SURGICAL TACTICS FOR COMBINED CORONARY ARTERY AND AORTIC VALVE DAMAGE

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Annotation: A retrospective analysis of 47 patients with coronary artery disease with severe aortic valve stenosis who underwent combined myocardial revascularization and aortic valve replacement operations was performed in comparison with a group of patients (n-32) with minor or moderate aortic stenosis who underwent isolated coronary artery bypass grafting. There were no significant differences in the clinical characteristics of patients of both groups. Acute heart failure, perioperative myocardial infarction, cardiac arrhythmias, respiratory failure was more often observed among patients with simultaneous operations.

Keywords: coronary artery bypass grafting, aortic valve stenosis.

Introduction

Combined damage to the coronary arteries and aortic valve (aortic valve) is a common pathology, especially in elderly patients. In 50% of patients treated for AC stenosis, lesions of the heart vessels of varying severity are detected. At the same time, the same number of patients with coronary heart disease (CHD) are diagnosed with pathological changes in AK [1, 3]. There is a regular increase in the number of combined surgical interventions on coronary arteries and AC. In this regard, it does not cause. There is no doubt about the relevance of tactical questions related to determining the time and volume of the proposed operation in patients with such a lesion, to which there are no unambiguous answers to date.

We analyzed 79 operations performed during the period 2000-2008 in the Department of Coronary Heart Disease Surgery of the Russian Academy of Medical Sciences named after Academician B.V. Petrovsky of the Russian Academy of Medical Sciences. The study group consisted of 47 patients with coronary heart disease with a pronounced lesion AK (table. 2), which was an indication for simultaneous

coronary artery bypass grafting (CABG) and prosthetics of the AC. The control group included 32 patients with mild or moderate aortic stenosis, which performed only CABG. The average age of the patients in the study group was significantly higher – 63.4±7.3 versus 56.4±6.5 g ($p<0.05$), the majority of patients in both groups were men, respectively, 42 (89.3%) and 28 (87.5%) ($p>0.05$).

The degree of aortic stenosis was assessed as mild, moderate and pronounced according to the classification ACC/AHA (Table 2). The vast majority of patients (91.4%) of the study group had severe AC stenosis, and all patients of the control group had minor or moderate (Table 3). Parameters of intracardiac hemodynamics and the state of the valvular apparatus are presented in Table 4. Patients of the study group had more pronounced AC lesion characterized by gross atherosclerotic changes in the valves, adhesions in the area of commissures, calcification valvular apparatus, including the fibrous ring and the underlying aortic wall. With an extreme form of lesion it seemed impossible to differentiate the above-listed structures, the deformed AC was presented in the form of a calcified conglomerate, inside which there was an irregularly shaped left ventricle (Fig. 1). Such changes in AC in patients of the studied group led to a significantly higher transvalvular pressure gradient, the appearance of significant regurgitation, an increase in the final diastolic pressure in the left ventricle, the development of his diastolic dysfunction.

The operations were performed under the conditions of normothermic artificial blood circulation (IC) and pharmacological cardioplegia. Cardioplegic solutions "Consol" or "Custodiol" were used.

An ECG was performed during surgical procedures monitoring and measurement of intracardiac hemodynamics parameters using a Swan-Ganz catheter and trans esophageal echocardiography. The first stage was the formation of distal anastomoses in patients of the study group in accordance with the volume of damage to the coronary arteries. Then you completed the prosthetics of the AK. After that, proximal anastomoses were formed on the clamped aorta. Due to the larger volume of the combined operation, the time IC and myocardial anoxia in the study group were significantly greater.

Frequency of use of internal thoracic arteries (CAA), which exceeded 90%, and the index of myocardial revacularization in patients of both groups did not differ significantly. In 29 (61.7%) patients of the study group, low–profile bicuspid prostheses from Carbomedics (Sulzer Medica, USA) were used for AK prosthetics, in 18 (38.2%) - disc prostheses.

With severe damage to the coronary arteries and AC, when the average pressure gradient on the valve exceeds 40 mmHg, and the area of the aortic opening less than 1 cm2, the decision in favor of a combined operation is beyond doubt. At the same time, if the hemodynamic significance of the AC lesion is not so obvious, the question of the scope of surgical intervention often presents great difficulties.

A number of researchers have shown that combined surgery on AC and coronary arteries increases the state mortality rate to 4-8%, whereas with isolated CABG this indicator does not exceed 1-2% [2, 7, 10]. In our work, the hospital mortality in the study group of patients after CABG and prosthetics was 6.3%, whereas all patients in the control group successfully underwent surgery for isolated CABG. The causes of mortality were acute heart failure (OSN) (n-2) due to initially reduced functional reserves of the myocardium, and acute violation of cerebral circulation.

A significantly more frequent perioperative complication in the study group was cardiac arrhythmias, manifested mainly by atrial fibrillation symptoms. Cardiac insufficiency, perioperative myocardial infarction, respiratory failure requiring prolonged artificial lung ventilation, ONMC, were more often observed among patients of the study group, however, the differences were unreliable (Table 6). The results obtained partially confirm the opinion that a significant increase in the time of cardioplegia and IC combined surgery is the basis for a higher risk of perioperative complications compared with isolated intervention, and low myocardial functional reserves are one of the main risk factors for hospital mortality among these patients.

Conclusion

In patients with coronary heart disease with hemodynamically significant AC stenosis, a combined CABG and AC prosthetics is a natural choice. Making a decision on the volume of surgery for atherosclerotic AC lesion without significant effect on central hemodynamics seems more difficult. The morphological picture of the defect is not always reflected in the corresponding violations of the valve function. Often, in the absence of a high transaortic gradient, pronounced degenerative changes in AK with extensive calcification are diagnosed valves and fibrous ring. Therefore, in such patients, the pressure gradient on the AC cannot be considered as an absolute criterion for determining the requirements for valve correction. The morphological pattern of the defect detected by echocardiography is an equally important factor dictating the need for combined surgical intervention.

Severe calcification, leading to significant degenerative changes in AK, is an independent criterion for acceptance decisions on the scope of surgical intervention. An analysis of our results in comparison with other studies shows that calcification of the valve flaps, even with moderate aortic stenosis with a pressure gradient in the range of 25-40 mmHg, is a sufficient reason to resolve the issue in favor of combined intervention. In such cases, the removal of only isolated CABG determines a high probability of repeated surgery due to the inevitable progression of atherocalcinosis of AK. Difficult access to the heart with passable shunts, the problem of ensuring adequate cardioplegia in conditions of myocardial hypertrophy and often functioning mammarocoronary anastomosis, pronounced calcinosis and reduced reserves of contractile function LV causes a high risk of repeated surgery, which, in our opinion, significantly exceeds the risk of combined surgery.

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