INTERNATIONAL MULTIDISCIPLINARY JOURNAL FOR RESEARCH & DEVELOPMENT
SJIF 2019: 5.222 2020: 5.552 2021: 5.637 2022:5.479 2023:6.563 2024: 7,805
eISSN :2394-6334 https://www.ijmrd.in/index.php/imjrd Volume 11, issue 03 (2024)

CLINICAL AND INSTRUMENTAL ASSESSMENT OF BRADYCARDIA OF DILATED CARDIOMYOPATHY IN CHILDREN

Zhalolov Bakhtiyor Bakhodirovich

Assistent of the department Hospital pediatrics, Andijan State Medical Institute, Andijan city, Republic of Uzbekistan

Annotation: The severity of the condition with DCM, in addition to the classic signs of circulatory failure are also determined by the severity of heart rhythm disturbances. The most difficult in terms of prognosis is the pathology of the conduction system of the heart, among which bradyarrhythmia (bradycardia) occupies a special place. Long-term bradyarrhythmia (bradycardia) in a child of any age contributes to the development of secondary arrhythmogenic cardiomyopathy with expansion of the cavities and disturbances, first of all, of diastolic and then systolic function**.**

Abstract: The severity of the condition in DCM, in addition to the classic signs of circulatory failure, is also determined by the severity of heart rhythm disturbances. The most difficult in terms of prognosis is the pathology of the cardiac conduction system, among which bradyarrhythmia (bradycardia) occupies a special place. Bradyarrhythmia (bradycardia), which exists for a long time in a child of any age, contributes to the development of secondary arrhythmogenic cardiomyopathy with expansion of cavities and disorders, first of all, of diastolic, and then of its systolic function.

Keywords: Children, dilated cardiomyopathy, bradyarrhythmia, atrioventricular block, sinus node, ECG.

Relevance. IN works, published V printing, The issues of diagnosis and treatment of dilated cardiomyopathies (DCM) in adults are mainly reflected. (2.3). However, DCM is one of the most common forms of cardiomyopathy, which occurs at any age, including children. The need for a detailed study of the problem of DCM in children is associated with the difficulties of diagnosing it, especially in the early stages of the development of the disease. (2,3,5).Despite the large volume of research conducted in recent years, the problems of the etiological nature of DCM in children remain controversial. Many researchers adhere to the polyetiological hypothesis of the origin of the disease - enough cases of the development of DCM in children, which is the end result of various pathological processes, have been described [3,7,9].

DCM does not have pathognomic clinical and morphological signs. Despite a large arsenal of methods for assessing hemodynamic disorders, there are still no clear diagnostic criteria for this disease that would allow timely prescribing pathogenetically based treatment. [1,6,11].

The severity of the condition with DCM, in addition to the classic signs of circulatory failure, is also determined by the severity of heart rhythm disturbances. Cardiac arrhythmias significantly aggravate the course of DCPM, being a frequent complication and an important prognostic indicator of this disease [1,4,6].

Research into the mechanisms of heart rhythm disturbances remains one of the most pressing issues in pediatric arrhythmology. Arrhythmias due to disturbances in the normal functioning of the sinus and atrioventricular junctions are polymorphic in clinical symptoms and ECG manifestations and difficult to diagnose [1,4,11].

The most difficult in terms of prognosis is the pathology of the conduction system of the heart, among which a special place is occupied by bradyarrhythmia (bradycardia), the main symptom of which is a slow heart rate, up to its stop [6].

Long-term bradyarrhythmia (bradycardia) in a child of any age contributes to the development of secondary arrhythmogenic cardiomyopathy, the manifestation of which is myocardial remodeling with expansion of cavities and disturbances, first of all, of diastolic and then systolic function [4,5,6].

The prevalence of sinus bradyarrhythmia (bradycardia) in children has not been determined, which may be due to a long asymptomatic course. Often, sinus bradycardia and atrioventricular block are detected accidentally during examination for various somatic diseases. [1,4,6].

In recent years, the opinion about the safety of bradyarrhythmias (bradycardias) has changed, since a long, low-symptomatic or asymptomatic course can lead to a change in the morphological structure of the heart chambers, namely to dilation and, first of all, of the left ventricle. [5.6].

In this regard, we were faced withtarget: to present a clinical and instrumental assessment of the course of the brady-dependent variant of DCM in children.

