CytoSorb in Staph aureus sepsis and myositis-associated rhabdomyolysis

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This case study reports on a 61-year-old female patient who presented at the hospital with fever, vomitus and signs of sepsis a few days after completion of her 11th cycle of adjuvant chemotherapy with Paclitaxel due to mamma carcinoma.

Case presentation

- Rapid deterioration of her hemodynamic situation and kidney function
- High plasma levels of inflammatory markers – leucocytes 24,000/µl, CRP 380 mg/l, PCT 45.1 ng/ml
- Additional clinically pronounced myositis (muscle inflammation) with myoglobin plasma levels of 6049 µg/l
- Erythema multiforme with proof of Staph aureus in wounds and suspicion of toxic shock syndrome
- Development of acute anuric renal failure with immediate initiation of citrate dialysis (CVVHD)
- Progressive deterioration of hemodynamic condition with high need for catecholamines (norepinephrine 4 mg/h)
- In the further course fulminant septic shock with renal and circulatory failure as well as highly elevated markers of inflammation resulting in the installation of CytoSorb into the CRRT circuit

Treatment

- One CytoSorb treatment session for 24 hours
- CytoSorb was used in conjunction with citrate dialysis (Multifiltrate; Fresenius Medical Care) in CVVHD mode
- Additionally, an EMic2 filter was installed for the treatment of highly elevated myoglobin plasma concentrations (CytoSorb in series before EMic2 filter)
- Blood flow rate: 150 ml/min
- Anticoagulation: citrate
- CytoSorb adsorber position: pre-hemofilter

Measurements

- Demand for catecholamines
- Inflammatory parameters (IL-6, PCT, CRP, leucocytes)
- Renal function (excretion)
- Lactate

Results

- Hemodynamic stabilization with reduction of catecholamine dosages to 2 mg after termination of CytoSorb treatment and gradual weaning from catecholamines with complete stop 4 days after start of CytoSorb therapy
- Leucocytes fell to 18000/µl four hours after start of CytoSorb treatment and continued to decrease to normal values in the further course
- CRP plasma levels decreased to 260 mg/l four hours after start of CytoSorb treatment and to 85 mg/l in the further course
- PCT could be reduced to 13.7 mg/l after 24 hours of CytoSorb treatment
- Myoglobin plasma concentrations were reduced to 3168 µg/l and to 665 mg/l in the further course
Patient Follow-Up

- Further improvement of all organ functions in the following days
- Following intermittent termination attempts CRRT could be stopped 16 days after start of CytoSorb therapy
- Patient could be discharged to rehabilitation with persistent critical illness myopathy and neuropathy 32 days after CytoSorb treatment

CONCLUSIONS

- Combined treatment of CRRT with CytoSorb resulted in a clear and quick stabilization of hemodynamics with declining needs for catecholamines and a significant reduction of inflammatory mediators
- The combined application of CytoSorb and the EMiC2 filter was also associated with a rapid reduction of myoglobin plasma levels as a result of myositis-associated rhabdomyolysis
- For the treating physicians, this was the 2nd case with an excellent experience using CytoSorb in a patient with fulminant septic shock
- Handling of the adsorber was easy and safe