefore, lesion is not limited with one vascular basin in sufficient part of cases. Based on data of international register REACH (2006) approximately 50% patients with ischemic heart disease (IHD), brain (B) and atherosclerosis lesion of arteries of lower extremities have symptoms of atherothrombosis in more than one vascular basin, and in approximately 4% patients symptoms in all 3 basins were revealed. Taking into account asymptomatic lesions that may be revealed in only additional methods of research a share of multifocal injuries reaches high figures (Ter-Akopyan et al., 2010; Shaarafeev, Akberov and Korobov, 2009; Nikulnikov, 2010; Karev et al., 2009).

Thus, diagnosis and treatment of patients with multifocal atherosclerosis (MA) must be accomplished by a group of specialists - Cardiosurgeons, Vascular and Endovascular Cardiologists, Neurologists aimed at joint elaboration of treatment tactic of patients (Lachezar, Mario and Kocho, 2009).

Hence, topicality of problem is predetermined by a major frequency of different sizes of lesion, unsatisfactory lifetime diagnosis, diverse, and at times diametrical contrary tactic.
Besides, today information is scanty determining a role of non-invasive methods of research in combination with interventional treatment of patients while damaging two, three and more arterial basins that, undoubtedly, present extraordinary interest both from scientific and practical point of view.

Thus, the present work is aimed at improvement of results of treatment of patients with chronic vascular cerebral failure (CVCF) in MA by using of different methods of diagnosis and choice of adequate surgical tactic using both open and interventional methods of treatment.

**Material and methods**

Results of examination and surgical treatment of 170 patients with MA treated in hospital in department of Vascular Surgery and Angioneurology of the 2nd clinic of the Tashkent Medical Academy during 2000M2011 founded our work.

All the patients examined were divided into 2 groups. Control (the 1st) group formed 71 (41.8%) patients with MA receiving conventional treatment. Main (the 2nd) group formed 99 patients with the same pathology on which we used worked out by us therapeutic diagnostic algorithm allowing determine tactic of surgical treatment and expand indications to using interventions. A cause of disease in all the cases was atherosclerosis that simultaneously damaged some arterial basins (Table 1). Criterion of selection of patients served a presence of lesion of CA combined with manifestations of ischemia in other arterial basins.

<table>
<thead>
<tr>
<th>Combined lesions of arterial basins</th>
<th>Control group</th>
<th>Main group</th>
<th>In all</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>abs.</td>
<td>%</td>
<td>abs.</td>
</tr>
<tr>
<td>CA and arteries of lower extremities</td>
<td>38</td>
<td>53.5</td>
<td>46</td>
</tr>
<tr>
<td>CA and renal arteries</td>
<td>14</td>
<td>19.7</td>
<td>18</td>
</tr>
<tr>
<td>CA, renal arteries and arteries of lower extremities</td>
<td>19</td>
<td>26.8</td>
<td>35</td>
</tr>
<tr>
<td>In all</td>
<td>71</td>
<td>100.0</td>
<td>99</td>
</tr>
</tbody>
</table>

Studying anamnesis of disease showed that an average duration of disease in patients in control group was 7.5±1.5 years, in the main group - 8.9±1.4 years.

In determination of a grade of CVCF we used classification of Pokrovsky (1979). The patients with III-IV stage of CVCF prevailed (Table 2).

<table>
<thead>
<tr>
<th>Stage of CVCF</th>
<th>Control group</th>
<th>Main group</th>
<th>In all</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>abs.</td>
<td>%</td>
<td>abs.</td>
</tr>
<tr>
<td>Asymptomatic course</td>
<td>11</td>
<td>15.5</td>
<td>19</td>
</tr>
<tr>
<td>Transitory ischemic attack</td>
<td>14</td>
<td>19.7</td>
<td>17</td>
</tr>
<tr>
<td>Discirculation encephalopathy</td>
<td>19</td>
<td>28.8</td>
<td>34</td>
</tr>
<tr>
<td>4th stage of CVCF (consequences of insult)</td>
<td>27</td>
<td>38.0</td>
<td>29</td>
</tr>
<tr>
<td>In all</td>
<td>71</td>
<td>100.0</td>
<td>99</td>
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**Results**

