Changes in resting energy expenditure in children with congenital heart disease

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Introduction

The aim of this study was to relate changes in energy expenditure and growth in infants with congenital heart disease (CHD), to the timing of corrective cardiac surgery.

Methods

Prospective cohort study of infants less than 1 year with CHD admitted for cardiac surgery to Royal Children's Hospital, between January to September 2005. Infants were assessed using anthropometry and indirect calorimetry and compared to healthy age matched controls.

Results: 38 infants underwent corrective (n=25) or palliative (n=13) cardiac surgery either at ≤ 10 days or at > 10 days. Infants undergoing corrective surgery after 10 days had deficits in z-scores for weight compared with infants undergoing early surgery (-1.15 ± 1.02 vs. -0.24 ± 0.98; CI 95%: -1.736 to -0.085; $p < 0.05$) and height (-1.47 ± 1.16 vs. -0.12 ± 0.66; CI 95%: -2.262 to -0.428; $p < 0.01$). However, by 6 months following surgery, weight and height were similar in both groups. Resting energy expenditure was increased before surgery compared to healthy controls (247 ± 36 vs. 210 ± 22 kJ/kg/d; 95% CI: -57.29 to -16.71; $p < 0.001$) however normalised 1 week following cardiac surgery. Standard equations did not accurately predict measured REE.

Conclusion

Increased REE observed in infants with CHD normalises within one week following corrective cardiac surgery. Deficits in weight and growth were greater in infants undergoing corrective cardiac surgery > 10 days of age compared with infants undergoing surgery in the first 10 days of life.

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