



# Use of Hemoadsorption in Patients with Septic Shock of Different Origins: A Case Series



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## Introduction

CytoSorb is a certified hemoadsorption device approved for the removal of inflammatory mediators, including both pro- and anti-inflammatory cytokines. Given the pivotal role of cytokines in mediating macro- and microcirculatory damage in septic shock, its use is supported by a clear therapeutic rationale in this clinical context.

## Methods

We report a case series of six patients (median age: 63 years) presenting with septic shock from various causes, including infectious cholecystitis, pneumonia, cardiogenic shock, pulmonary insufficiency, metabolic acidosis, and mediastinitis. All patients exhibited significant respiratory ( $\text{PaO}_2/\text{FiO}_2$  ratio: 169), hemodynamic (mean arterial pressure: 59 mmHg), and metabolic (lactate: 4.6 mmol/L) disturbances. Due to renal impairment (creatinine: 4.8 mg/dL) and persistent hemodynamic instability, all patients received broad-spectrum antibiotic therapy (e.g., piperacillin/tazobactam, linezolid, fosfomycin, meropenem, fluconazole), continuous renal replacement therapy (CRRT), and three cycles of CytoSorb hemoadsorption (2 CytoSorb in the first day and 1 in the second day) to support organ function and modulate the inflammatory response.

## Results

Following a 72-hour CRRT cycle combined with three CytoSorb treatments, patients demonstrated marked improvements in pulmonary, renal, metabolic, and hemodynamic parameters. Lactate levels decreased significantly from 4.55 mmol/L to 1.04 mmol/L, and renal function improved, as indicated by a reduction in serum creatinine from 4.8 mg/dL to 1.1 mg/dL. Oxygenation improved, with  $\text{PaO}_2/\text{FiO}_2$  increasing from 169 to 321, and mean arterial pressure rose from 59 mmHg to 65 mmHg (figure 1). Overall, four out of six patients were successfully discharged from the intensive care unit, showing clear clinical and laboratory improvement after the combined CRRT and CytoSorb therapy.

## Conclusion

When added to CRRT in patients with acute renal failure, sorbent therapy demonstrates the ability to improve both hemodynamic stability and overall clinical status in cases of septic shock, regardless of differing epidemiological profiles.

Figure 1: Lactate, MAP,  $\text{PaO}_2/\text{FiO}_2$  ratio, Creatinine, at baseline and after 72 hours of treatment

