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COMPLICATIONS AFTER SURGERY FOR CONGENITAL HEART DEFECTS

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Summary: *The article is devoted to the study of epidemiological and etiological data of morphogenesis and pathomorphology of congenital heart defects in children.*

Modern data on the etiology and pathophysiological mechanisms of the development of this pathology are considered. A brief review of the literature on this issue was carried out.

Key words: *epidemiology, etiology, congenital heart defects.*

ОСЛОЖНЕНИЯ ПОСЛЕ ОПЕРАЦИЙ ПО ПОВОДУ ВРОЖДЕННЫХ ПОРОКОВ СЕРДЦА

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Резюме: *статья посвящена изучению осложнений после операций по поводу врожденных пороков сердца. Рассматриваются современные данные по этиологии и патофизиологическим механизмам развития этой патологии. Проведен краткий обзор литературы по данному вопросу.*

Ключевые слова: *эпидемиология, этиология, врожденные пороки сердца.*

Relevance. After cardiac surgery, in most cases, residual anatomical and physiological anomalies remain in patients. Let's look at the most problematic of them. Anatomical and hemodynamic disorders (residual defects) and surgical consequences are often observed.

Information about the types of congenital heart defects, the surgical operations performed on them and the subsequent consequences, as well as complications.

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Aortic artery patency. The risk level of surgery performed in this defect is very low. In the defect, pulmonary hypertension does not develop and there are no other changes. Aneurysm and endocarditis do not develop. This defect can also be performed by trascatheter method. Recanalization, risk of infectious endocarditis, preservation of some changes in the cardiovascular system can be observed from residual, that is, anatomical and hemodynamic disorders. In most cases, the following are identified as complications: sciatica nerve, diaphragmatic nerve injury, chylothorax, aneurysm formation.

Partition wall defect. In this defect, as a result of the difference in blood pressure between the right and left chambers of the heart, blood flows from the left side to the right chamber. This leads to an increase in pressure in the right chamber of the heart and pulmonary veins. If this defect is not treated, the heart muscle weakens, the rhythm changes, the risk of blood clots increases, and heart attack or stroke may develop as a complication. Cardiac compartments can be in the middle, lower and upper part according to the location of the septal defect. If it is located in the lower part of the wall, it is located near the valve between the ventricle and the ventricle, sometimes the layers of the valve can be shortened. As a result of this birth defect, various complications can develop, including: an enlarged heart, pneumonia when the defect is provoked, thickening of the wall of the pulmonary artery, blood clots in the pulmonary veins, sometimes heart- pulmonary asthma develops. In this defect, surgery is performed in 2 different ways: the outer edges of the hole are stitched together, or the hole is closed with a piece of pericardium and sewn around. This defect, isolated without other defects, occurs in school-aged children. Reconstruction is performed in the heart that has stopped working, that is, the defect is sewn up or closed with various prostheses. Mortality after this operation is around 1%. After surgery, the size of the heart is reduced to normal. Residual, i.e., anatomical and hemodynamic disorders may include the following. Partial preservation of the hole between the compartments, partial enlargement of the heart, bleeding from the right ventricle, development of mitral valve pathology, and pulmonary hypertension can be observed. Complications include right ventricular

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failure, heart rhythm disorders, pulmonary hypertension, mitral valve dysfunction and insufficiency, atrioventricular conduction block.

Ventricular septal defect.

In the assessment of hemodynamic disorders that develop due to this defect, the size, location of the defect, the age of the patient, the degree of heart failure, and the resistance of the pulmonary vessels are taken into account. The ventricular septal defect is closed with a prosthesis or Dacron flap, taking care not to damage the valvular layers and conduction pathways. In most cases, the results of the operation are good, only in some cases, the right branch of the Gis bundle may be damaged. Residual, i.e., anatomical and hemodynamic disturbances can include blood flow from the left ventricle to the right ventricle, the risk of developing infectious endocarditis, and pulmonary hypertension. Complications of surgical practice include scarring of the closed defect site, changes in electrocardiography, tricuspid valve insufficiency, atrioventricular block, aortic valve insufficiency.

