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WORKSHOP

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Treatment of post-traumatic rhabdomyolysis with a combined purification strategy: a case report.

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Background

Crush syndrome or traumatic rhabdomyolysis, a medical condition characterized by major shock and renal failure after a crushing injury to skeletal muscle is a challenge for intensivists.

Methods

We present a case regarding a young man (19 years old) victim of a motorbike accident in urban environment. He was conducted by emergency equipe (i.e. 911) in local emergency department.

At admission he was awake and collaborative, with retrosternal/epigastric pain, and exposed fracture of the left knee with important lesion of the popliteal artery, low arterial pressure. Total body TC was performed: rupture of the diaphragm with herniation of the stomach, lung contusion, hemoperitoneum, right acetabulum and whole iliac wing fracture, confirmed left knee fracture with vascular lesion (ISS66).

Urgent surgery was immediately performed under general anaesthesia: reparation of the diaphragmatic rupture with stomach repositioning, correction of intraperitoneal hemorrhage (from mesenteric artery), urgent vascular graft of the poplitea artery. The patient was conducted in ICU.

He was sedated and curarized, under mechanical ventilation. Routine emergency Laboratory test was performed, and we notice low Hb level and an increasing value of myoglobin (up to 60000 mg%), with a rapid and progressive worsening of renal function, suggestive for AKI. So we started Continuous Renal Replacement Therapy in CVVHD CiCa using an highly adsorbent cartridge in order to remove Citokines and myoglobin (Citosorb®) and a secondary high-cut off dialysis filter (Emic2®). Two filters were mounted in series. We used an HFCVC in IJV dx only for CRRT; a CVC was inserted in IJV sx and subsequently a PICC in antecubital vein, in order to avoid turbulent blood flow in superior vena cava.



Results

A fall in myoglobin plasmatic dosage (24000 mg%) was observed after two days application of this strategy; the patient recovered his renal function up to spontaneous diuresis. We did not observe any complication in hemodynamic status, hepatic function, pH balance and coagulation cascade.

	Day 0	Day 2
Myoglobin	60,000	24,000
Removal Ratio		60 %

Conclusions

Although there are no randomized studies, we can conclude that in crush syndrome the early use of specific adsorbent resins associated with high cut-off dialysis filters has played a decisive role in breaking down myoglobin levels and in the recovery of renal function, drastically reducing the potential damage caused by rhabdomyolysis.

Surely it will take time for large-scale studies to determine what is the optimal treatment, even in terms of timing, of the crush syndrome, however we can suggest the early use of this strategy in cases like the one just discussed.

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