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PERINATAL CARDIOLOGY: PREGNANCY AND CONGENITAL HEART DEFECTS

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ABSTRACT

The incidence of congenital heart defects varies widely and ranges from 2.4 to 14.15%. Every year, more than 30,000 children are born worldwide with congenital heart defects. Many of these patients are young women planning to carry a pregnancy to term and give birth to a healthy child. In women with congenital heart defects during pregnancy, the risk of developing heart failure, arrhythmia, cerebrovascular diseases, and embolism, leading to death, increases. The course of pregnancy is complicated by fetal growth restriction, premature birth, preeclampsia, newborns have a lower birth weight, and the risk increases.

Introduction. Congenital heart defects in pregnant women are a very common pathology in practice of cardiologist and obstetrician-gynecologist, which can cause complications at different stages of pregnancy. Women with CHD planning pregnancy are at increased risk of heart failure, arrhythmias, cerebrovascular disease, and embolism. In such patients, pregnancy course is complicated by intrauterine growth restriction, preeclampsia, and preterm birth. Their newborns generally have a low birth weight and high risk of congenital malformations including heart defects. European Society of Cardiology (ESC) developed risk assessment based guidelines to optimize the management of pregnant women with CHD. This approach requires a cooperation of obstetrician-gynecologists, general practitioners, and cardiologists.

Aim of the study. Analysis of modern data on the problem of tactics of management and delivery of pregnant women with congenital heart defects.

Material and methods. A review of publications by domestic and foreign authors was carried out, and data from clinical and epidemiological studies were studied.

Results and discussion. Approaches to diagnosis, non-drug and drug correction of hemodynamic disorders, prevention of complications and delivery tactics from the perspective of evidence-based medicine are presented, which should be a guide for practicing physicians caring for and treating such patients. Early detection, thorough clinical examination at the stage of preconception preparation, joint observation by a cardiologist and an obstetrician-gynecologist during gestation, timely implementation of therapeutic measures

will help prevent possible complications in pregnant women with congenital heart defects and choose the optimal delivery tactics (vaginal or surgical).

Congenital heart defects (CHDs) are defects in the structures of the heart and large blood vessels. The most common are ventricular septal defect (VSD) - 27-42%, atrial septal defect (ASD) - 5-15%, patent ductus arteriosus (PDA) - 10-18%, aortic coarctation - 7%, congenital aortic stenosis - 6%, pulmonary artery stenosis - 8-10%, Fallot group defects.

Hemodynamic disturbances and the clinical picture vary depending on the size of the defect, location, nature and duration of the cardiac lesion. The main complaints with heart defects in pregnant women are nonspecific: fatigue, muscle weakness, heaviness in the legs, drowsiness, palpitations and shortness of breath that occur during physical activity; As the defect progresses, shortness of breath is also observed at rest, swelling increases, and rhythm disturbances are possible.

Diagnosis of heart defects

Anamnesis. The history contains indications of congenital heart disease and the presence of a heart murmur since childhood.

Physical examination includes palpation of the heart area, percussion of the heart and vascular bundle, and auscultation of heart sounds.

Laboratory studies are carried out at the stage of preconception preparation, during pregnancy (at 10-11, 26-28 and 32 weeks) and after childbirth, including to assess the state of the blood coagulation system.

Instrumental studies:

- Electrocardiography (ECG) is performed as the primary stage of the examination, it allows to identify signs of hypertrophy (and overload) of various parts of the heart (depending on the type of defect and characteristic hemodynamic disorders).
- Echocardiogra
- phy (EchoCG) and Doppler echocardiography in most cases make it possible to detect pathognomonic signs of the defect, objectively assess its degree, the severity of disturbances in intracardiac hemodynamics and the functional state of various parts of the heart.

Tactics for managing pregnant women. According to the latest recommendations of the European and Russian Societies of Cardiology, pregnant women with heart defects are divided into two risk groups - high and low. The high-risk group includes patients with heart failure of functional class III-IV, regardless of the cause of the disease. Most often, diseases that can lead to the development of such heart failure include heart defects accompanied by pulmonary hypertension, in which maternal mortality reaches 30-50%. The high-risk group also includes patients with severe stenosis of the aorta and aortic valve. Pregnancy in high-risk patients is not recommended. If pregnancy occurs, its termination is indicated, since the risk for the mother is high: mortality is 8-35%, severe complications - 50%. Even the termination of pregnancy itself is associated with a high risk due to vasodilation and decreased myocardial contractility as a result of anesthesia.

