CytoSorb®: A Single Center Experience

M. Malgaj Vrečko[1,2], V. Peršič[1,2], A. Jerman[1], V. Premru[1], B. Vajdič Trampuž[1,2], A. Marn Pernat[1,2], A. Župunski Čede[1,2], B. Knap[1,2], M. Andonova[1,2], and J. Gubenšek[1,2]

[1] Department of Nephrology, University Medical Center Ljubljana, Slovenia
[2] Faculty of Medicine, University of Ljubljana, Slovenia

BACKGROUND

CytoSorb is an extracorporeal hemadsorption device, designed mainly to reduce the systemic cytokine burden in refractory septic and cardiogenic shock. It adsorbs molecules between 5 and 60 kDa, which includes cytokines and a wide range of hydrophobic substances (myoglobin, bilirubin, some drugs …). Therefore, it is used in patients with cytokine storm and also for other indications (liver failure, rhabdomyolysis, intoxications, …). The **aim** of this analysis was to report our experience with CytoSorb treatment coupled with different renal replacement therapies (RRT) in a heterogenous group of patients.

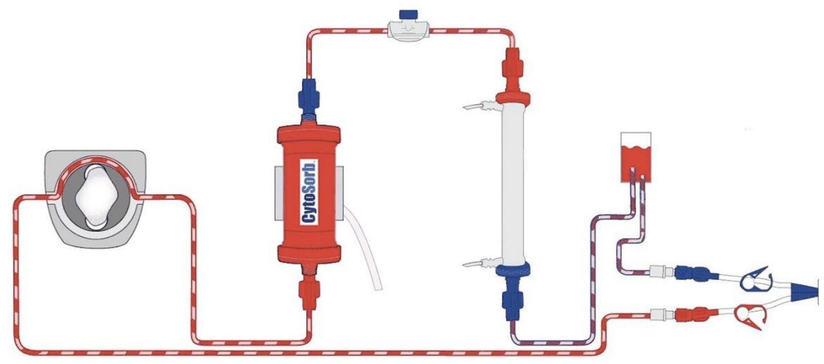
METHODS

We performed a retrospective analysis of **121 adult patients** treated with CytoSorb in University Medical Center Ljubljana from January 2017 to October 2019.

CytoSorb treatment was **initiated either immediately (within 2 hours)** in patients with:
- fulminant sepsis,
- post-splenectomy,
- fulminant meningococcemia,
- necrotizing fasciitis,
- toxic shock syndrome;

or **within 12 hours** in patients with:
- refractory septic shock,
- systemic inflammatory response syndrome (SIRS) after cardiac arrest or acute pancreatitis,
- other indications.

In the majority of procedures, CytoSorb was **used in combination with one of the forms of RRT**: continuous veno-venous hemodialysis (CVVHD) or intermittent hemodialysis (IHD).



CytoSorb used in combination with one of the forms of renal replacement therapy was placed in the pre-filter position.

RESULTS

Indications for CytoSorb therapy were as follows:
- septic shock (67.8%),
- SIRS after cardiac arrest (14.9%),
- SIRS after acute pancreatitis (5.8%) or hemorrhagic shock (4.1%),
- intoxication with amitriptyline or amlodipine (2.5%),
- hemophagocytic lymphohistiocytosis (1.6%),
- extreme hyperbilirubinemia (0.8%),
- more than one indication - SIRS after cardiac arrest and hemorrhagic shock with a need for removing ticagrelor (0.8%), rhabdomyolysis and SIRS (1.7%).

CytoSorb was **coupled** with:
- IHD (90.9%),
- CVVHD (8.3%),
- extracorporeal membrane oxygenation (ECMO) as a stand-alone therapy (0.8%).

15.7% of all patients were treated with CytoSorb and IHD/CVVHD filter while also on ECMO.

Regional citrate **anticoagulation** was used in all but one procedure, where heparin-free IHD was performed. No device-related adverse events were observed.

CONCLUSIONS

CytoSorb is a safe therapeutic option in a wide variety of clinical settings. However, its benefits are still to be proven in randomized clinical trials.