USEFULNESS OF ADIUVANT HAEMOADSORPTION (CYTOSORB) IN THE EARLY PHASE OF SESPSIS: A RETROSPECTIVE OBSERVATIONAL STUDY

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Background

Sepsis is a clinical syndrome defined by a systemic response to infection. With progression to sepsis- associated organ failure or hypotension (septic shock) morbidity and mortality increase. Despite all medical advances, it continues to be a substantial problem, as to date therapeutic approaches have failed to prove efficacy. In recent years, hemoadsorption (CytoSorb) has been used more frequently to treat septic shock, especially in refractory conditions, in which standard therapy did not seem to be sufficient enough.

Materials and Methods

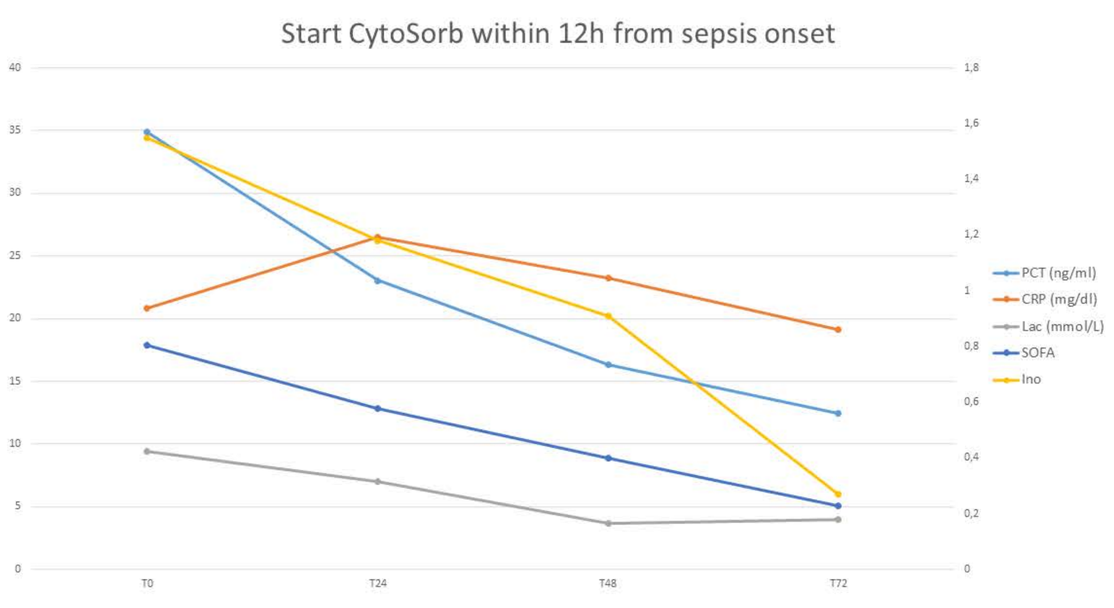
Here we present a 3-years retrospective observational study of 18 patients, that were reported to “Cardinale G. Panico” Hospital, Tricase (LE) from January 2019, to April 2021, affected from sepsis/septic shock of various origins and treated with CRRT plus CytoSorb as adjuvant therapy to standard medical
approach. Patients had a sepsis approach initiated within 3 hours after arrival in the emergency department or after the triggering cause in inpatient or surgical wards. Every patient was submitted to CRRT (Ci-Ca CVVHDF, Multifilter) with pre-dyalizer CytoSorb adsorber (from a minimun of 1 to max 4 cartridges). The treatment was started within 6 hours (for a group of patients), no later than 12 hours (for another group, according with our internal sepsis management protocol) and later than 12 hours (against our internal protocol, for a group of patients in which the delay of CytoSorb administration was due to logistical problems). Of each patient we dosed different items recording each value at time zero, 24, 48 and 72 hours after the cartridge’s administration. Each adsorber was changed every 12 hours.

