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Results of Surgical Treatment of Acquired Heart Defects in Elderly Patients: Risk Factors, Prognosis

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Abstract:

This article includes information and detailed analysis of acquired heart defects and its post-surgery results, factors and prognosis.

Keywords: heart, WHO, anesthesiology, myocardial protection, surgery, disease, mortality rate.

In recent decades, there has been a significant change in the population structure of most countries associated with the growth of the elderly population. The growth rate of this group is significantly faster than the increase in the population as a whole. Currently, about 600 million people over the age of 65 live on earth. If the total population of people is growing at a rate of 1.7% per year, then the population over 65 years of age is increasing by 2.5% per year and is about 18.3% in developed countries, and about 7.5% of the total population in developing countries. These figures are projected to increase significantly in the future and will amount to 23.6% and 11.9%, respectively, by 2025 (from the Program on Aging and Health of the World Health Organization). The growth of the elderly and senile population in modern society makes it a priority to maintain the highest possible level of activity of elderly people, to provide the necessary medical care. As is known, the most common cause of morbidity and death in this age group are cardiovascular diseases. According to WHO (World Health Statistics, 2008), the main cause of increased mortality in Eastern Europe, compared with other European countries, is cardiovascular diseases, especially among men. Over the past 20-25 years, there has been an increase in mortality in Russia from cardiovascular diseases. They also occupy the first place among the reasons for hospitalization, one of the main reasons — among the reasons for counseling - and disability of elderly people. Many of the elderly patients need surgical treatment. In this regard, recently there has been a rapid development of cardiovascular surgery of the elderly in most countries. This is primarily due to advances in the development of surgical techniques, anesthesiology, myocardial protection, patient preparation for surgery and postoperative management.

Not so long ago, back in the 70s and 80s, there was a tendency to abandon active surgical tactics in elderly patients in most clinics of the world; they tried to resort to it only in extreme cases. The authors cite the following data in their study of patients who underwent coronary artery bypass grafting (LCSH) - (GASS - study); of 8913 patients, 1806 (12%) were over 65 years old and only 42 (0.47%) were over 75 years old. In the last decade , there has been an increase in the number of open - heart surgeries in the elderly . Thus, the number of LCSH operations in the USA in elderly patients increased by 67% from 1987 to 1990. . There is also a significant increase in such operations in Russia . The number of elderly patients who have undergone heart valve surgery is growing. The most common aortic valve lesions in this age group are calcified aortic stenoses, whereas it is known that aortic insufficiency or combined pathology prevail in younger patients. From the pathology of the mitral valve in elderly patients, regurgitation of ischemic genesis is more common, unlike other age groups, where rheumatic or degenerative lesions mainly prevail; calcified lesion of the fibrous ring. In this group of patients, there is a particularly high probability of the need for myocardial revascularization during valvular prosthetics. In many works of recent

years, there is a significantly higher number of postoperative complications compared to younger patients. Complications such as cerebral circulation disorders, acute renal dysfunction and the need for dialysis, increased ventilation time and related possible complications are more common.

Mortality in this group of patients is also much higher than in other age groups. Thus, according to a number of authors, the operational mortality in elderly patients after single-valve prosthetics ranged from 2% to 20%. On average , there is a higher mortality rate in the elderly after mitral prosthetics compared with operations on the aortic valve . With prosthetics of several valves , the operational mortality is also quite high from 5.9% to 20.0%. In this group of patients, there is often a combined lesion of the valvular apparatus and coronary arteries, which leads to the need for surgical correction of defects in combination with simultaneous CABG surgery. Adequate revascularization during surgical treatment significantly improves the prognosis and survival of patients in this group, however, hospital mortality is also higher than in the group of younger patients.

Complications after heart surgery in this age group, as well as high mortality rates, are associated by many authors with the presence of concomitant diseases. The combination of multisystem lesions in elderly patients significantly complicates preoperative management and worsens the prognosis. The number of concomitant diseases increases dramatically with age: from 30% in patients from 21 to 30 years old and up to 90% in patients 71 — 80 years old. 1/3 of elderly patients have 3 or more concomitant diseases, and 4/5 have at least one.

Thus, despite a significant increase in the number of heart operations in the elderly, the choice of treatment tactics in this group of patients with increased surgical risk remains difficult. In recent studies devoted to this problem, in order to assess the effectiveness of treatment, along with the analysis of objective and instrumental data, an analysis of the patient's quality of life (QOL) is carried out. It was the study of the quality of life of elderly patients after open-heart surgery that demonstrated good results of surgical treatment and changed perceptions about this problem.

Despite the higher mortality rate, prolonged hospital stay after surgery, the higher cost of treatment and a number of other factors, the quality of life of patients after surgery improves significantly and often does not significantly differ from people of the same age without heart surgery living in the same region.

