Prevention of Rhabdomyolysis-Associated Acute Kidney Injury by Extracorporeal Blood Purification with CytoSorb: A Case Report

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Background

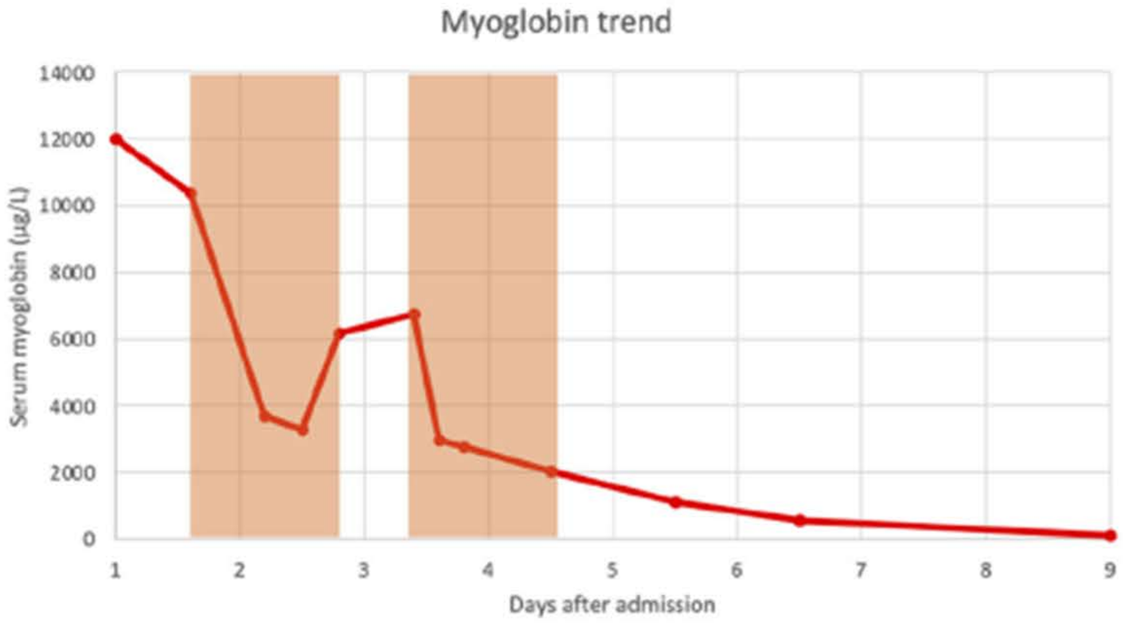
Rhabdomyolysis is a clinical syndrome caused by damage to skeletal muscle and release of its breakdown products into the circulation. Acute kidney injury (AKI) is a severe complication of rhabdomyolysis. The pathophysiology of rhabdomyolysis-associated AKI is complex, but myoglobin related damage plays a major role. The mainstay of prevention and treatment of rhabdomyolysis-associated AKI is the early and aggressive hydration, administration of bicarbonate and in case of refractory hyperkalaemia, acidosis and/or volume overload, renal replacement therapy is indicated. Extracorporeal blood purification via modulation of high levels of myoglobin is therefore an appealing target to prevent AKI, however, attempts to remove myoglobin with standard dialysis membranes have so far been unsuccessful.

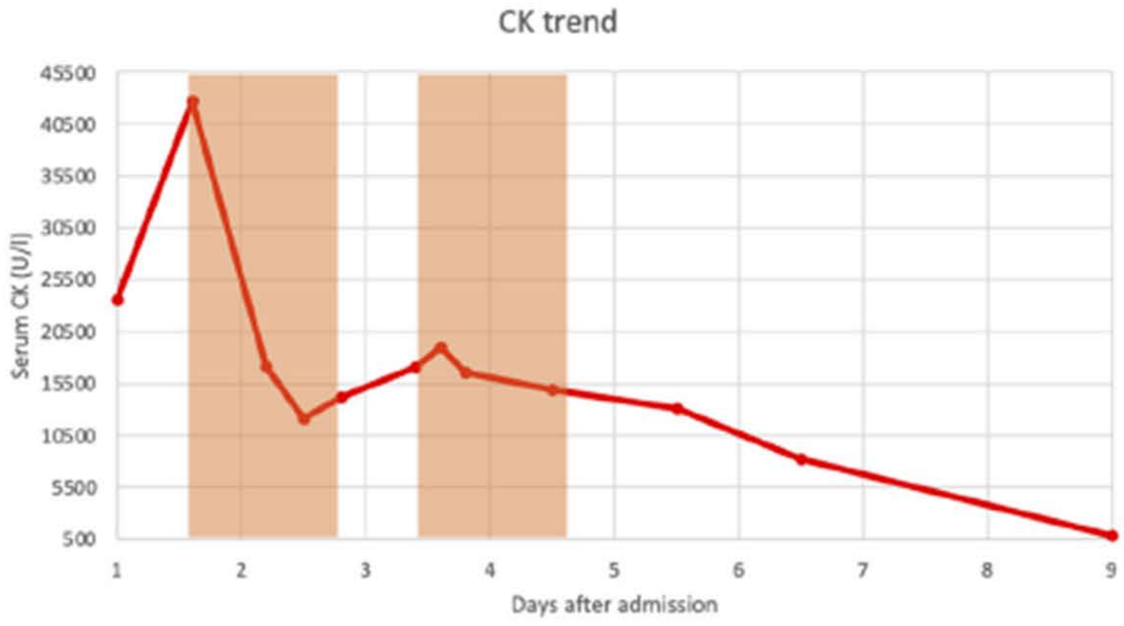
Case Report

Here we report the case of a 12-year-old boy with severe trauma-related rhabdomyolysis admitted to the intensive care unit after a surgical fasciotomy at the lower leg to prevent a compartment syndrome. A massive rhabdomyolysis was developed few hours after surgery with Creatinine Kinase (CK) and myoglobin values reaching a peak of >42,670 U/l and >12,000 µg/l, respectively. We decided to start continuous renal replacement therapy (CVVHDF) in combination with 2 cycles of CytoSorb to modulate CK and myoglobin levels and prevent AKI.

Results

After 24 hours of CVVHDF + CytoSorb, extracorporeal treatment was interrupted due to a continuous increase of CK and myoglobin, then a second cycle of 24 hours of CVVHDF + CytoSorb





The early use and the rapid change of extracorporeal blood purification with CytoSorb allowed a rapid and efficient stabilization of myoglobin and CK levels in blood.

Conclusions

The hemoperfusion treatment with the CytoSorb adsorbent cartridge proved to be a valid adjuvant therapy in determining a better clinical course both in terms of the need for invasive mechanical ventilation and survival.