

Risk Factors in Neonatal Cardiac Surgery

*Trunina I.I., Tumanyan M.R., Filaretova O.V., Anderson A.G., Kharkin A.V., Abramyan M.A.
Bakulev scientific centre for cardiovascular surgery RAMS, Moscow, Russia*

Basics. In recent years more researches of leading hospitals are devoted to analysis of different factors, which augment mortality risk in newborns with congenital heart disease. Risk factors differentiation helps to analyse outcome and quality of life after cardiac surgery in newborns.

Material and methods. From 2005 till 2010 we have treated 7558 children 1st year of life, incl. 1193 (16%) newborns (av. age 3,6 days, av. weight 2,9 kg). Congenital heart defects were the following: TGA, LHHS, coarctation of the Aorta, PA atresia, critical aortic or pulmonary valve stenosis, etc. As to the structure of surgical interventions for the whole group, 54% (4065 operations) were made under artificial circulation (283 of which were operations for newborns, 40% were urgent, with survival rate of 86,9%) and 46% under closed methods.

Results. The statistic analysis of the factors influencing the outcomes of the surgical treatment ($p < 0,01$) in conjunction with the expert estimate of anamnestic, clinical, laboratory results of the neonates study lead to the conclusions on the risk factors. In the neonates group these are: prematurity and low birth weight (339 children – 31,6%), hypotrophy (82 children – 7,6%), early neonatal period (468 – 39,2%), TORCH infections (56 children – 5,2%), concomitant somatic pathology and mechanical ventilation while entering hospital (216 children – 20,1%), multiple disembriogenetic stigmas and syndromic forms of CHD (94 children – 8,8%). Severity of condition was characterized by the presence of the risk factors in each child (from 0 to 6). The increase in the quantity of risk factors lead to the increase ($p < 0,05$) of the mortality risk. Analysis of the risk factors enabled to elaborate particular dynamic steps of clinical treatment for each group in order to improve the outcomes. As a result in a period from 2005 to 2010 the number of newborns significantly ($p < 0,03$) increased and the survival rate after urgent operations improved to 94,2%, incl. premature and low-birth-weight children (av. weight 1,6 kg).

Conclusions. Optimization of preoperative care in children with CHD and risk factors exerts positive influence on quality of treatment and improves outcome for newborns and infants with CHD.