Despite the increasing number of elderly patients in cardiac surgery clinics, there is still no detailed procedure and selection criteria in this group of patients associated with: increased surgical risk. The study of surgical results and the study of the quality of life of elderly patients after surgical correction of acquired heart defects - as an independent criterion for the effectiveness of treatment, will reveal the main predictors of mortality and risk factors; reducing the quality of life: Determining criteria that affect the prognosis and quality the life of elderly patients after surgical treatment of acquired heart defects is an extremely important and topical issue of modern practical medicine. Elderly patients with acquired heart defects belong to a heavy contingent of patients in whom surgical correction of defects is an effective method of treatment and can be performed with good immediate and long-term results. During the study period, there was a significant increase in the number of operations performed per year in patients over 65 years of age.

The analysis of the studied group of patients revealed the following features: long—term course of the disease, the presence of concomitant diseases (in most patients - 2 or more), the predominance of aortic defects (54.5%), pronounced calcification of the valvular apparatus (40.5%), repeated heart surgery (17.9%), the need for myocardial revascularization (25.9%). The total hospital mortality in the group as a whole was 10.6%. With isolated aortic prosthetics - 5.2%, with isolated mitral prosthetics — 10.6%, with multivalvular correction - 13.6%. In the group of patients with

surgical correction of defects in combination with CABG, hospital mortality was higher, the highest mortality was detected in the group of patients with multi-valve correction in combination with CABG (16.6%).

In our study, the following predictors of hospital mortality were identified: low PV (less than 40%), a pronounced degree of circulatory insufficiency (TV FC NYHA), the presence of diabetes mellitus. Acute heart failure prevailed in the structure of hospital mortality — 85%, often combined with multiple organ failure and respiratory failure. In the early postoperative period, the following complications were noted in elderly patients: heart failure, respiratory failure, including prolonged ventilation (14.3%), cardiac arrhythmias (61.9%), acute bleeding (6.4%), acute cerebrovascular accident (3.7%). The structure of fatal postoperative complications was dominated by heart failure — 85% and multiple organ failure - 40% of patients. In elderly patients after heart surgery, the total length of hospital stay significantly increases (33.8±14.3 k/d).

The overall survival rate of elderly patients after surgical correction of acquired heart defects during the observed period was: 90.3% 1 year after surgery, 84.8% 2 years later, 78.9% 3 years after heart surgery. The following risk factors were identified that significantly affect the survival of elderly patients after heart surgery: the presence of chronic nonspecific respiratory diseases ($p<0.022$) and diabetes mellitus ($p<0.04$), an initially low ejection fraction (less than 40%) - ($p<0.000002$), the severity of NC - IV FC NYHA ($p<0.003$).

Surgical treatment of acquired heart defects in elderly patients leads to a significant improvement in the clinical condition and hemodynamic parameters in the immediate and long-term postoperative period. The study revealed a marked improvement in the quality of life of patients over 65 years of age after surgical correction of acquired heart defects: a significant and significant increase in the average indicators of the scales of physical and social functioning in the long-term follow-up.

To optimize the results of surgical treatment of acquired heart defects in elderly patients, it is necessary to carry out joint work of large cardiac surgery centers and medical institutions of a non-invasive profile in order to ensure continuity and phasing of the patient's treatment. Elderly patients in need of surgical correction of the defect require a particularly thorough and comprehensive examination, taking into account possible concomitant pathology in order to predict the risk of surgical intervention.

Taking into account the frequency of the spread of concomitant pathology in this category of patients, it is necessary to include a complete diagnosis of diseases of the respiratory organs, kidneys, gastrointestinal tract, brachiocephalic arteries, arteries of the lower extremities and other organs in the mandatory examination of elderly patients referred to a cardiac surgery hospital. Undiagnosed concomitant diseases can negatively affect both the immediate results of surgical treatment and, to a large extent, complicate the postoperative period. Early diagnosis and referral of the patient for surgical treatment, before the appearance of signs of decompensation of the defect, is the most important factor in successful results in treatment, especially in this age group of patients. Decompensation of the defect, a high degree of circulatory insufficiency and a low ejection fraction are the main risk factors for surgical mortality and negatively affect the survival of patients in the long term after surgery.

Monitoring of patients at the prehospital stage and after surgery, including timely correction of signs of circulatory insufficiency, monitoring of adequate anticoagulant therapy, is an important link in improving the effectiveness of long-term treatment results. The age of patients requiring surgical treatment of heart diseases, without taking into account concomitant pathology and risk factors, should not be an obstacle to the provision of cardiac surgery. The analysis of the quality of

life of elderly patients after heart surgery is an important criterion for evaluating the effectiveness of the treatment and can be successfully implemented for this purpose in clinical practice.

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