The low-risk group includes pregnant women without pulmonary hypertension, as well as with mild or moderate valve insufficiency. With such heart defects during pregnancy, cardiac decompensation does not occur due to a decrease in total peripheral vascular resistance. Patients with mild or moderate aortic stenosis also tolerate pregnancy well. In

such cases, the pressure gradient increases simultaneously with the increase in stroke volume. Even moderately severe pulmonary stenosis is well tolerated and only rarely requires intervention during pregnancy.

Most patients with corrected heart defects without artificial valves can tolerate pregnancy well. However, residual defects after cardiac surgery occur in 2-50% of cases and must be established clinically and by echocardiography. Cardiac examination, even in low-risk cases, is carried out every trimester.

All pregnant women with defects need constant monitoring by a cardiologist (general practitioner) and obstetrician-gynecologist. They need to undergo echocardiography once a month, and three times during pregnancy they are hospitalized in a multidisciplinary hospital with cardiology and obstetric departments.

With the onset of labor, the administration of sodium heparin should be stopped and resumed 4-6 hours after birth in the absence of bleeding. If childbirth occurs while taking indirect anticoagulants (warfarin), the effect of the latter is eliminated by transfusion of two doses of fresh frozen plasma (500 ml). Indirect anticoagulants are resumed 24 hours after birth. During this period, they are safe for the fetus, as they do not penetrate into the milk.

During a planned cesarean section, patients receiving indirect anticoagulants are switched to low molecular weight heparins (LMWH) and one of the antiplatelet agents within 7-10 days. Heparin is stopped 8 hours before surgery and resumed 3 days later.

During drug therapy, dynamic monitoring and control of left ventricular systolic function and pulmonary artery pressure (EchoCG) is carried out. To prevent a decrease in left ventricular systolic function, nifedipine is prescribed. If surgical correction of heart defects is necessary, the management of patients is determined by a cardiac surgeon.

Prevention of pregnancy complications due to heart defects:

- diet with sufficient amounts of proteins, vitamins and microelements;
- limiting the consumption of table salt and liquid;
- prevention of infectious diseases of the respiratory and urinary tract;
- normalization of work and rest schedules, limitation of physical activity;
- prescription of herbal medicines that have a sedative effect.

Caesarean section is performed when:

- combination of the defect with obstetric complications (narrow pelvis, abnormal position of the fetus in the uterus, placenta previa);
- mitral valve insufficiency with significant circulatory disorders (severe regurgitation);
- mitral stenosis, not amenable to surgical correction;
- aortic valve defects with circulatory disorders.

In all cases, the decision on the method of delivery should be made jointly by cardiologists, obstetricians and anesthesiologists together with the patient. It is preferable to set a date for delivery so that the entire medical team is ready.

Ventricular septal defect

It is of fundamental importance to distinguish between low and high ventricular septal defects (VSD). Low VSD is located in the muscular part of the interventricular septum (Tolochinov-Roget disease), the discharge of blood from left to right with this defect is insignificant, hemodynamic disturbances are practically absent, this defect has a favorable

course. A high VSD is characterized by a significant shunt of blood from left to right, which leads to overflow first of the right ventricle, the pulmonary artery system, and then of the left atrium and left ventricle. Volume overload is accompanied by enlargement of the right and left chambers of the heart.

When the pressure in the right ventricle is compared with the pressure in the left, a variable discharge occurs, and when the pressure in the right ventricle is exceeded, a right-to-left discharge occurs, cyanosis appears, shortness of breath increases, and Eisenmenger syndrome develops, which is not amenable to surgical correction.

Conclusions. Advances in modern medicine and timely surgical correction of congenital heart defects have made it possible to significantly expand the indications for pregnancy in patients who previously did not have the opportunity to experience the joy of motherhood. With a small defect and the absence of hemodynamic disturbances in pregnant women with congenital heart disease, it is possible to prolong pregnancy and deliver through the natural birth canal. However, patients must undergo a thorough examination and be monitored throughout gestation together with a cardiologist and obstetrician-gynecologist.

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