First description of single-pass albumin dialysis combined with cytokine adsorption in liver failure and hemophagocytic syndrome resulting from generalized herpes simplex virus 1 infection

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This case study reports on a 50-year-old immunocompetent woman who was admitted to hospital for acute hepatitis with acute liver failure.

Case presentation
- Liver biopsy revealed acute liver cell necrosis due to herpes simplex virus type 1 (HSV-1)
- Despite antiviral therapy liver failure progressed and patient was transferred to ICU
- Rapid development of MOF with hepatic coma, severe coagulopathy, acute anuric renal failure, respiratory insufficiency and arterial hypotension
- Patient was listed for highly urgent liver transplantation
- Additional diagnosis of hemophagocytic lymphohistiocytosis (HLH), secondary to HSV-1-infection
- Hemodialysis and extracorporeal liver support were initiated using MARS ® -therapy (6 hours 1 st day, 19 hours 2 nd day)
- Increasing need for NE and excessively elevated concentrations of inflammatory markers indicated ongoing severe SIRS
- Hence extracorporeal therapy was changed to CVVHD with SPAD (12 hours of treatment)

Treatment
- One session of CytoSorb treatment was performed with a treatment duration of 20 hours
- CytoSorb was integrated in a predialyzer position
- Regional anticoagulation was performed using sodium citrate

Measurements
- Need for vasopressors
- IL-6, bilirubin

Results
- IL-6 levels fell from 81059 pg/ml to 17177 pg/ml after 12 hours of treatment
- Noradrenaline dosage was reduced to 0.25 µg/kg/min
- No further clinical deterioration of the patient
- Antiinfective therapy was conducted with Acyclovir, with no reported adaption of dosage during CytoSorb treatment
- Reduction of the moderately elevated bilirubin with SPAD + CytoSorb

Patient Follow-Up
- Successful OLT on 4th day on ICU
- Further improvement after OLT

Conclusions
- First report of the combined use of CytoSorb with SPAD in a patient suffering from ALF and probable HLH with severe SIRS listed for liver transplantation
- Major results of the intervention were a marked decrease of IL-6, and bilirubin, as well as a reduction of vasopressor need
- Treatment was safe and well-tolerated, without any adverse events
- Existing liver support technique (MARS ® treatment) had no effect on the reduction of bilirubin
- CytoSorb might be a useful tool for patients with acute liver failure and severe hyperinflammatory syndromes