Results.The examination of children was carried out on the basis of the regional children's multidisciplinary medical center in Andijan (Republic of Uzbekistan) in the department of cardiorheumatology. The examination included 86 children with a confirmed diagnosis of DCM, of which 20 children had the brady-dependent variant. Diagnosis of DCM is based on anamnestic data, the results of a clinical examination and instrumental data - ECG, CM ECG, Echo CG and chest radiography. DCM was diagnosed in the presence of cardiomegaly, caused by dilatation of the left ventricle or biventricular dilatation, with slight myocardial hypertrophy and normal or reduced systolic function of the left ventricle. We diagnosed sinus bradycardia if the heart rate was below the threshold level by more than 5% of age standards.

Age range of children with brady-dependent form of DCM was 7-16 years old, with girls predominating by gender (65% versus 35% boys).

Children with primary hospitalization accounted for 40%; with two – 35% and the remaining children had a history of 3 or more hospitalizations.

Since the issues of the unfavorable course of the perinatalO periodinfluenceon the formation of heart rhythm remain debatable, we analyzed this period in the group of examined children. From the anamnesis obtained during conversations with mothers, we found that all women had a complicated course of pregnancy and childbirth. In all mothers, pregnancy proceeded against the background of anemia (100%), with threat of miscarriage - 60%, with fetoplacental insufficiency - 20%, with gestosis - 20%. All women noted frequent respiratory viral infections during pregnancy, three women had a complication (pneumonia), for which they received hospital treatment.

In 6 women the birth was premature, in 9 – with weakness of labor and in 4 – with early discharge of amniotic fluid. One woman had a surgical delivery (caesarean section).

Of those examined: 9 children (45%) were born low birth weight, but full term; 3 children were born prematurely. After birth, all children were diagnosed with asphyxia of varying severity, in 7 children (35%) due to entanglement of the umbilical cord.

Characterizing the health status of the examined children with DCM, we found that all of them had frequent acute respiratory viral infections with repeated hospitalization, 3 children (15%) suffered from measles at an early age, 4 children (20%) had chickenpox.

Upon admission to the hospital, the condition of 3 children was assessed as severe, the rest - moderate. In 4 children with initial hospitalization, this disease was discovered by chance during a routine examination. The presence of bradycardia and systolic murmur at the apex prompted further examination [8].

The leading complaint of all children with brady-dependent form of DCM before admission to hospital treatment was weakness, with a tendency to increase. In addition, all children had poor tolerance to physical activity, as this was accompanied by shortness of breath. In 4 children (20%) in the age range of 14-16 years, frequent dizziness and syncope equivalents were noted. There were frequent complaints (30%) of a feeling of shortness of breath, especially in the evening or after physical activity. These symptoms can be explained by the presence of moderate disturbances of cerebral blood flow, especially in children with a long course of bradyarrhythmia (bradycardia) [8].

An objective examination revealed pronounced pallor of the skin (100%), a diffuse apical impulse (100%) and a systolic murmur of varying intensity, heard at the apex and base of the heart. Hepatomegaly (+2 - +4 cm) was detected in children whose condition upon admission was assessed as severe.

The average heart rate (HR) in children 7-10 years old was 72-78 beats per minute; in children 11-16 years old - 64-70 beats per minute.

The functional state of the cardiovascular system was assessed using ECG and EchoCG. The ECG of all examined children showed bradycardia (RR values = 0.96 s - 0.78 s) and disturbances conductivity, but the sinus node remained the main driver of the heart rate.

Intraventricular conduction disturbances occurred in all examined children with bradyarrhythmias (bradycardia). One of the most frequently recorded conduction disorders on the ECG was atrioventricular block of the first degree (11 children - 55%). The average duration of the PQ interval was 0.20 s - 0.22 s for children 7-10 years old and 0.24 s - 0.26 s for children 11-16 years old.

Incomplete atrioventricular block of the second degree, type II, was recorded on the ECG in 4 children (20%) aged 14-16 years. The basis for the diagnosis of this conduction disorder was the random loss of the ventricular QRS complex in the form of a long pause after the P wave with an extended, but with the same duration, P-Q interval. We classified this type of second degree atrioventricular block as the distal type, due to the presence of a deformed and widened QRS complex (0.11 s - 0.13 s).

