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**DIASTOLIC FUNCTION OF THE LEFT VENTRICLE IN CHILDREN  
WITH A DISTURBANCE OF THE PROCESSES OF MYOCARDIAL  
REPOLARIZATION**

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Disorders of repolarization processes (DRP) of the ventricular myocardium are often recorded in various pathologies, and in certain cases are considered a variant of the norm. Dysfunction of autonomic nervous system, including hypersympathicotonia, which may be due to primary enhancement of the functioning of the sympathetic adrenal system, as well as an increase in its reactivity due to exercise, is the most common cause of violations of repolarization processes during electrocardiographic examination in children and adolescents. Diastolic dysfunction of the ventricular myocardium precedes the development of heart failure.

Purpose: to improve the early diagnosis of heart failure in children with myocardial damage.

Materials and methods. The functional state of the cardiovascular system was studied in 65 children with secondary cardiomyopathies aged 9 to 17 years. Patients are divided into 2 groups. 1st group - 42 children with nonspecific DRP on the ECG (decrease in the amplitude or inversion of the T wave, prolongation of the QT interval more than 0.05 ms from the normative values, depression or ST segment elevation relative to the isoline by 2 mm and more). The second group consists of 23 children with the syndrome of early repolarization of the ventricular myocardium (SER). The control group consisted of 14 practically healthy children who did not have cardiac complaints and ECG changes.

Results. In  $47.62 \pm 7.8\%$  of children of the 1st group DRP were registered against a background of autonomic dysfunction, in  $30.95 \pm 7.2\%$  - against a background of metabolic disturbances. In  $40 \pm 10.4\%$  of children (2 groups of SER)

were registered against a background of autonomic dysfunction, in  $25\pm 9.2\%$  of children - against connective tissue dysplasia, in  $15\pm 7.6\%$  of children - against metabolic disturbances.

The parameters of the transmittal flow in children of the 1st group were characterized by the following types of diastolic dysfunction:  $37.5\pm 8.7\%$  of the examined has restrictive type, in  $31.25\pm 8.32\%$  - pseudonormal type. In children of 2 groups:  $33.33\pm 11.43\%$  of patients has a restrictive type and in  $38.89\pm 11.82\%$  - type of pseudo-normalization. In both groups, there was a significant decrease in the speed parameters in comparison with the control group: the rate of early filling of the LV in atrial systole ( $E1 = 0.78\pm 0.024$  m/s,  $E2 = 0.807\pm 0.029$  m/s,  $E_k = 0.970\pm 0.06$  m/s,  $p < 0,05$ ) and the rate of late filling ( $A1 = 0,380\pm 0,014$  m/s,  $A2 = 0.377\pm 0.216$  m/s,  $A_k = 0.46\pm 0.01$ ,  $p < 0,01$ ) . There was an increase in the ratio of the speed indicators ( $E1/A1 = 2.117\pm 0.082$ ,  $E2/A2 = 2.222\pm 0.144$ ,  $E/A_k = 0.141\pm 0.05$ ) and the time of isovolumetric relaxation ( $IVRT1 = 0.056\pm 0.003$  s,  $IVRT2 = 0.055\pm 0.003$  s,  $IVRT_k = 0.061\pm 0.01$  s). These changes indicate the severity of metabolic disorders and lead to an increase in left ventricular myocardial stiffness with marked disturbances in its relaxation. Frequency of diastolic LV dysfunction increases in children with increased adrenergic organism ( $p < 0,05$ ), especially in children with nonspecific DRP on the ECG.

Thus, the development of diastolic dysfunction in children with DRP is associated with an increase of adrenergic organism.  $71.24 \pm 7.3\%$  of children with DRP have diastolic dysfunction, which indicates the pathology of the myocardium and may be an early marker of heart failure.