Indication to intervention operation on CA in control group was considered hemodynamically valuable stenoses (stenosis of carotid arteries more than 70%), and in cases of stenosis less than 70% - an availability of an uneven surface of plaque according to the findings of angiography or transitory ischemic attack (TIA) in anamnesis.
In presence of the mentioned indications in patients with different stages of cerebral circulation failure, and in absence of catastrophe in another arterial basin we have accomplished surgical correction of CA.

Twelve patients appealed with manifestations of renovascular hypertension, and they all were underwent reconstruction of renal arteries (RA). Patients with hemodynamically valuable stenoses of RA were underwent reconstructive operations on vessels in case of failure from the performed course of therapy. Surgical interventions on renal arteries had an open character.

Thirty patients in admission had a clinic of ischemia of lower extremities; they all were underwent reconstructive interventions. Indication to operations on terminal portion of aorta and arteries of lower extremities served, as a rule, chronic critical ischemia of extremity (CCIE) III-IV stage. Reconstructive operations on vessels for patients with II stage were accomplished in case of failure of effect from the conducted course of conservative treatment.

In critical ischemia of lower extremities (CILE) catheter was established into femoral artery to perform prolonged intra-arterial catheter therapy (PIACT). Reconstructive intervention was carried out after regression of ischemia. Duration of PIACT was determined by time of regression and averaged 5-7 days. Efficacy of therapy performing was established during the first 3 days. In case of failure of PIACT was carried out revision of the damaged segment of arteries with a high probability of amputation of extremity. Primary amputation of extremity was accomplished in cases when rentgen-staining angiography determined an absence of peripheral channel.

Analyzing a course of early and remote postoperative period it is necessary to note that complications from a side of brain were observed in 5 (8.62%) patients, the heart - in 6 (9.4%), and amputation of lower extremities was performed in 2 (2.82%) patients. Lethal outcomes owing to ischemic insult (II) took place in 3 (4.86%) patients, myocardial infarction - in 2 (3.13%), progressing gangrene - in 1 (1.41%).

Analysis of unsatisfactory results of treatment of patients with MA exhibited that they were caused by the following causes:
- Insufficient information on a stage of diagnosis;
- Absence of objective evaluation of a state of every arterial basin;
- Absence of concrete indications to interventions including one-stage interventions;
- Absence of established priority of interventions and terms of their accomplishment;
- Absence of evaluation of risk of surgical aggression in determination of treatment tactic;
- Absence of algorithm of management of patients from primary referral up to discharge from hospital.

Conventional treatment has a series of shortages, and in this connection a necessity is arising to search for a new diagnostic approach that will provide an adequate choice of interventional stages.

Therapeutic diagnostic algorithm has been elaborated for patients with MA. It included methods of observation with studying neurologic status, ultrasound methods (ultrasound dopplerography, transcranial dopplerography, ultrasound investigation of kidneys, echocardiography, triplex scanning), radioisotopic scintigraphy, computer tomography (CT) of brain, magnet - resonance angiography (MRA), computer tomography angiography (CTA) and rentgen-staining angiography (RSA). RSA was used only in cases when was necessity to use interventions based on non-invasive methods of diagnosis (PIACT, angioplasty and stenting). That all allowed determine a level and duration of occlusive stentic process, character and morphology of atherosclerotic plaque and an adequate treatment tactic.

Carotid endarterectomy (CEAE) (the first stage) was accomplished in patients with CA pathology, terminal portion of aorta and arteries of lower extremities in absence of CILE aimed at surgical prevention of II.

Conservative therapy aimed at reduction of ischemia grade of lower extremities was carried out patients with lesions of CA, terminal portion of aorta and arteries of lower extremities, requiring reconstruction of vessels of lower extremities in period of preparation to
revascularization of CA as well as after operation. Using this approach permitted conduct as the first stage reconstruction of CA in 24 (35%) patients.

