

Impact of hemoadsorption with CytoSorb® in a case of streptococcus pneumoniae-Induced septic shock

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Introduction

Sepsis is a severe systemic inflammatory response to infection that can rapidly progress to septic shock and multiorgan failure.

Timely initiation of extracorporeal support therapies such as continuous renal replacement therapy (CRRT) combined with CytoSorb® -the only adsorber cartridge certified for whole blood removal of cytokines, bilirubin, myoglobin, ticagrelor, and rivaroxaban- can significantly improve clinical parameters by counteracting the progression to septic shock and improving outcomes in critically ill patients.

Methods

A 42-year-old asplenic woman presented to the emergency department with vomiting, diarrhea, fever, facial erythema with cyanosis, petechiae on the trunk and lower limbs, and signs of peripheral hypoperfusion. She tested positive for Streptococcus pneumoniae urinary antigen and was promptly started on antibiotic therapy. During hospitalization, she required a surgical tracheostomy and subsequently developed critical ischemia of both upper and lower extremities, necessitating multiple amputations.

She underwent continuous veno-venous hemodialysis (CVVHD) using an EMiC filter in combination with CytoSorb® to treat a cytokine storm and improve hemodynamic stability.

Early initiation of CVVHD with an EMiC filter and CytoSorb® therapy was thus chosen, aiming to mitigate the cytokine storm responsible for organ dysfunction and to improve the patient's hemodynamic profile.

Results

Vital signs stabilized, blood pressure was well controlled, and vasopressor requirements decreased.

Procalcitonin (PCT) levels dropped from 31.8 µg/L to 14 µg/L and serum creatinine decreased from 2.34 mg/dL to 1.46 mg/dL by day three, with a continued downward trend toward normalization. Systolic blood pressure remained stable and subsequently increased (Figure 1).

Conclusion

CytoSorb® therapy played a key role in the rapid resolution of septic shock, contributing to both hemodynamic stabilization and attenuation of the systemic inflammatory response.

This clinical case supports the rationale for early use of hemoadsorption techniques in critically ill patients, highlighting the potential benefits of timely intervention to achieve rapid clinical and inflammatory improvement.

Figure 1: PCT, Creatinine and SBP levels after CytoSorb treatment

