

CYTOSORB HEMOADSORPTION IMPROVES HAEMODYNAMICS AND SOFA SCORE IN SEPTIC SHOCK



Aucella F¹, Pellegrino AM¹, Ferrara G¹, Gatta G¹, Vaira P², Del Gaudio A³

¹*Department of Nephrology IRCCS Casa Sollievo della Sofferenza Hospital, San Giovanni Rotondo (FG)*

^{2,3}*Intensive Care Units, IRCCS Casa Sollievo della Sofferenza Hospital, San Giovanni Rotondo (FG).*

Background

Sepsis is the most common cause of death in medical intensive care units (ICU). If sepsis progresses to refractory septic shock, mortality may reach 90–100% despite optimum current therapy. Cytokine reduction using hemoadsorption represents a new concept for blood purification, developed to attenuate the systemic levels of pro-inflammatory and anti-inflammatory mediators released in the early phase of sepsis.

Methods

We retrospectively evaluated the impact of CytoSorb, used as adjunctive therapy, on hemodynamics and clinically relevant outcome parameters in 38 critically ill patients with septic shock and in need of renal replacement therapy (RRT) in Intensive Care Unit. Mean levels of MAP, procalcitonin, noradrenalin need and SOFA score were evaluated. RRT of acute renal failure was performed either as continuous veno-venous hemofiltration (CVVH) or continuous veno-venous hemodialysis (CVVHD) at the discretion of the attending physician. Hemoperfusion was started after refractory shock was diagnosed. The adsorber CytoSorb was connected in a pre-filter position into the CRRT circuit. The first exchange was performed within 24 h without interruption. Further adsorber exchanges were at the discretion of the physicians, mean cartridge number was 2.8/patient, mean time between admission and hemoperfusion treatment start was 44±9 hours.

Results

Demography is showed in Table n. 1. After CytoSorb treatment procalcitonin, C-reactive protein and white cells count, all decreased vs basal levels; these features were associated with hemodynamic stabilization and reduction of noradrenaline infusion (Table n. 2). Moreover, urine output showed a relevant increase. SOFA score improved in 22 (57%) patients, and overall in hospital mortality was 43% despite a 65% SOFA predicted score. Treatment using the CytoSorb device was safe and well-tolerated with no device-related adverse events during or after the treatment sessions.

Table n. 1 Demography

AGE	M/F	SEPSIS ORIGIN	SURGICAL	COMORBIDITY (n.)
59±15	21/17	24 (63%) abdominal	22/38 (57%)	2.5±1.8

Table n. 2 Outcome parameters

	PCR	PCT	WC (x 1000)	NOR-µg/kg/min	MAP	SOFA	URINE OUTPUT
BASELINE	35±12	42±11	23±7	0.88±2.3	69±15	12.8±2.7	450±125 ml
AFTER 1 CARTRIDGE	31±9	34±15	19±6	0.9±1.5	68±12	/	425±110 ml
END OF TREATMENT	12±6	9±9	15±8	0.4±2.1	88±25	6.3±3.4	680±190 ml

Conclusion

In severe septic shock unresponsive to standard treatment, hemodynamic stabilization and inflammatory parameters improved using cytokine adsorption therapy. These effects seem to be more pronounced in patients in whom therapy started within 24 h of sepsis diagnosis, whereas a delay in the start of therapy was associated with a poor response to therapy in terms of reduction of catecholamine demand and survival.