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ARRHYTHMIAS IN PREGNANCY: TACTICS OF PATIENT MANAGEMENT

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ABSTRACT

The article presents a review of the literature data on the effect of the most common heart rhythm disorders on the body of a pregnant woman and the fetus, the features of the management of such patients, the principles of prescribing antiarrhythmic drugs. Arrhythmias occur in 20-40% of pregnant women, the most common are supraventricular or ventricular extrasystoles, life-threatening malignant arrhythmias are quite rare, and in the absence of structural changes in the myocardium, the prognosis does not affect the prognosis. Have. Due to the possibility of adverse effects on the fetus, antiarrhythmic drugs are prescribed to pregnant women according to strict indications. Drug treatment requires only frequent extrasystole with impaired hemodynamics, a pronounced decrease in the quality of life, or threatening to turn into more severe arrhythmias. In the development of paroxysm of tachycardia with unstable hemodynamics, electropulse therapy is used. The aim of the study was to identify the dominant types of arrhythmias in pregnant women, to discuss the features of the pathogenesis of ventricular arrhythmias during pregnancy, the relevance of preconception diagnostics, and the expediency of using antiarrhythmic drugs during gestation.

Introduction. Cardiovascular diseases during pregnancy are an important cause of morbidity and mortality, present in 1–4% of all pregnancies [1]. Arrhythmias are the most common cardiac complications that occur during pregnancy [2]. They occur both in healthy women, which is due to neuroendocrine, autonomic and metabolic changes during gestation, and may indicate the presence of a serious extragenital pathology [1]. persistent arrhythmias, the hemodynamics of the fetus deteriorates, uterine excitability increases, the threat of fetoplacental insufficiency (AFN) and termination of pregnancy increases, so it is necessary to consider the expediency and safety of the use of antiarrhythmic drugs in pregnant women [3].

Advances in clinical medicine have led to an increased number of pregnancies in women with pre-existing cardiovascular disease, as well as a higher prevalence of obesity and hypertension.

In the structure of cardiovascular diseases in pregnant women, the most common are congenital heart defects (up to 31% of cases), arrhythmias (22%), arterial hypertension (19%), rheumatic heart disease (17%); About 12% of cases are other lesions of the cardiovascular system [1, 2]. Among all arrhythmias of pregnancy, the incidence of supraventricular tachycardia is 7.5%, atrial fibrillation is 7.5%, supraventricular, ventricular extrasystole, and sinus tachycardia is 75%, and other forms of arrhythmia are 10% [2]. Ventricular extrasystoles occur in more than half of pregnant women, of which ventricular extrasystoles of high gradations, which require treatment, are registered more often in women with dystonia of the autonomic nervous system and myocardial dystrophies of various origins. In most women, ventricular arrhythmias are asymptomatic, do not affect hemodynamics and are determined only during planned ECG recording. In the presence of complaints, the most common reason for visiting a cardiologist is palpitations. Less commonly, complaints are made of a feeling of interruptions in the work of the heart, discomfort behind the sternum, anxiety and worry about the existing symptoms. A constant feeling of heart palpitations, especially poorly tolerated by the patient and/or accompanied by retrosternal pain, episodes of presyncope and syncope, symptoms of heart failure require further diagnosis [2]. There is an increase in the frequency of rhythm disorders in primiparous women of older age. This phenomenon is associated with the fact that over the years, the number of risk factors, such as hypertension, diabetes, obesity, increases, with the development of structural diseases of the myocardium and the manifestation of its electrical instability [3]. The occurrence of arrhythmias is also influenced by the number of pregnancies in anamnesis [4]. In pregnant women with a normal body mass index (BMI), the proportion of registered arrhythmias is statistically significantly lower than in pregnant women with BMI, higher and lower than normal [5]. In the later stages (in the second and third trimesters), the frequency and severity of clinical manifestations of arrhythmia increase.

An in-depth examination of women at risk at the stage of preconception preparation will allow corrective treatment and avoid possible complications, including in the first trimester. First of all, it is necessary to exclude pathology of the digestive tract, bronchopulmonary system, thyroid dysfunction. Pregnant women with complaints of palpitations, heart failures, as well as healthy pregnant women with asymptomatic arrhythmias detected on the ECG, should undergo an examination, including Holter ECG monitoring (at 28–30 weeks, before childbirth and two months after delivery), transthoracic echocardiography [13]. ECG during pregnancy has a number of features [14]. Physiological changes that occur in the body during pregnancy lead to a change in the electrical axis of the heart due to its displacement due to an increase in the size of the uterus. As the gestational age increases, there is a change in the duration of waves and intervals on the ECG, as well as the amplitude of the ventricular complex. These changes do not go beyond the norm and disappear after childbirth. Changes in hemodynamics, electrolyte balance and the predominance of sympathoadrenal regulation during pregnancy also explain the development of sinus tachycardia and extrasystole. However, the appearance of ventricular tachycardia in a pregnant woman may indicate heart