In 7-10 days successful operations on aortal-iliac-femoral segment were performed in 23 (69%) patients. Ankle - humeral index in these patients was increasing from 0.49±0.1 up to 0.81±0.08 (p<0.05).

Hybrid tactic was used in 9 of 23 patients. Thrombosis of aortal-femoral shunt arose in 1 patient in remote period after the second stage that required thrombectomy. Later postoperative period elapsed smoothly. No lethal outcomes in this group were fixed.

Arresting ischemia of extremities with cathether according method worked out in clinic for PIACT was performed in CILE eleven patients as the first stage aimed at surgical prevention of II, and later CEAE was made. Its efficacy was determined based on improvement of blood circulation in lower extremities. Initial linear speed of a blood flow (LSBF) of these patients was 0.27±0.04, on days 3-4 of PIACT it was increasing up to 0.49±0.1 (p<0.05). Reliable increase of oxygen saturation in tissues of extremities was noted that evidenced sufficient improvement of blood circulation in lower extremities. SpO2 (oxygen saturation in tissues) that was 82.3±2.4% before treatment, and it was increasing after treatment up to 91.0±3.4% (p<0.05).

Reconstructive operations on aortal-iliac-femoral-popliteal segment as the second stage were accomplished 12 patients on day 7. It should be noted that low index of LSBF (<0.4) after treatment showed unfavorable outcome. Reconstruction of arteries of lower extremities as the second stage was carried out 10 patients. In the nearest postoperative period 1 patient was underwent primary high amputation of extremity after CEAE against a background of PIACT due to progression of CILE. No lethal outcomes were registered in this group.

At the beginning of our work we used simultaneous interventions, but taking into consideration a high percent of complications and lethal outcomes according to literature data and our own observations we have refused one-stage interventions.

While using one-stage tactic we relayed on impossibility of management of surgical interventions (PIACT, angiooplasty and stenting) or its inefficacy, in these situations we accomplished simultaneous operations. All the patients with one-stage tactic had hemodynamically valuable lesion of carotid arteries requiring surgical correction and CILE in which only sufficient restoration of blood circulation of lower extremities allowed preserve them. In other words, reconstructive operation on vessels of lower extremities was an alternative to amputation. Simultaneous operations were performed in 14 patients. Simultaneous CEAE and aortal-femoral shunting (AFS) were accomplished in 7 of them, CEAE and profundoplasty - in 6, subclavicular-carotid and AFS - in 1. Ischemic insult due to thrombosis of upper carotid artery (UCA) was registered in 1 patient with one-stage tactic after operation. This patient was re-operated, later came regression of neurologic symptomatology. Re-operation for thrombosis of aortal-femoral shunt was made 1 patient, and operation was finished by amputation of extremity, patient died for acute cardiac failure in an early postoperative period.

Other 11 patients with hemodynamically insufficient CA with preserved CILE were only underwent aortal-femoral reconstruction with good result.

Today we in the first place are performing surgical correction of cerebral blood circulation in equivalent lesions. We perform adequate anesthetic therapy during 7 days in an early postoperative period after revascularization of CA patients with manifestations of CILE, and as second stage we perform reconstruction of arteries of lower extremities.

Such a tactic has been used in 7 patients, in which was performed as second stage revascularization of arteries of lower extremities during 7 days. Only aortal-femoral reconstruction as second stage was conducted in 2 patients, and hybrid interventions were used in other 5 patients.

We succeeded in finding adequate scheme of hypotensive therapy 14 patients with lesion of CA and renal arteries with syndrome vasorenal hypertension (VRG). After correction of arterial pressure (AP) they were underwent successful interventions of CA. Reconstruction of renal arteries was conducted 4 patients after revascularization of CA. Fatal perioperative insult was developing in postoperative period in one patient with VRG (after medicamentous correction of AP and CEAE).
Therapy failed in 8 patients and they received as first stage rentgen-endovascular dilatation (RED) (6) and stenting of renal arteries (2), and then as second stage they were underwent reconstruction of CA. No complications were observed in these patients.

