

Hypophosphatemia following staged surgical palliation of Hypoplastic Left Heart Syndrome

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Introduction

Hypophosphatemia is commonly seen in critically ill children and has been shown to hamper clinical recovery. Patients after surgical palliation of HLHS are prone to develop this disturbance as they require large doses of medications known to decrease serum phosphorus levels. Moreover, deleterious effects of hypophosphatemia on the cardiopulmonary system can be especially harmful to those patients.

Methods

We conducted a retrospective review of the medical records of children consecutively admitted to our PICU between March 2014 to September 2018, immediately after Norwood, Glenn or Fontan procedure. The following data were recorded: age, weight, presence of malnutrition, type of procedure with assigned Aristotle Basic Complexity Score, duration of cardiopulmonary bypass, serum phosphorus and magnesium levels monitored during the first 3 days of PICU admission, hemodynamic parameters, medications, use of blood products, duration of mechanical ventilation and PICU length of stay.

Results

89 children were included in the study, with a median age of 6,4 months (range: 2d - 75.7m). Throughout the study period decreased serum phosphorus levels occurred in 39 patients (44%), and we observed 6 cases of refractory hypophosphatemia, which did not respond to single potassium phosphate infusion. The mean age and weight at the time of the procedure was significantly lower for the hypophosphatemic group and the mean Aristotle Basic Complexity Score (perioperative morbidity, mortality, and technical difficulty of the procedure) was significantly higher. What's more, epinephrine and dopamine use showed independent association with hypophosphatemia. □

Conclusions

Hypophosphatemia is highly prevalent in children after staged surgical palliation of HLHS. Given the greater susceptibility and potential complications, serum phosphorus levels should be routinely measured after the surgery, so that appropriate replacement therapy may be started.