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Inadequate energy and protein supply in children after cardiopulmonary bypass

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Paucity of data exists about actual protein and energy requirements in children after cardiopulmonary bypass (CPB) which is altered as a result of systemic inflammatory and complex neuroendocrine responses. The present study aimed to assess resting energy expenditure (REE) and nitrogen loss in comparison with caloric and protein supply in the current clinical practice in children following CPB. 16 children (aged1-19 months, median 7months) were studied in the first 24 hours after CPB. REE was measured using indirect calorimetry. Data of clinical caloric and protein supply was collected. Nitrogen loss includes total urinary nitrogen and faecal/miscellaneous. The nitrogen balance was calculated as follows: nitrogen balance=nitrogen intake minus total nitrogen loss. The nitrogen-to-protein conversion factor was 6.25. In these patients, REE was 64.52 (95% CI: 44.60, 84.43) kcal/kg/d. Caloric supply was 9.69 (95% CI: 6.93, 12.44) kcal/kg/d. Total nitrogen loss was 0.27 (95% CI: 0.20, 0.36) g/kg/d. Protein supply was 0.50 (95% CI: 0.31, 0.69)g/kg/d. Total nitrogen supply was 0.08 (95% CI: 0.05, 0.11) g/kg/d. Nitrogen balance was -0.20 (95% CI: -0.29, -0.11) g/kg/d. There is large inter-individual variation in energy and protein requirements among these patients. Energy and protein supply is substantially less than requirements in children early after CPB. Further studies are warranted to obtain better understanding of individual nutrition requirements in different groups of children in the early postoperative days after different cardiac surgeries in order to provide adequate and individualized nutrition treatment.

Biography

Jia Li is a Pediatric Cardiologist and Professor. She obtained a PhD degree on oxygen transport in children after Heart Surgery Imperial College, UK, in 2002. This has remained her focus while she worked in Canada and now in Beijing China. The research on oxygen consumption, manifesting metabolic rate, has led her to investigate energy expenditure and nutrition supply in critically ill children.

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