

Table 3. Risk Factors for Psychosocial Outcome

	Definition	Results Group [#] A	B
<i>Pre-, peri- and postoperative risk factors</i>			
Perinatal asphyxia	APGAR-score <7 after 5 minutes	13.3% (8/60)	13.0% (7/54)
Severe preoperative hypoxia	pH value <7.2 in the umbilical venous blood (n=3); severe postasphyxia syndrome with organ failure and cerebral seizures (n=2); repeated severe cyanosis caused by intracardiac mixing problems (n=2)	11.7% (7/60)	5.6% (3/54)
Age at surgery (days)	-	7.1 , 5.1 *	7.2 , 5.3 *
Duration of DHCA (min)	-	60.0 , 3.1 *	59.8 , 3.0 *
Duration of CPB (min)	-	63.4 , 13.7*	62.9 , 14.0*
Duration of aortic cross clamping (min)	-	65.7 , 8.1 *	65.8 , 8.5 *
Duration of core cooling on CPB (min)	-	10.8 , 2.7 *	10.9 , 2.7 *
Temperature at initiation of DHCA (°C)	-	15.1 , 1.0 *	15.1 , 1.0 *
Additional VSD patch closure	-	3.3% (2/60)	3.7% (2/54)
Perioperative and postoperative cardiocirculatory insufficiency	Low cardiac output [†] in spite of adequate filling pressures and inotropic and vasodilatory therapy	16.7% (10/60)	14.8% (8/54)
Perioperative and postoperative resuscitation events	Necessity of pharmacological and/or mechanical resuscitation	6.7% (4/60)	7.4% (4/54)
Postoperative intraventricular cerebral hemorrhage (IVH)	Evaluation by cranial ultrasound preop., 4h, 1, 2, and 3 days and 1 and 2 weeks po; persistency of IVH-like findings 2 weeks po, according to ⁹	6.7% (4/60)	5.6% (3/54)
Perioperative and postoperative clinical seizures	-	3.3% (2/60)	3.7% (2/54)

Neurodevelopmental findings

Endurance capacity	Assessment by the Bruce Treadmill Test ⁷ : normal $\geq 10^{\text{th}}$ percentile; impaired $< 10^{\text{th}}$ percentile	Normal (90%) Impaired (10%)	54 6	Normal (100%)	54
Neurological status	Evaluation of complete clinical neurological status ¹⁰ : normal = no dysfunction; impaired = dysfunction in one or more domains (head shape and growth, cranial nerves, motor dyspraxia, ataxia, sensory dysfunction, palsy, clinical or electroencephalographic seizures)	Normal (73.3%) Impaired (26.7%)	44 16	Normal (81.5%) Impaired (18.5%)	44 10
Speech function	Assessment by the Total Functional Score (volitional oral movements, articulation, phonation, and coordination of speech) of the Oral and Speech Motor Control Test ¹¹ : normal ≥ 110 points; impaired < 110 points	Normal (60%) Impaired (40%)	36 24	Normal (64.8%) Impaired (35.2%)	35 19
Motor function	Assessment by the Kiphard and Schilling Body-Coordination Test ¹² : motor quotient; standard scores with a mean of 100 and a SD of 15	92.8 , 27.3 * p=0.02 [‡]		98.9 , 16.7 * p=0.33 [‡]	
Intelligence	Assessment by the Kaufman-Assessment-Battery for Children (K-ABC) ¹³ : scale of intellectual function; standard scores with a mean of 100 and a SD of 15	98.9 , 16.8 * p=0.29 [‡]		100.6 , 14.5* p=0.39 [‡]	
Academic achievement	Assessment by the K-ABC: acquired abilities (learning, knowledge); standard scores with a mean of 100 and a SD of 15	96.2 , 15.2 * p=0.04 [‡]		96.9 , 16.7 * p=0.09 [‡]	
Receptive language	Assessment by the K-ABC: selected subtests 7, 13, 14, 16; standard scores with a mean of 100 and a SD of 15	96.9 , 12.6 * p=0.08 [‡]		98.2 , 12.4 * p=0.14 [‡]	
Expressive language	Assessment by the K-ABC: selected subtests 4, 12, 14, 15; standard scores with a mean of 100 and a SD of 15	97.6 , 12.5 * p=0.04 [‡]		97.4 , 12.5 * p=0.07 [‡]	

Sociodemographic findings

Age at neurodevelopmental testing (years)	-	10.5 , 1.6 *	10.4 , 1.7 *
Socioeconomic status	Social classification (5 categories) of the family by the main breadwinner's profession, according to ⁸	p = 0.11 [§] versus published controls	p = 0.15 [§] versus published controls

CPB, cardio-pulmonary bypass; DHCA, deep hypothermic circulatory arrest; po, postoperatively; preop., preoperatively; VSD, ventricular septal defect.

*Results as mean , standard deviation (SD).

[†]Low cardiac output = clinically estimated by means of arterial pressure (target value for mean pressure 45 mm Hg), central venous pressure (target value 5 to 7 mm Hg), diuresis (target value > 1.5 ml/kg of body weight/hour), capillary refill time and skin temperature.

[‡] Versus published normal children; p values calculated by comparison of mean values (t-tests).

[§] P value calculated by comparison of frequencies (chi²-test); socioeconomic status representing an ordinal scale.

[#] **Group A: total group of 60 children; group B: subgroup of 54 children without severe neurological damage.**