

Septic Shock Associated with Severe Rhabdomyolysis in a Chronic Hemodialysis Patient Successfully Treated with CRRT and Cytosorb: A Case Report

P. Vtieri¹, R. Marras¹, S. Murgia¹, C. Porcedda¹, A. Cherchi², P. Fadda², V. Pilo²

¹ Complex Operational Unit of Dialysis; San Martino Hospital; Oristano; OR; Italy
² Complex Operational Unit intensive care; San Martino Hospital; Oristano; OR; Italy

Introduction

Rhabdomyolysis is a clinical syndrome characterized by skeletal muscle tissue necrosis, leading to the release of substances, including myoglobin.

The most common causes include trauma, medications, drugs abuse, and infections. A definitive diagnosis is confirmed by measuring myoglobin and creatine phosphokinase (CK).

Increased myoglobin levels could lead to acute kidney injury (AKI). Several extracorporeal purification techniques have been used to treat rhabdomyolysis-induced AKI, including kidney replacement therapies, and hemadsorption with CytoSorb to accelerate the removal of myoglobin.

We describe the case of a chronic hemodialysis patient with severe rhabdomyolysis secondary to sepsis, successfully treated with continuous renal replacement therapy (CRRT) and Cytosorb.

Methods

A 78-year-old male patient with chronic kidney disease undergoing biweekly hemodialysis was admitted to the emergency department for fever and general malaise. He subsequently developed septic shock with hemodynamic instability, requiring vasopressor support, and was admitted to the intensive care unit.

Laboratory tests showed increased procalcitonin (753 ng/ml) and significantly elevated myoglobin (106,691 mcg/l) and creatine kinase (CK) (82,080 U/L), indicating rhabdomyolysis secondary to sepsis, likely originating from the hemodialysis' central venous catheter (CVC).

Continuous veno-venous hemodialysis (CVVHD) with regional citrate-calcium anticoagulation was started applying Cytosorb, and replacing the sorbent every 12 hours. The treatment continued for 72 hours.

Empirical broad-spectrum antibiotic therapy was started and adjusted based on blood culture results, which confirmed *Aeromonas Jandaei* infection from the CVC.

Results

After the first 24 hours of treatment, myoglobin and CK levels decreased by 80% and 76%, respectively. By the end of the full CVVHD plus Cytosorb cycle, myoglobin and CK levels further decreased to 4,565 mcg/l and 2,694 U/L, corresponding to reductions of 95% and 96%.

Progressive clinical improvement allowed for the discontinuation of CRRT, resumption of intermittent bicarbonate hemodialysis, and transfer to the internal medicine department. The patient was discharged home after 15 days of hospitalization.

Conclusion

CRRT combined with CytoSorb proved effective in rapidly reducing circulating myoglobin levels, helping to preserve diuresis and residual kidney function. Furthermore, it is hypothesized that the reduction of inflammatory cytokines, although not directly measured, may have contributed to the resolution of septic shock.