Staged interventions were accomplished in 4 (4.05%) patients with combined lesions of CA and coronary arteries and a high coronary reserve: as first stage was made carotid endarterectomy, as second one - aortal-coronary revascularization. Carotid endarterectomy as second stage after stenting of CA was performed 3 (4.72%) patients with lower and median coronary reserve. No complications were found in this group. Interventions on CA in patients of this group were accomplished in other clinic.

It should be noted that therapeutic-diagnostic algorithm proposed by us is not mathematical model of multifocal atherosclerosis which existence of itself is questionable in connection with exceptional versatility and complexity of probable combinations. But resorting to simple answers to questions put in algorithm practically anyone Clinician sees easy and clear, what on and why should be concentrated one's attention and damage of what arterial basins should be considered as priority. Decision of choice of therapeudic tactic remains strong individual for every clinical case.

Principal criteria of estimation of unsatisfactory results of treatment in the comparing groups were total number of complications, formation of ischemic and hemorrhagic sites, amputation of extremity, a number of re-interventions and a number of lethal outcomes related to underestimation of total state of patient (Table 4).

**TABLE 4. CHARACTERISTIC OF UNSATISFACTORY RESULTS OF TREATMENT**

<table>
<thead>
<tr>
<th>Criteria of unsatisfactory results of treatment</th>
<th>Control group, n=71</th>
<th>Main group, n=99</th>
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<tr>
<td>Complications</td>
<td>13, 18.3±4.6%</td>
<td>5, 5.1±2.2%**</td>
</tr>
<tr>
<td>Re-operations</td>
<td>4, 5.6±2.7%</td>
<td>3, 3.0±1.7%</td>
</tr>
<tr>
<td>Lethal outcome</td>
<td>6, 8.5±3.3%</td>
<td>2, 2.0±1.4%</td>
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Notes: * - Differences concerning data of control group are valuable (** - p<0.01).

Character of complications was considered both in an early postoperative period and in remote terms after operation. Studying results of treatment in both groups showed that complications were often arising in relation with underestimation of value of lesions in arterial basins and an incorrect choice of staging of interventions.

Application of perfected approach allowed reduce a number of acute myocardial infarction (AMI) from 8.5 to 2.0%, II - from 7.0 to 2.0%, amputation of lower extremities - from 2.8 to 1.0%, and a number of re-operations - from 5.6 to 3.0%.

Thus, common complications in postoperative period in control group were observed in 13 (18.3%) patients, total lethality was in 6 (8.5%) patients. In main group complicated course of postoperative period was observed in 5 (5.1%) patients, and 2 (2.0%) of them died for different causes. Therefore, using of approach to surgical treatment of patients with MA perfected by us permitted lower common number of complications and lethal outcomes.

**Discussion**

To evaluate results of treatment in the comparing groups of patients we studied efficacy of primary reconstruction of some arterial basin. It should be noted that one-stage tactic and endovascular corrected of damaged blood circulation was not used in patients of control group unlike main group. Thus and so, we gave joint characteristic of total number of complications and lethal outcomes.

By using the offered tactic positive direct results of operation were obtained in 47 (95.9%) patients. In remote period after operation complication was developing in 2 (2.0) patients. In application of top priority reconstruction of CA in control group complications were fixed in 4.2%, and in main group - in 2.0% patients. Lethality in the given approach was also...
reducing from 2.8 to 1.0%. According to literature data a number of complications in top priority reconstruction was 13%, and lethality - 10%, at the same time per cent of complications from a side of peripheral vessels reaches 40.0% (Ignatev, 2011).

