Early Hybrid Approach and Enteral Feeding Algorithm Prevents Necrotizing enterocolitis in Neonates with hypoplastic left heart syndrome

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Introduction: The reported incidence of necrotizing enterocolitis (NEC) in neonates with complex congenital heart defect with ductus dependent (DD) systemic circulation ranges between 6.8% and 13% despite surgical treatment; its overall mortality is between 25% to 97%. Gastrointestinal complications after hybrid palliation for neonates with DD systemic circulation is not defined yet, but seems to be comparable to Norwood Procedure.

Methods : We reviewed the incidence of gastrointestinal complication in a series of 43 consecutive neonates with DD systemic circulation underwent early hybrid palliation associated with a standardized feeding protocol. Median age and birth weight at time of surgery were respectively 1 day (range 1 to 10 days) and 3.07 Kg (range 1.5 to 4.5 kg.). Median ICU length of stay was 7 days (1- 70 days) and median inhospital length of stay was 16 days (6 - 70 days). Median of mechanical ventilation was 3 days. Hospital mortality was 16 % (7/42). All patients in the post-operative period were subjected to fast weaning from ventilatory support and received treatment with vasodilatatory therapy. Feeding was started six hour after estubation according to a dedicated feeding protocol. In the majority of patients enteral feedings were initiated in the first 48 hrs post procedure and increased to full volume (120 mL/kg/day) within 5 days. According with Slicker and colleagues experience, nutritional intake was increased slowly as tolerated with nasogastric (NG - continuous at 1 ml/kg/h) or oral (bolus of 3 ml/kg X 7/die). We used human milk or standard formula, ensuring adequate caloric and water intake by total parenteral nutrition (TPN). The final volume of 120 – 140 ml/kg/die can be reached by advance bolus 10 ml/kg/die or increasing continuos infusion of 1 ml/kg/die every 6 hrs

Results: None of our patients after treatment experienced any grade of NEC or major gastrointestinal adverse events.

Conclusions: Our experience indicates that combination of “early hybrid approach”, fast weaning from ventilatory support, vasodilator therapy and dedicated feeding protocol adherence could reduce the incidence of gastrointestinal complication in this group of neonates.