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RATE AND TYPE OF CHILDREN'S CONGENITAL HEART DISEASES, THE IMPORTANCE OF TREATMENT WITH SURGERY

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Summary
This scientific discussion article explores general concepts about congenital heart defects in children, the level of occurrence, types, and the importance of their surgical treatment. The results show that the incidence of congenital heart defects in children varies, from 4 to 1,000 per 1,000 live births, up to 50, and accounts for 30% of all congenital malformations. It is used: radical correction, palliative surgery and hemodynamic correction. Surgical treatment of congenital heart defects prevents the development of infectious endocarditis, eliminates small-circulatory hypertension, reduces the risk of thromboembolism, improves the quality of life of the child.

Keywords: children, heart, congenital, defects, occurrence, types, surgical treatment.

ЧАСТОТА И ТИП ВРОЖДЕННЫХ ПОРОКОВ СЕРДЦА У ДЕТЕЙ, ЗНАЧИМОСТЬ ХИРУРГИЧЕСКОГО ЛЕЧЕНИЯ

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Резюме
В данной научной дискуссионной статье исследуются общие представления о врожденных пороках сердца у детей, уровне встречаемости, видах и важности их хирургического лечения. Полученные результаты показывают, что частота врожденных пороков сердца у детей колеблется от 4 до 1000 на 1000 живорожденных, до 50, и составляет 30% всех врожденных пороков развития Применяется: радикальная коррекция, паллиативная хирургия и гемодинамическая коррекция. Хирургическое лечение врожденных пороков сердца предупреждает развитие инфекционного эндокардита, устраняет мелкоциркуляторную гипертензию, снижает риск тромбоэмболии, улучшает качество жизни ребенка.

Ключевые слова: дети, сердце, врожденные, пороки, встречаемость, виды, оперативное лечение.

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БОЛАЛАР ТУҒМА ЮРАК НУҚСОНЛАРИ УЧРАШ ДАРАЖАСИ, ТУРЛАРИ, ЖАРРОҲЛИК БИЛАН ДАВОЛАШНИНГ АҲАМИЯТИ

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Аннотация
Ушбу илмий муҳокама мақолада болалар туғма юрак нуқсонлари хақида умумий тушунчалар, учраш даражаси, турлари ва уларни жарроҳлик усулида даволашнинг ахамияти хақида маълумотлар ўрганилган. Натижалар кўрсатишича, болаларда юрак туғма нуқсонларнинг учраш дражаси турлича, яъни 1000та тирик туғилган чақалоқларнинг 4-тадан энг кўпи 50 тагача учрайди ва барча туғма нуқсонларнинг 30% ташкил қилади. Юрак туғма нуқсонларининг 90-дан зиёд турлари фарқ қилинади, уларни даволашда 3 та жарроҳлик усуллари қўлланилади: радикал коррекция, паллиатив жарроҳлик ва гемодинамик коррекция. Юрак туғма нуқсонларини жарроҳлик усулида даволаш натижасида инфекцион эндокардит ривожланиши олди олинади, кичик қон айланиш доирасидаги гипертензия сўндирилади, тромбоэмболия асоратлари камайтирилади, бола хаёти яшаш сифати оширилади.

Калит сўзлар: болалар, юрак, туғма, нуқсонлар, учраши, турлари, жарроҳликда даволаш.

The incidence of congenital heart defects varies from 4 to 50 out of 1000 live births. In the last 100 years, there has been a significant decrease in the incidence of NTD, from 0.6 per 1000 babies in 1930-1934, to 9.1 by 1995 (3, 4). According to the European Society for Congenital Heart Defects, it was 8.1 in 2010-2014 (5, 9). Geographically, different indicators were determined at the level of UTN meeting, the highest indicator was in Asian countries, that is, 1000/9.3. In China, the rate of YTN was 8.2/1000 in 2009, with 6.7 live births and 168.8 stillbirths (1, 2, 5). 34% of ventricular septal wall defects, 24% of aortic patency, 11% of ventricular septal wall defects were among LVs (15). According to a 2014 report in India, TN was found in 19 out of 1,000 newborns, of which ventricular septal defect was 33%, septal defect was 19%, and tetrad of Fallot was 16% (6, 7, 11). In Saudi Arabia from 1993 to 2003, the incidence rate of UTN was 2.1 to 10.7 per 1000 children, of which ventricular septal defect is the most common, 30-40%, septal septal defect 9-18%, pulmonary artery stenosis 6-12%. organized the According to the data of 2011 in European countries, the rate of meeting of UTN was 1000/8.2.

Currently, there are two international organizations in the world that monitor birth defects. The EUROCAT organization consists of 35 regional registries from 21 European countries. Thus, among the cardiovascular diseases of infants and children, congenital heart defects occupy the main place. There are more than 90 types of congenital heart defects, most of which are combined (4, 8, 12).

According to the regional registry of the Russian state, the tasks of considering congenital heart defects and surgical treatment are set (Kirillov K.O., 2014). In this registry, a large organization named "Child's Heart" was established for providing qualified assistance to children with congenital heart defects, telephone consultation. The main goal of this organization is to systematically help and rehabilitate children with congenital heart defects.

Congenital heart defects are the most common diseases, accounting for 30% of all birth defects, and are the third most common after musculoskeletal and central nervous system defects (11, 13). 30-35 thousand children are born with this defect every year in the USA and 20-22 thousand in Russia. It was found that boys are more affected, that is, boys and girls are 57% and 43%. The most common congenital heart defects include: ventricular septal defect - 15-23%; transposition of trunk vessels - 9-20%; Tetrad of Fallo - 8-14%; aortic coarctation - 6-15%; patency of arterial flow - 6-18%; septal wall defect – 2.5-16%; narrowing of the aorta - 2-7%; pulmonary artery narrowing – 6.8-9%.