Results

The results are show in table 1 and figure 1. We demonstrated that an early use of CRRT CytoSorb (< 12 hours) according by a DSS score > 6, was associated, compared with patients with a delayed CytoSorb administration (> 12 hours) and with the control group with CRRT use only, with an improvement in hemodynamic indices at 24, 48 and 72 hours (decreasing in use of vasoactive amines, improvement of MAP and reduction of lactate) and in inflammatory items (PCR, PCT and SOFA score). Finally, we recorded a decreasing in mortality in ICU compared with control groups. This improvement is also detectable in patients with an initial compromised clinical situation (APACHE II score > 30).

	CytoSorb start within 12 h				CytoSorb start after 12 h			
	T0	T24	T48	T72	T0	T24	T48	T72
Nr.Patients	11				7			
PCT (ng/ml)	34,91	23,04	16,32	12,43	24,75	12,97	9,2	7,08
CRP (mg/dl)	20,84	26,5	23,2	19,11	29,36	24,48	19,2	12,85
Lac (mmol/L)	9,41	7,03	3,67	3,95	11,39	10,86	4,13	6,23
Inotropes	1,55	1,18	0,91	0,27	1,29	1,14	1	1
Sofa	17,91	12,8	8,9	5,1	18	20,43	16	19
Nr. Cartridge	2,64				2,14			

Table 1: *T0 (at time zero), T12 (after 12 hours of treatment), T24 (after 24 hours of treatment), T48 (after 48 hours of treatment LAC (lactate). In green: patients in which a positive outcome was recorded (Transferred to ward). In yellow: patients unresponsive/dead.*



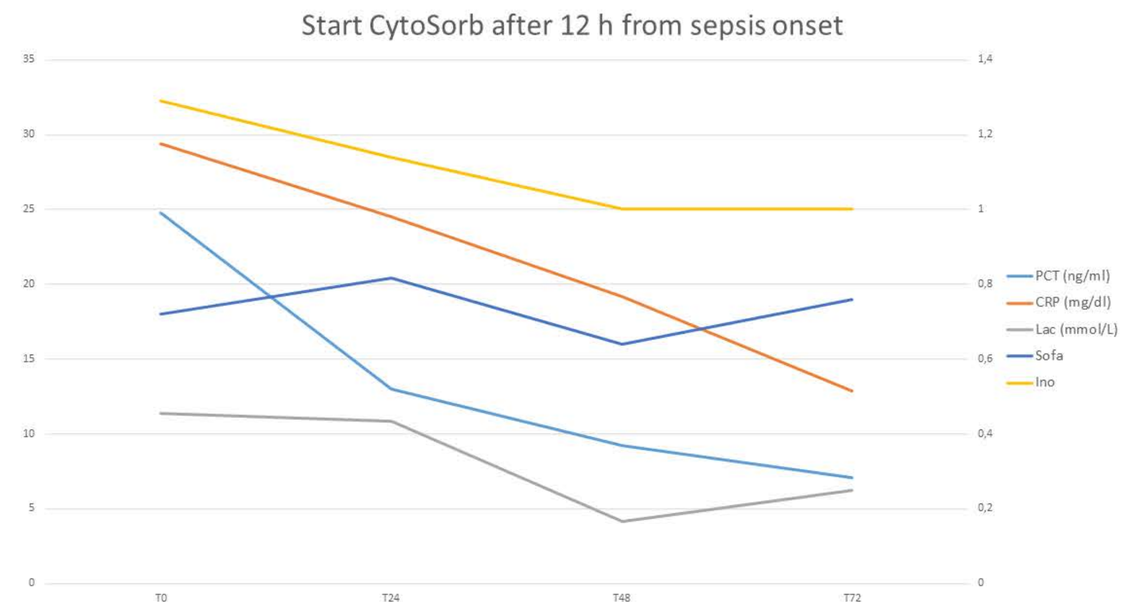


Figure 1: *value of patients start CytoSorb within 12 h and patients start CytoSorb after 12 h*

Conclusion

We recommend an early as possible use of CytoSorb in patients with diagnosis of sepsis (NEWS2 score > 5 and an increasing of SOFA score > 2 points than the baseline). This action-time is preferable to be < 12 hours, although best results are obtained if the cartridge is administered within 6 hours. We also note the uselessness but the harmfulness of this treatment in terms of delay in administration of new therapies or new adsorbers when number of CytoSorb cartridges is > 3.