Coarctation of the aorta

Coarctation of the aorta is a congenital defect, which is a partial or complete stenosis of various areas of the aorta. Children with coarctation have clinical symptoms such as restlessness, cough, bruising, suffocation, hypotrophy, rapid fatigue, dizziness, palpitations, and nosebleeds. In children's cardiology, coarctation of the aorta occurs in 7.5%, it is detected 2.5 times more often in boys. In 60-70% of cases, it is accompanied by other heart defects. As the cause of this defect, in the embryonic period, the aortic arch is covered with Batalov's tube, connective tissue grows and becomes a scar in the arterial tube, the aortic wall becomes sclerotic, and narrowing stenosis develops. The typical location of coarctation of the aorta is the terminal part of the aortic arch. From the outside, the stenosed area of the aorta looks like an hourglass. Hypertension is observed in the upper part of the narrowed area of the aorta, and hypotension in the lower part.

Coarctation of the aorta is classified as type 1 - limited coarctation, type 2 - coarctation of the aorta combined with open arterial flow, type 3 - coarctation of the aorta combined with other congenital heart defects. This type of defect is separate

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and combined with ventricular space defect, two-layer aortic valve, and three-chamber heart defects in 6% of cases. Surgery is performed by cutting and widening the narrowed part of the aorta, primary anastomosis and plastic surgery. If the surgical method is performed when the patient is 5-7 years old, the outcome will be good. Residual, i.e. anatomical and hemodynamic disorders, there is a difference in blood pressure in the arteries of the legs and arms, hypertension that decreases after surgery can rise again over time, in 85% of coarctation of the aorta, the two-layer aortic valve is preserved, the head there is a risk of developing an aneurysm in the cerebral vessels, the development of various pathologies in the mitral valve, and infectious endocarditis can be observed. Complications include re-narrowing, pathology of the left vertebral artery, and aneurysms in the area of coarctation of the aorta where surgery was performed.

As a result of cardiosurgical treatment of congenital heart defects, the development of infectious endocarditis is prevented, hypertension in the small circulation is extinguished, complications of thromboembolism are reduced, and the child's life expectancy is increased (Glazyrina G.A., et al., 2014). With great success in the science of cardiosurgery, the issue of complications that develop after surgical treatment of congenital heart defects remains an urgent problem in the clinic. Post-surgical complications range from 8% to 30%. Complications related to the respiratory system are the most common among all complications (Degtyareva E.A. 2012). After surgery for a congenital heart defect, a residual hole is often left. Sometimes the relapse of the defect develops, that is, it often relapses in valvular stenosis, coarctation of the aorta, and as a result, infective endocarditis is added. Certain congenital heart defects recur many times, for example coarctation of the aorta up to 10% of cases, stenosis of the aortic valve up to 50%.

According to L.A. Bokeria, after surgical correction of congenital heart defects, it is often complicated by arrhythmia, that is, ventricular extrasystole, and it is detected in up to 36% of cases. Supraventricular extrasystole occurs in 29%, supraventricular tachycardia in 17%, atrioventricular block in 10%. Pulmonary arterial hypertension is observed in most cases after cardiac surgery for congenital

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heart defects. The reason for the development of pulmonary arterial hypertension is the development of various degrees of sclerosis in the wall of the pulmonary artery.

Before surgical treatment of congenital heart defects, it is known that children often suffer from ORVI, weakness, rapid fatigue, growth retardation, hypotrophy, palpitations and tachycardia. In knowing the child's condition before surgery, three levels of heart failure proposed by Strajesko N.D., Vasilenko V.H., Lang G.F. were confirmed:

Level I - initial: blood circulation insufficiency is hidden, shortness of breath, tachycardia, rapid fatigue are observed only during physical activity.

II - level - period A - minor blood circulation disorders in small and large blood circulation circles; Stage V - deep disturbance of blood circulation in both circles, chronic heart failure.

Level III is the final dystrophic level, with severe hemodynamic disorders, organ function and metabolism disorders, and structural changes.

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