



Hemodynamic improvement in Septic Shock Patients treated with CytoSorb



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Introduction

While the Surviving Sepsis Campaign guidelines primarily focus on the management of sepsis with interventions like antibiotics, fluids, vasopressors, and organ support, the role of hemoadsorption and other similar therapies remains a topic of ongoing investigation. There are several extracorporeal devices and techniques currently used or under evaluation in sepsis management, including Cytokine adsorbers, devices that specifically target cytokines.

Methods

We retrospectively evaluated 175 septic shock patients treated with CytoSorb® admitted to our general ICU since 2016, July 1 till 2023 December 31. CytoSorb® was initiated within 24-48 hours from the onset of septic shock. The decision to continue the HA after the 2nd session was left to the attending team. Overall, 90 patients underwent ≥ 3 procedures and 85 patients underwent ≤ 2 sessions (high and low intensity group, respectively). The cause of septic shock was medical in 55%, surgical in 40% and undetermined in 5% of cases, respectively. For the entire population of patients, the admissions SAPS II score was 56. After the fluid resuscitation, an infusion of noradrenaline was started at an initial dose of 0,2 $\mu\text{g/kg/min}$ and titrated in order to achieve a MAP ≥ 65 mmHg. The kidneys and the lung were the most involved organs; consequently, all patients were mechanically ventilated and the HA was associated with a CRRT.

Results

We assessed variables as the time course of the SOFA score, procalcitonin (PCT), C-reactive protein (CRP), lactate, vasopressors and mean arterial pressure (MAP). In all patients, MAP significantly increased and lactate, PCT, CRP, SOFA score and the amount of noradrenaline administered significantly decreased at the end of the treatment as compared with the initial values (Table 1).

Conclusion

In septic shock patients, early and intense treatment with CytoSorb have shown overall hemodynamic improvement.

Table 1: Variables Considered in all Patients. Lactate (LAC), Procalcitonin (PCT), C-Reactive Protein (CRP), SOFA Score (Sequential Organ Failure Assessment Score), Noradrenaline (NA) and Mean Arterial Pressure (MAP)

Variable	All patients		p-value
	Pre-treatment	Post-treatment	
LAC (U/L)	26.70 (15.55-52.50)	16.55 (6.60-42.18)	0.01445
PCT (ng/mL)	29.65 (5.16-82.80)	7.19 (2.29-26.83)	0.00002
CRP (mg/dL)	200 (119.58-285.98)	100.30 (48.20-186.90)	< 0.00001
SOFA Score	12 (10-14)	11 (9-13)	0.001
NA ($\mu\text{g/kg/min}$)	0.82 (0.50-1.07)	0.44 (0.11-0.91)	0.00001
MAP (mm Hg)	63 (53.75-67.75)	67 (55.42-73.33)	0.00543

Data are expressed as median and 25th-75th IQR.