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# Impact of The Debut of Dilated Cardiomyopathy in Children

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**Abstract:** Dilated cardiomyopathy (DCM) is one of the most common types of cardiomyopathies that occurs at any age, including children. The severity of this disease is determined not only by the development of heart failure, but also by the severity of heart rhythm disturbances. These are the questions that are reflected in this thesis.

**Key words:** dilated cardiomyopathy, cardiac arrhythmias, diastolic dysfunction, heart failure, subepicardial ischemia.

## INTRODUCTION

According to epidemiological studies, the incidence of DCM is 20 per 100 thousand per year. Among children, according to foreign authors, DCM occurs with a frequency of 2.6 per 100 thousand, manifesting in 75% of cases in the first two years of life. According to the results of various authors, boys get sick 2-3 times more often than girls, but a more severe course is observed in girls. The prognosis of the disease does not depend on gender.

## MAIN PART

The severity of the condition in DCM, in addition to the classic signs of circulatory failure, is also determined by the severity of cardiac arrhythmia (CHD). According to 24-hour electrocardiography monitoring, various heart rhythm disturbances in DCM are recorded in almost 100% of cases. However, as numerous studies have shown, the absence of arrhythmias in children with DCM does not guarantee a low risk of sudden cardiac death.

In this regard, the question of identifying additional prognostic criteria remains relevant. Heart failure is an integral element of the clinical picture of dilatation of the cardiac cavities, as well as one of the factors that can significantly complicate the course and worsen the prognosis of DCM [1].

Heart failure is a syndrome that occurs when a child has systolic and (or) diastolic dysfunction, accompanied by chronic hyperactivation of neurohormonal systems and clinically manifested shortness of breath, weakness, palpitations, limitation of physical activity and pathological fluid retention in the body. Chamber dilatation as part of cardiac remodeling may result from a complex deterioration of cardiac structure and function in response to damaging overload or loss of viable myocardium and often precedes clinical manifestations of HF.

The work was carried out in the departments of cardiology and functional diagnostics of the Regional Children's Multidisciplinary Medical Center in Fergana. 30 children aged from 1 year to 16 years, diagnosed with DCM. Dilated cardiomyopathy was diagnosed in the presence of clinical signs of heart failure, cardiomegaly caused by dilatation of predominantly the ventricles (more than the

left) with mild or absent myocardial hypertrophy and a decrease in systolic myocardial dysfunction. A mandatory condition for selecting patients was the absence of congenital heart disease. Diagnosis of DCM was based on the analysis of anamnestic data obtained from a conversation with parents, copying information from medical records, the totality of the results of a clinical examination, as well as the use of ECG, echocardiography and cardiac radiography [2].

ECG registration was carried out in 12 standard leads on a 6-channel electrocardiograph.

Parameters of the morphological and functional state of the heart were assessed on the basis of echocardiography in the "M" and "B" modes (one-dimensional and two-dimensional), using Doppler echocardiography.

The first group consisted of children with the onset of the disease before 2 years of age (11 children). An explanation for this distribution can be the fact that the second year of life is one of the main "critical" periods in the development of a child, when the genetic development program changes and sensitivity to the effects of unfavorable factors increases. Children with the onset of the disease at an older age (19 children) made up the second group.

By gender, in the first group of children the largest proportion were girls (72.8%), in the second group boys predominated (63.2%). A recurrent course was detected exclusively in children of the second group (26.3%).

All children of the first group had the following complaints upon admission: shortness of breath, tachycardia, loss of appetite, anxiety. An objective examination is presented by the following clinical symptoms: expansion of the boundaries of relative dullness of the heart to the left; muted tones; systolic murmur at the apex with varying degrees of severity, and a weakening of the first tone was also noted there. Hepatomegaly in 6 children (54.5%) up to + 2-2.5 cm; in 5 children (45.5%) more than +3.5 cm. The parents associated the onset of the disease with a history of acute respiratory viral infection. The onset of the disease was clearly dated by the parents.

In children of the second group, clinical symptoms were determined by signs of heart failure, the severity of which depended on the degree of hemodynamic impairment. The general condition of 8 children (41.1%) upon admission to the hospital was assessed as severe, in the rest (57.9%) - moderate. From the complaints we identified: shortness of breath, mainly during physical activity; tachycardia; 4 children (21%) had pain in the heart area; 2 had swelling in the lower extremities (10%); 2 had cold extremities (10%); 3 (16%) had abdominal pain. Clinical signs of heart failure of degree II "A" were diagnosed in 8 children (42.1%) and degree II "B" in 11 children (57.9%). The boundaries of relative cardiac dullness are expanded mainly to the left, and in 2 children (10%) to both sides. A blowing systolic murmur was combined with a weakened first sound at the apex of the heart. The emphasis of the second tone over the pulmonary artery indicated the development of pulmonary hypertension. Hepatomegaly was pronounced (+6.0 cm) in the 1st child; in the remaining children, the enlargement of the liver was, on average, + 2.0-3.0 cm. We made the conclusion about the gradual development of DCM among children in this group after a conversation with parents.

Considering that DCM is characterized by disturbances in automaticity and conduction, our studies established that in all children the source of the rhythm was the sinus node. Among children of both groups, the highest frequency is sinus tachycardia, which was detected in 100% of cases in children of the first group and in 68.5% of children in the second group. The heart rate in the first group was in the range of 142-164 beats per minute, in the second group of children - 116-130 beats per minute. Sinus bradycardia was diagnosed in 2 children of the second group.

Conduction disorders in our studies were represented by intraventricular blockades, which occurred only in children of the second group: in 4 (21%) there was a slowdown in impulse conduction along the left bundle branch; 2 (10.5%) had complete blockade of the right bundle branch; 6 had incomplete blockade of the right bundle branch; in one child (5.5%) - AV block of the

first degree. In addition, in one child of the second group, 5 years old (case history No. 9842\512), we identified the phenomenon of WPW, type B, which was recorded once in the form of an episode of paroxysmal supraventricular tachycardia.

**CONCLUSION**

1. The severity of hemodynamic disorders in children with DCM is determined by the timing of the disease. In children with the onset of the disease before 2 years of age, symptoms of heart failure prevailed, and with a longer course - heart failure in combination with cardiac arrhythmias.

2. Dilatation of the heart cavities occurred in all children, regardless of age, and in children over 2 years of age, isolated dilatation of the left ventricle prevailed, and in children under two years of age, dilatation and hypertrophy of the left ventricle was combined with overload and hypertrophy of the left atrium. Rhythm disturbances were more often recorded among children of the older age group.

3. When assessing the adaptive capabilities of a child's body with DCM, all clinical and instrumental methods should be used both for the purpose of differential diagnosis of the disease, the effectiveness and safety of the therapy, and to predict the further course.

4. Children with impaired conduction of impulses along the left bundle branch should be included in the risk group, since transition to blockade is an unfavorable prognostic sign of the outcome of DCM.

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