pathology. An increase in heart rate usually results in a reduction in the PR, QRS, and QT intervals, while uterine heaviness and diaphragm elevation can cause a physiological deviation of the heart's electrical axis to the left. Sometimes there is an increase in the amplitude of QRS. Q-waves in leads II, lead, III, aVF, V4-V6, and flat or inverted T-waves in leads III and V1-V3 are found in the second and especially in the third trimester, ST-segment depression may also be noted. However, other changes, such as the delta wave suggestive of WPW or the lengthening of the QT interval, should be considered pathological findings [6, 15]. Transthoracic echocardiogram is necessary to rule out structural and functional abnormalities, to establish the state of ventricular function before choosing drug therapy, if indicated. Normal echocardiography results in a pregnant patient may differ from those in non-pregnant women and include dilatation of the heart chambers, an increase in end-diastolic volume. Most of the changes gradually intensify, peak in the third trimester and disappear in the postpartum period [14].

To prevent heart rhythm disorders, it is necessary to exclude provoking factors: alcohol consumption, caffeine, smoking, psycho-emotional overload, in many cases this is enough to stop a number of arrhythmias or to significantly reduce the severity of their clinical manifestations [15]. When prescribing antiarrhythmic drugs, it should be understood that the use of some of them is associated with the risk of developing a large number of fetal complications. Potentially adverse effects on the fetus are most pronounced during organogenesis. The Food and Drug Administration's (FDA) Classification of Antiarrhythmics (AADs) by Risk of Use in Pregnant Women defines the main antiarrhythmics as Class B through D drugs (Table). In the treatment of arrhythmias in pregnant women, the minimum effective dose of the drug should be used [5]. In the case of a symptomatic course, clinically manifested in the form of a feeling of interruptions in the work of the heart, chest discomfort, anxiety even without hemodynamic disorders, in order to improve the subjective tolerance of heart rhythm disorders, reduce psycho-emotional stress of the pregnant woman, it is recommended to start therapy with selective beta1-adrenergic blockers (class II AADs). There is extensive experience with beta1-blockers for the treatment of maternal hypertension, cardiochannelopathies and cardiomyopathies during pregnancy. These drugs penetrate the placenta, their long-term use is associated with the risk of fetal growth restriction, however, in numerous registries of pregnant women treated with beta1-adrenergic blockers, no increase in the risk of congenital malformations after treatment of maternal concomitant pathology was reported. In ventricular extrasystoles, the indications for the prescription of antiarrhythmic drugs are frequent polymorphic, volley (group) and early extrasystoles of type R on T (classes 3A, 4B and 5 according to Laun-Wolf). According to the recommendations of the European Society of Cardiology (ESC), the main drug for the relief of extrasystole in the absence of heart failure is procainamide (class IA AADs). This drug should be administered intravenously by drip very slowly, since with rapid administration, the development of side effects (hypotension, collapse, impaired intraventricular conduction, asystole) is possible. Procainamide also crosses the placenta, but no teratogenic effects have been observed with its use, although data are limited [6, 7]. Intravenous administration of lidocaine (class IB AADs) or novocainamide can be used to restore sinus rhythm in pregnant women with monomorphic persistent ventricular tachycardia not accompanied by severe hemodynamic

disorders. Intravenous amiodarone is only given in cases where other treatments for symptomatic monomorphic ventricular tachycardia cannot be applied or are ineffective.

Conclusion. In order to reduce the risk of developing adverse consequences of arrhythmias for the mother and fetus, it is advisable to carry out Holter monitoring and echocardiography both at the stage of pregnancy planning and during gestation. It is necessary to conduct an in-depth examination of women at risk at the stage of preconception preparation, which will allow timely corrective treatment and avoid most complications. treatment of concomitant pathology. The use of antiarrhythmic drugs is associated with a risk to the fetus, and therefore is indicated only in cases where arrhythmias pose a serious threat to the life of the pregnant woman. In the absence of life-threatening and hemodynamic disorders, pregnant women are shown to normalize their lifestyle and correct their psycho-emotional state, which in most cases leads to the relief of arrhythmias. However, there are a number of life-threatening types of arrhythmias: conduction impairment with the development of grade II and III AV block, QT prolongation, WPW syndrome, group polymorphic ventricular tachycardia. In this regard, it is obvious that there is a need to initiate large cohort studies in order to focus not only on the gynecological features of the course of pregnancy, but also on the determination of proarrhythmic activity with the determination of the prognosis of complex ventricular arrhythmia.

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