In top priority reconstruction of terminal portion of aorta and arteries of lower extremities the complicated course of postoperative period noted to be in 2.8% patients of control group. No complications were observed in main group, but all the patients had CILE. Kadoglouab et al. (2010) gave data about 20% complications and 13% lethality in operations on trunk vessels of lower extremities [2]. According to some findings complicated course of postoperative period registered to be in 27.3% patients (Bendov and Gordeev, 2010) in top priority reconstruction of abdominal aorta and arteries of lower extremities.

Top priority open interventions on renal arteries are almost not performed in lesion of carotid and renal arteries owing to development of medicamentous correction of AP and interventional radiology. Kadoglouab et al. (2010) determine staging of interventions of patients with lesion of CA and RA by determination of auto-regulation reaction of cerebral vessels. In accordance with his data complication was observed in 14% patients in priority reconstruction of renal arteries. In simultaneous and staging operations of patients with lesion of carotid and renal arteries percentage of complications in open interventions accounted for 8 and 2.2% (Shaarafeev, Akberov and Korobov, 2009; Bendov and Gordeev, 2010) respectively.

Primary low invasive interventions (RED, RES or PACT) were used in 21 patients with multifocal atherosclerosis with hemodynamically valuable lesion of CA and CILE on a stage of diagnosis. RED (6) and stenting of renal arteries (2) as the first stage were conducted in 8 patients with lesion of carotid and renal arteries. Stenting of CA was accomplished in 4 patients with combined disturbances of CA and coronary artery (KA) with lower and median coronary reserve.

Primary amputation was made in using of interventional methods of correcting blood circulation in 1 (1.01%) patient. Other complications in using of the given tactic were not observed. Lachezar, Mario and Kocho (2009) noted complications in remote postoperative period in 9%, lethal cases - in 6%. According to literature data a number of complications in MA reached 40% in lesion of CA, and 30% - in pathology of KA and 10-12% - in injury of RA.

Complicated course of postoperative period was observed in 2 (2.0%) among patients in which simultaneous tactic of surgical treatment has been used. The last publications exhibited that one-stage approach is not a choice of surgeon, but rather a possibility for patient in critical position, i.e. in the given cohort of patients the staging intervention, probably, provokes catastrophe in other basin, and a number of postoperative complications and lethal outcomes will increase. Ter-Akopyan et al. (2010) observed complications after simultaneous interventions in 13.5%, and lethal outcomes - in 8.1%. According to the data of Karev et al. (2009) survival rate of patients with multifocal atherosclerosis after surgical interventions during 2 years varied from 5 to 29%. Acute cardiac vascular insufficiency was a cause of such a high lethality.

Complicated course of postoperative period observed to be in 5 patients (5.1%), two of them died for various causes (2.0%). Acute disturbance of the cerebral circulation (ADCC) was developing in 2 (2.0%) patients. In one of them a cause of ADCC was thrombosis of UCA. The patient died after re-operation for acute cardiac insufficiency on day 9 after operation. Fatal perioperative insult was developing in 1 patient with VRH (after medicamentous correction of AP and CEAE).

Thus, neurologic complications observed to be in 2 patients in an early postoperative period in control group, acute cardiac insufficiency - in 3 (4.2%), amputation was made in 2 (2.8%), and total lethality was 4.2% (3 patients). Based on data of Gavrilenko et al. (2011) neurologic complications were 3.3%, acute cardiac insufficiency - 2.6%, lethality - 5.8% after the first stage of surgical treatment of multifocal atherosclerosis.

We succeeded in reducing myocardial infarction from 4.2 to 1.0%, ischemic insult - from 2.8 to 1.0%, progression of ischemia with following amputation - from 2.8 to 1.0%, and a number of lethal outcomes - from 4.2 to 1.0% in patients of main group with complicated course of an early postoperative period owing to application of therapeutic-diagnostic
algorithm proposed by us. Results of treatment were studied in remote period in terms from 6 months to 3 years (period of observation averaged 4.22±3.36 months).

In control group ischemic insult that was a cause of lethal outcome endured 2 of 5 patients. One patient died for myocardial infarction in remote period, and 2 patients had cardiac complications, of them one - arrhythmia, myocardial ischemia managed by therapy - else one.