A condition that plays an important role in the pathogenesis of congenital heart disease is confirmed to occur after trauma in the 1st trimester of pregnancy, exactly at 16-18 weeks. In order to make a correct diagnosis of UTN, an ultrasound examination should be performed during this period, and it will reveal cyanosis in the child's body, an increase in the amount of regenerated hemoglobin, an increase in the amount of venous blood, a decrease in the level of blood oxygenation in the lungs, and a lack of oxygen in the tissues.

Practitioners are divided into three groups to make it convenient for cardiologists to use (3, 5, 9):

1. There is an arteriovenous shunt, type of UTN leakage - defect of the septal wall of the ventricles, defect of the septal wall of the compartments, patency of the arterial flow, atrio-ventricular communication.
2. There is a venoarterial shunt, type of UTN bruise - transposition of main vessels, tetrad of Fallo, triad of Fallo, three-layer valve atresia.
3. There is blockage of blood flow from the ventricles. UTN - pulmonary artery stenosis, aortic stenosis, coarctation of the aorta.

Based on the above classification of UT, surgical treatment can be divided into 3 groups:

I. Radical correction - complete restoration of heart anatomy and hemodynamics.

II. Palliative surgery - incomplete recovery of heart anatomy, partial improvement of hemodynamics.

III. Hemodynamic correction - incomplete restoration of heart anatomy, separation of large and small circulations.

Critical manifestations of congenital heart defects occur in infants. The peculiarity of these is the path of the compensatory reaction, or to a lesser extent. Such congenital heart defects can be fatal if not treated immediately by surgery. Congenital heart defects in a critical state are characterized by a defect in blood flow from the heart, worsening heart failure, severe tissue hypoxia, and development of decompensatory acidosis. Such defects include: a common arterial trunk, a double entrance hole to the ventricle, atresia of the pulmonary artery valve, pulmonary artery stenosis, right-sided hypoplasia, left-sided hypoplasia (2, 8, 12).

Surgical treatment of UTN is carried out according to the types of surgical techniques proposed by Friedli, depending on the type of congenital defect and the degree of damage to the heart.

1) in the case of ventricular septal defects, aortic flow patency, coarctation of the aorta, when the method of full and correct heart correction is used, most patients lead a normal life without complications.

2) tetrad of Fallo, atrioventricular wall defect, valvulotomy or valvular plasty, anatomical correction is performed. Such patients may have residual defects, but the patient's symptoms disappear.

3) Improving the method of anastomosis of the right ventricle with the pulmonary artery using artificial prostheses. Due to the development of degeneration after prosthetics, surgery may be performed again.

4) Physiological correction is made by Sen's Mustard method in the transposition of trunk vessels, and Fontan method in a three-chamber heart.

After heart surgery, residual anatomical and physiological anomalies remain in most cases. Let's look at the most problematic of these. 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 (4, 5, 7, 10).

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: damage to the vagus nerve, diaphragmatic nerves, chylothorax, and the formation of an aneurysm.

Compartmental septal defect. 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 mitral valve dysfunction and insufficiency, atrioventricular conduction block.

Defect of the septal wall of the ventricles.

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, but in some cases, the right branch of the Gis bundle may be damaged. Residual, i.e., anatomical and hemodynamic disorders can include blood flow from the left ventricle to the right ventricle, the risk of developing infectious endocarditis, and pulmonary hypertension. As a complication of surgical practice, scarring of the closed defect site, changes in electrocardiography, mitral valve insufficiency, atrioventricular block, aortic valve insufficiency.

Coarctation of the aorta

This type of defect is separate and combined with ventricular septal 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 result ends well. As residual, that is, anatomical and hemodynamic disorders, there is a difference in blood pressure in the arteries of the legs and arms, hypertension, which has decreased after surgery, may rise again over time, in 85% of coarctation of the aorta, a two-layer aortic valve is preserved, the risk of developing an aneurysm in the vessels of the brain, in the mitral valve every various pathologies may develop and

infective endocarditis may be observed. Complications include re-narrowing, pathology of the left vertebral artery, 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 infective endocarditis is prevented, hypertension in the small blood circulation is extinguished, complications of thromboembolism are reduced, and the quality of life of the child is increased (3, 6, 9). With great success in the science of cardiosurgery, complications that develop after surgical treatment of congenital heart defects remain 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 (4, 8, 10, 13). A residual hole is often left after surgery for a congenital heart defect. Sometimes the relapse of the defect develops, that is, it often relapses in valvular stenosis, coarctation of the aorta, 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%.

L.A. According to 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 artery hypertension is observed in most cases after cardiac surgery for congenital 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 (2).

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

Level I - initial: circulatory failure is hidden, only during physical work there is shortness of breath, tachycardia, rapid fatigue.

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

Grade III is the final dystrophic grade, with severe hemodynamic disturbances, organ function and metabolism disorders, and structural changes.

Conclusions: The incidence of congenital heart defects in children varies from 4 to 50 out of 1000 live births and accounts for 30% of all birth defects.

More than 90 types of congenital heart defects are distinguished, 3 surgical methods are used in their treatment: radical correction, palliative surgery and hemodynamic correction.

As a result of surgical treatment of congenital heart defects, the development of infectious endocarditis is prevented, hypertension in the small blood circulation is extinguished, complications of thromboembolism are reduced, and the quality of life of the child is increased.

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