

## Conduction and Rhythm Disorders in Children

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**Abstract:** Arrhythmias are one of the most common diseases of the cardiovascular system among children and adolescents. They manifest themselves in disruption of the heart. Arrhythmia is characterized by changes in the frequency, regularity and sequence of heart contractions. In a broader sense, arrhythmia is any deviation of the heart rhythm from the norm.

Often arrhythmias in children are a consequence of congenital or acquired diseases of the cardiovascular system. It is quite difficult to identify arrhythmias in childhood without instrumental diagnostics, since the child may not pay attention to the discomfort caused by the disease and may not complain. That is why it is extremely important to visit doctors in a timely manner and undergo routine examinations.

Arrhythmias in children are divided into two main groups - diseases characterized by an increased heart rate (tachyarrhythmias), and diseases, the main manifestation of which is a rare heart rhythm (bradyarrhythmias).

Manifestations of arrhythmia in a child may have different specifics. Each age group has its own characteristics.

In newborns and infants, arrhythmia can manifest itself in the following symptoms:

- ✓ Refusal to eat.
- ✓ Slow growth.
- ✓ Intermittent sleep.
- ✓ Pallor.
- ✓ Dyspnea.

About half of all cases of arrhythmia in school-age children and adolescents are asymptomatic and are detected during routine medical examination. In other cases, a sign of arrhythmia may be increased fatigue, exercise intolerance, pallor, decreased appetite, apathy, or, conversely, mild excitability. With a low heart rate, dizziness, pain in the heart area, and fainting may occur. Such manifestations require immediate intervention by specialists and hospitalization of the child.

The causes of arrhythmia in a child are divided into several groups:

- **Related to the work of the heart (cardiac causes).** These include congenital and acquired heart defects, carditis and cardiomyopathies, arterial hypertension, myocarditis, etc. This group also includes the consequences of severe infectious diseases such as tonsillitis, pneumonia, diphtheria.
- **Extracardiac causes.** These include diseases of the central nervous system, brain injuries and tumors, hereditary diseases, prematurity, complicated childbirth, etc. Conventionally, this group includes arrhythmia in adolescents, which is a consequence of the rapid growth of the body in conditions where the heart and blood vessels do not keep pace with the growth of muscles and skeleton.

Psychologists also point out possible problems in the family when parents are too demanding of the child and constantly set other children or even adults as examples.

**Key words:** childhood, arrhythmia, conduction disorder.

**Target.** Analysis of the prevalence of arrhythmias in different age periods children's population.

**Material and methods.** Children without organic pathology were examined hearts (81 people, 42 boys and 39 girls), aged 4 to 16 years, middle and th age  $10.8 \pm 1.0$  years, in children's city clinic No. 4 . Survey included a study of the anamnesis and clinical manifestations of possible arrhythmias, conducting instrumental studies, namely electrocardiography (ECG) in 12 standard leads, traditional echocardiography using two-dimensional, one-dimensional, Doppler mode using color Doppler mapping, 24-hour Holter ECG monitoring.

**Results.** When performing a standard ECG and daily ECG monitoring According to Holter, patients in this category were identified: sinus bradycardia in 31 (38.3%) children, sinus tachycardia - in 13 (16.0%), ventricular extrasystole - in 38 (46.9%), phenomenon of shortened PQ interval - in 17 (20.9%), phenomenon of ventricular preexcitation - in 3 (3.7%), supraventricular tachycardia in 12 (14.8%) children.

Sinus bradycardia was more often recorded at the age of 11-16 years (53.1%), in 2 cases (12.5%) was a manifestation of sick sinus syndrome. In children with sinus bradycardia, a decrease in heart rate variability was recorded with a predominance of bradyarrhythmia at night, and a decrease in the circadian index to  $1.15 \pm 0.03$  ( $p < 0.05$ ) in accordance with the age norm. According to echocardiography increase in global contractility and stroke volume ( $p < 0.05$ ) without changes in the size of the heart chambers were observed in children with sinus bradycardia.

Ventricular extrasystole was observed more often in children 11-16 years old without indications of organic heart pathology according to echocardiography and medical history, and was classified as "idiopathic". In 3 (7.9%) children, frequent per day (more than 20% of total number of complexes), which required the appointment of antiarrhythmic therapy with to prevent arrhythmogenic cardiomyopathy. Atrioventricular orthodromic reciprocal tachycardia was observed in 5 (41.6% of the number of persons with supraventricular tachycardia) patients, 4 of them with shortened PQ interval and 1 with the phenomenon of ventricular preexcitation.

It should be noted that the described rhythm disturbances were observed more often in the older age category of children (from 11 to 16 years).

**Conclusion.** Rhythm disturbances occur in different age periods of childhood, more often in the pre- and pubertal periods, which may be a manifestation immuno-biological changes of the maturing organism and require dynamic monitoring.

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