Improvement after surgical treatment in the second group was noted in 94.9% patients, 5.1% patients needed additional therapeutic measurements, i.e. these patients had complicated course of disease.

In remote period one patient (1.0%) died for myocardial infarction, and 1 (1.01%) patient had ADCC that was a cause of death.

As manifestation of multifocal atherosclerosis ADCC in an early postoperative period was developing in 0.3-10.7% patients (Ter-Akopyan et al., 2010; Karev et al., 2009; Gavrilenko et al., 2011). Overall neurologic complications in control group were observed in 8.5% patients, in 4.2% of them these complications led to lethal outcome. In main group complications were developing in 3.0% examinees, and lethality was 2.0%. Overall coronary complications in control group were found in 8.5% больных, and lethal outcome - in 4.2%. In main group coronary complications that were causes of death were in 1.0%. It is not a bad index because some authors observed postoperative cardiac complications in 47-58% patients (Ignatev et al., 2011; Serajitdinov, Vladimirsky and Lifentsov, 2011; Palomboa et al., 2010). Amputations of lower extremities in control group were made in 2.8%, and in main group in 2.0% patients.

Taking into consideration complications of postoperative period we analyzed an overall number of re-operative interventions. In control group they were 8.5%, in main group - 4.0%. Based on literature data a number of postoperative complications reaches 12-33.3%, and 10-29.2% cases (Shaarafeev, Akberov and Korobov, 2009; Palomboa et al., 2010) required additional reconstructive operations in the nearest postoperative period.

Lethality accounted for 8.5% in control group, and 2.0% - in main group. Owing to using of therapeutic-diagnostic algorithm proposed by us in control group well and satisfactory results in remote terms were obtained in 93.9% patients with MA.

Analysis of tactic of treatment in patients with damage of some arterial basins showed a great efficacy and more stable character and effect after accomplishment of interventions by using of interventional methods of treatment both in the nearest and remote terms.

Thus, surgical treatment of multifocal atherosclerosis requires an individual approach. Restorative operations at once on several arterial basins are reasonable and proved in presence of absolute indications. Combined operations do not increase lethality, and, therefore, they are economically, physiologically and psychologically more acceptable for patient.

**Conclusion**

1. Screening duplex investigation of trunk arteries in patients with atherosclerosis is an obligatory condition of diagnosis. It allows reveal a grade of injury of dominant vascular basins in the earlier terms, and correctly estimate indications and staging of treatment of the given cohort of patients and, by that, implement prevention of development of ischemic insult.

2. It is necessary to accomplish surgical intervention of carotid arteries as the first stage in patients with multifocal atherosclerosis in hemodynamically valuable lesions of carotid arteries with a high coronary reserve against a background of medicamentous correction of myocardial ischemia. That permits reduce frequency of ischemic insults from 4.2% to 2.0%, and lethality - from 8.5% to 2.0% in the given cohort of patients. Accomplishment of endovascular and open surgical interventions on CA as the first stage in median and low coronary reserve in patients with multifocal atherosclerosis reduces developing coronary complications from 8.5% to 2.0%.

3. It is necessary to accomplish surgical intervention on carotid arteries as the first stage patients with multifocal atherosclerosis in hemodynamically valuable lesions of carotid
arteries with VRH against a background of medicamentous correction of arterial hypertension and/or endovascular interventions.

4. It is necessary to accomplish surgical intervention on carotid arteries as the first stage patients with multifocal atherosclerosis in hemodynamically valuable lesions of carotid arteries with critical ischemia of lower extremities against a background of medicamentous correction of ischemia of extremity and/or endovascular interventions to arrest critical ischemia of extremity in patients with chronic vascular cerebral failure that allows reduce a number of amputations.

5. Using of the proposed therapeutic diagnostic algorithm in patients with multifocal atherosclerosis allowed reduce frequency of postoperative complications related to general disease in 4 times (from 18.3 to 5.1%) and improve remote results of treatment by 16.3%.

References

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