

Early nutrition in children with critical congenital heart defects and long-term growth

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Objective

Growth failure as a result of feeding difficulties and increased metabolic demands in neonates and infants with critical congenital heart defects (CCHD) may negatively influence their neuro-developmental outcomes. Moreover, according to so called 'thrifty phenotype' hypothesis a reduced growth in the first 1000 days of life including fetal period may result in a tendency for an obesity and type 2 diabetes if such children are reared in an unhealthy lifestyle in later life. The aim of study was to estimate growth parameters in children with CHD who underwent surgery in the first year of their life.

Methods

Study group consisted of fifty non-syndromic children with CCHD as follows: ventricular septal defect (34%), pulmonary stenosis or atresia (16%), coarctation of the aorta (18%), tetralogy of Fallot (10%) and transposition of great arteries (10%), others (12%). Anthropometrical data from medical records were retrospectively collected at the moment of the birth and age of six months, three and five years. Using the growth charts for the Czech population from The National Institute of Public Health, the patient's z-scores for height, weight, height-for-age and body mass index were calculated. The stunting was set as z-score for BMI < -2; growth failure as z-score for the height < -2.

Results

The prevalence of stunting was 17% at the birth, 21% at 6 months, 37% at 1 year, 8% at 3 years and 3.6% at 5 years of age. The prevalence of the growth failure was 17% at the birth, 11% at 6 months, 13% at 1 year, 16% at 3 years and 25% at 5 years of age.

Conclusion

This study demonstrates a high prevalence of significant malnutrition in infants with CCHS during the first year of life. It was also shown that these children are at increased risk of impaired later growth. As far as growth failure in infancy have an impact on long-term neuro-development and quality of life, clinicians have to pay attention to feeding difficulties in infants with CCHD and to standardising their nutritional practice. Supported by Ministry of Health, Czech Republic – conceptual development of research organization (FNOL, 0098892).