In 3 children (15%), type I sinus node syndrome was registered, since during physical activity these children had an adequate increase in heart rate. In 2 children (10%), intraventricular impulse conduction disorders were manifested by incomplete blockade of the right Hiss bundle branch, characterized by splitting of the R wave in the right precordial leads and a QRS duration of 0.08 s - 0.10 s.

According to echocardiography, only 2 children (10%) had biventricular dilatation, the rest had isolated dilatation of the left ventricle. Almost all children had an increase in the end-diastolic size (EDV) of the left ventricle with varying degrees of severity. The highest rates were in

children (20%) with a disease duration of more than 5 years (5.6 mm - 6 mm), but with preserved systolic function (EF = 58% - 64%).

After obtaining consent from parents, only children 12-16 years old underwent 24-hour ECG monitoring. From the results obtained, we found that the average heart rate during the day corresponded to 65-75 beats per minute; at night - 42-54 beats per minute. The maximum heart rate is 92-98 beats per minute, the minimum is 40-44 beats per minute. The average heart rate duration was 2200-2600 ms.

In order to prove cardiomegaly, after an X-ray examination of the chest, we calculated the cardiothoracic index, which was in the range of 58-66%.

Conclusion. Thus, we have established that long-term bradyarrhythmia (bradycardia) leads to dilatation primarily of the left ventricle, to an increase in end-diastolic size, but with preserved contractile function of the myocardium.

Conduction disturbances, mainly due to presented atrioventricular block of the 1st - 2nd degree.

Children with atrioventricular block should be included in the risk group, requiring dynamic monitoring by a cardiologist, with mandatory and regular ECG monitoring in order to timely detect and prevent the development of life-threatening rhythm disturbances.

BIBLIOGRAPHY:

1. Belozerov Yu.M., Kovalev I.A., Dinov B.A., Abdulatipova I.V. Atrioventricular block. In the book by M.A. Shkolnikov, E.I. Alekseev “Clinical recommendations for pediatric cardiology and rheumatology.” M.: M-Art, 2011; from 160-180.
2. Bogmat L.F., Golovko T.A., Nikonova V.V., Mikhalchuk O.Ya., Evdokimova T.V. Features of the formation of secondary arrhythmogenic cardiomyopathy in adolescents with rhythm disturbances. Modern pediatrics. 2018. 3(91); from 59-64.
3. Vaikhanskaya T.G., Savitskaya L.N., Kurushko T.V., Levdansky O.D., Danilenko N.G. Dilated cardiomyopathy: a new look at the problem. Russian Journal of Cardiology. 2019; 24(4).
4. Kovalev I.A., Belozerov Yu.M., Sadykova D.I., Sobirova D.R., Yakovleva L.V. Atrioventricular (atrioventricular) blockade in children. Practical arrhythmology /2018/vol. 15/№5/ p.365.
5. Chilikina Yu.M., Sadykova D.I. Risk factors for arrhythmogenesis in children. Practical medicine. 2013. 6(75).
6. Shkolnikova M.A., Bereznitskaya V.V., Chernyshova T.V. and others. Prognostic value of asymptomatic sinus bradycardia in children without organic heart disease. // Issues of modern pediatrics. – 2009. - No. 1. – from 1-12.
7. McNally EM, Mestroni L. Dilated cardiomyopathy: genetic determinants and mechanisms. Circ Res. 2017; 121(7):731- 48.doi:10.1161/CIRCRESAHA.116.309396.
8. Taxirovich, A. S. (2023). The Main Etiological Factors, Methods of Prevention and Treatment of Meningitis. Inter-national Journal of Scientific Trends, 2(2), 141-148.

9. Porcari A., De Angelis G., Romani S., Paldino A., et al. Current diagnostic strategies for dilated cardiomyopathy: a comparison of imaging techniques. Expert Rev Cardiovasc Ther.2019; 17 (1): 53-63.
10. Mathew T., Williams L., Navaratnam G., Rana B., et al.; British Society of Echocardiography Education Committee. Diagnosis and assessment of dilated cardiomyopathy: a guideline protocol from the British Society of Echocardiography. Echo Res Pract. 2017; 4 (2); G1-13.
11. Pasotti M., Klersy C., Pilotto A., Marzilliano N., et al. Long-term outcome and risk stratification in dilated cardiolaminopathies. J Am Coll Cardiol. 2008; 52 (15); 1250-60.