ECHOCARDIOGRAPHIC MONITORING OF ADAPTIVE POSSIBILITIES OF MYOCARDIUM IN PREMATURELY BORN CHILDREN

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Actuality of the problem. The issue of determining the normative parameters of the heart in prematurely born children at the stage of hemodynamic adaptation in the early neonatal period remains relevant.

Aim. We plan to create percentile distribution of echocardiographic parameters in prematurely born children in the early neonatal period.

Methods: Doppler echocardiography.

Results: The study involved examination of 144 prematurely born infants: Group I (n=40): extremely low body weight (ELBW) (birth weight 854.5 ± 84.46 g) at 23-29 weeks of gestation, Group II (n=36): newborns with very low body weight (VLBW) (1324.11 ± 104.59 g) at 28-33 weeks of gestation, Group III (n=68): newborns with low body weight (LBW) (1859.1 ± 118.1 g) at 31-33 weeks of gestation.

Percentage tables have been created for prematurely born infants, starting with the weight of 600 grams by the bootstrap method.

Percental distribution of echocardiographic parameters in prematurely born children in the early neonatal period

We can use Z-score data in our practice. We propose percentile ranks morphometry of the heart in newborns in the early neonatal period, typical for children of our region.

Body weight (kg)	End diastolic diameter of the left ventricle (mm)				
	5%	25%	50%	75%	95%
0.600-0.999	9.0	10.5	12.8	14.9	16.3
1.000-1.499	11.0	12.7	14.0	15.4	17.0
1.500-2.000	12.0	13.1	14.4	15.5	18.2
Diameter of the left atrium (mm)					
0.600-0.999	5.5	6.4	7.7	8.3	9.6
1.000-1.499	7.0	7.8	8.8	9.2	10.1
1.500-2.000	7.0	8.2	9.1	9.9	10.9
Diameter of the aorta (mm)					
0.600-0.999	4.6	5.7	7.0	7.5	9.2
1.000-1.499	6.3	7.2	7.8	8.5	9.3
1.500-2.000	6.7	7.6	8.0	9.0	10.1
Thickness of the interventricular septum (mm)					
0.600-0.999	1.8	2.1	2.3	2.3	2.7
1.000-1.499	2.0	2.6	3.1	3.3	4.2
1.500-2.000	2.2	2.6	3.1	3.5	4.3
Thickness of the left wall of the left ventricle (mm)					
0.600-0.999	1.8	2.1	2.3	2.6	3.1
1.000-1.499	2.0	2.7	3.1	3.5	4.0
1.500-2.000	2.0	2.7	3.1	3.5	4.3
End-diastolic diameter of the right ventricle (mm)					
0.600-0.999	6.8	8.8	9.8	11.0	12.0
1.000-1.499	8.0	9.1	10.4	12.0	12.1
1.500-2.000	8.8	10.0	10.9	12.7	13.1
Diameter of pulmonary artery (mm)					
0.600-0.999	5.1	6.3	7.2	8.0	9.3
1.000-1.499	7.1	8.0	8.4	9.0	9.9
1.500-2.000	7.8	8.0	8.7	9.4	10.3

Lag or entry of the obtained numerical value in 5 percentile, entry of value or more than 95 percentile from the obtained average normative indices indicates morphological changes of heart chambers, requiring clinical and instrumental comparison.

Conclusions: The obtained morphometric data can be reference indices of echometric parameters in prematurely born children with ELBW, VLBW and LBW at birth from 600 g to 2000 g.

Sources: Abuhamad A. Z., Chaoui R. A practical guide to fetal echocardiography. Normal and abnormal hearts. 3rd Edition. 2015. 608 p. Vorobev A. S., Zimina V. Yu. Ehokardiografiya u detey i vzroslyih. Rukovodstvo dlya vrachey. SpetsLit. 2015. 592 s. 256. Tissot C., Muehlethaler V., Sekarski N. Basics of functional echocardiography in children and neonates // Front Pediatr. 2017. Vol. 5. Article 235. 13 p. doi: 10.3389/fped.2017.00235.