Short-term results of surgical treatment of Coarctation of the aorta with small left ventricle

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Goal: to perform 10-years experience of treatment infants with coarctation of the Aorta
Materials and methods: retrospective analysis of 880 patients of the 1st year of life with Aorta Coarctation, who had no significant septal defects, treated in Bakoulev center. Among all operated infants 7.5% were newborns (n=66) with left ventricle end diastolic volume index (LV EDVi) less then 30 ml/m2, where Z-score of at least one of LV structures were lower than -1.65. Age at the hospitalization time ranged from 4 hours to 28 days of life (av. 8±7.5 days), weight 1.65-4.86 kg (av. 3.23±0.71), length 40-62 cm (av. 51±4.2), Z-score LV end diastolic size (Z LV EDS) from -6.63 to -0.51 (av. -2.45±1.22); Z-score mitral valve (Z MV) from -3.91 to -0.15 (av. -1.71±0.91); Z-score aortic valve (Z AV) from -5.09 to -0.91 (av. -0.77±1.12). 28 newborns (42.4%) had entered hospital in critical condition. We operated 3 premature newborns from 26 to 32 weeks of gestation. Only 5 newborns (7.8%) had Coarctation with Aortic stenosis, before resection of the Coarctation we performed aortic valvuloplastics.

Results: 34 newborns (51.5%) had complicated postoperative period, among which we observed mainly heart failure (n=28, 42.4%), respiratory failure (n=16, 24.2%) and necrotic enterocolitis (n=8, 12.1%). Progressive heart failure caused death of 3 pts., in other 7 cases it was generalization of the infection. Total mortality rate was 15.2% (n=10). There were no reliable influence of age, z-score AV, AV stenosis and ASD size on surgical results. Newborns with LV EDVi 22.5 ml/m2 (33.3%), weight less 2.8 kg (37.5%) and who had critical condition before operation (29.6%) had higher mortality. Conclusion: z MV -1.7 (p=0.009) is a predictor of postoperative heart failure. LV EDVi 22.5 ml/m2 (33.3%), weight less 2.8 kg (37.5%) and critical condition before operation reliably increases the mortality rate (p=0.015).