

Congress Abstract

Renal Recovery After Continuous Veno-Venous Hemodiafiltration for Rhabdomyolysis-Associated Acute Kidney Injury in a Pediatric Trauma Patient

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ABSTRACT

Background: Acute kidney injury (AKI) is a major contributor to morbidity and mortality in critically ill children, and rhabdomyolysis is an important yet underrecognized trigger of severe AKI after major trauma. Continuous veno-venous hemodiafiltration (CVVHDF) allows simultaneous correction of fluid, electrolyte and acid-base disturbances together with clearance of myoglobin and inflammatory mediators in hemodynamically unstable patients. Data on adequately dosed, prolonged CVVHDF in adolescents with combined trauma-induced rhabdomyolysis and septic acute kidney injury remain limited. We report a case of severe RIFLE-Failure AKI in a polytrauma adolescent successfully managed with 15 days of continuous renal replacement therapy.

Case Presentation: A 13-year-old boy (weight 85–90 kg) was admitted to the pediatric intensive care unit after severe polytrauma sustained in a road traffic accident and underwent intramedullary osteosynthesis of long-bone fractures. On postoperative day 3 he developed a hardware-associated abscess with systemic inflammatory response and sepsis, complicated by traumatic rhabdomyolysis and severe AKI, RIFLE-Failure stage: anuria, metabolic acidosis, hyperkalemia and rising azotemia. Baseline values were creatinine 567 $\mu\text{mol/L}$, potassium 6.16 mmol/L , pH 7.28, AST 7001 U/L and ALT 5591 U/L.

CVVHDF was initiated on postoperative day 3 via an internal jugular venous catheter, using a MultiFiltrate® platform (Fresenius Medical Care): blood flow 200 mL/min , dialysate and replacement fluid each 1500 mL/h , ultrafiltration 100 mL/h , corresponding to an effluent dose of approximately 34–36 mL/kg/h . Anticoagulation was maintained with unfractionated heparin 1250 U/h under laboratory monitoring. Therapy continued for 15 days without catheter- or circuit-related complications. Progressive correction of acidosis, hyperkalemia, azotemia and cytolysis markers was achieved (Table 1), and diuresis recovered to 1150 mL/day by day 15, allowing discontinuation of extracorporeal support; the patient was transferred from the intensive care unit to a specialized ward.

Conclusion: This case demonstrates that adequately dosed, prolonged CVVHDF ($\approx 35 \text{ mL/kg/h}$) can safely and effectively reverse life-threatening metabolic derangements and achieve complete renal recovery in an adolescent with trauma-induced rhabdomyolysis and septic RIFLE-Failure acute kidney injury. Early initiation on postoperative day 3, uncomplicated vascular access and close monitoring supported an uneventful 15-day course. The case underscores the role of timely, adequately dosed continuous renal replacement therapy as a bridge to renal recovery in pediatric trauma patients with combined rhabdomyolysis and sepsis-associated acute kidney injury.

	Keywords: Veno-Venous Hemodiafiltration; Rhabdomyolysis-Associated; Acute Kidney; Pediatric Trauma Patient
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