

A. Kasianova¹, V. Zhovnir², A. Pavlova³, K. Chasovskyi⁴, O. Fedevych⁵, I. Yemets⁵

¹Clinical Psychology, Ukrainian Children's Cardiac Center, Kyiv, Ukraine ; ²Intensive Care, Ukrainian Children's Cardiac Center, Kyiv, Ukraine ;

³Cardiology, Ukrainian Children's Cardiac Center, Kyiv, Ukraine ; ⁴Perfusiology, Ukrainian Children's Cardiac Center, Kyiv, Ukraine ; ⁵Surgery, Ukrainian Children's Cardiac Center, Kyiv, Ukraine

Introduction. The decreased cerebral blood supply and hypoxia can impair the brain development of children with congenital heart defects (CHD) in utero.

We explored the impact of cardiopulmonary bypass (CPB) surgery on neurodevelopment outcomes in infants with CHD.

Objectives. To assess psychomotor development of infants that underwent CPB surgery for CHD using the autologous placental umbilical cord blood (APUCB) in the first hours of life.

Aims. To prevent psychomotor retardation in infants after CPB surgery and implement early psycho-diagnosis and psycho-correction measures.

Methods. We analyzed a database of children enrolled in prospective studies on surgical support techniques from 2010 to 2012. We used the Bayley Scales of Infant Development (BSID-II) to study the cognitive and motor development. The study involved 90 infants of 1 to 2.5 years of age with CHD. Study group included 28 infants that underwent surgery with CPB and APUCB, conventional group included 62 infants that underwent surgery with CPB and donor blood.

Results. Although the aggregate group of infants after CPB surgery displayed the mental retardation and/or psychomotor development in 40% of infants the average mental (MDI) and psychomotor (PDI) indices were within normal age limits in study and conventional group of infants respectively. The study group tended to show higher MDI 94.5 ± 15.8 and PDI 91.4 ± 15.3 compared with conventional group MDI 90.3 ± 13.4 and PDI 86.3 ± 14.5 .

Conclusion. The considerable number of infants with cognitive retardation implies the development of early psychosocial programme of assistance to patients and the optimization of surgery using APUCB instead of donor blood.