

Use of CytoSorb in severe sepsis after hemicolectomy and anastomosis dehiscence

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This case study reports on a 80-year-old female patient (previous medical history of: arterial hypertension, coronary heart disease, atrial fibrillation, NIDDM II, aortic stenosis, peripheral vascular disease, chronic renal failure III), who was admitted to hospital for elective right-sided hemicolectomy for colon carcinoma.

Case presentation

- Admission to normal surgical ward for scheduled operation and subsequent postoperative transfer to intensive care unit
- Her stay on ICU was complicated by secondary bleeding on the 1st postoperative day necessitating an immediate re-laparotomy with removal of hematoma
- After a short stay in ICU, transfer to the normal surgical ward for further treatment for a total of 10 days
- On the 10th day, acute deterioration of her general condition, diagnosis of severe sepsis after anastomosis dehiscence with fecal peritonitis
- Immediate surgical care with re-laparotomy, anastomotic resection, installation of a new anastomosis, lavage and drainage
- Antibiotic therapy initially with tazobactam/piperacillin and after microbiological findings were available, changed to meropenem/echocantine (gram-negative sepsis)
- 8 days later again deterioration with re-laparotomy and placement of a terminal ileostoma and abdominal dressing (VAC treatment for wound closure)
- Retransfer to ICU, orotracheally intubated, mechanically ventilated, noradrenaline-dependent with doses of 0.5-0.83 µg/kg/min at a heart rate of 90-140/min and a blood pressure of 80/45 mmHg, which improved to 110/60 mmHg with noradrenaline
- At this point she exhibited highly elevated inflammatory parameters (CRP 33.7 mg/l, leukocytes 28.400/µl, PCT 75 ng/ml)
- Additional impairment of renal function: GFR 14.7 ml/min
- Due to her acute-on-chronic renal insufficiency as well as her hemodynamic instability and the increased inflammatory markers, the decision was made to initiate CytoSorb as an adjunctive therapy together with CVVHD

Treatment

- Two treatments with CytoSorb for a total treatment time of 66 hours (1st and 2nd treatment for 24 hours each, treatment pause of 18 hours between both treatments)
- CytoSorb was used in conjunction with CRRT (Multifiltrate, Fresenius Medical Care) performed in CVVHD mode
- Blood flow rate: 150 ml/min
- Anticoagulation: citrate
- CytoSorb adsorber position: pre-hemofilter

Measurements

- Demand for catecholamines
- Renal function (GFR, excretion)
- Inflammatory parameters (CRP, PCT, leucocytes)

Results

- Hemodynamic stabilization with a significant reduction in catecholamine doses –norepinephrine doses could be reduced to 0.09-0.2 µg/kg/min during both treatments, patient was free from catecholamines 96 hours after completion of both CytoSorb treatments
- Clear reduction of inflammatory parameters under CytoSorb therapy (CRP 10.38 mg/l, leucocytes 14.500/µl, PCT 22.5 ng/ml)
- Clear improvement in kidney function: GFR from 14.7 to 45.6 ml/min

Patient Follow-Up

- Termination of renal replacement therapy 2 days after the last CytoSorb treatment, recovery of diuresis to initial quantity 7 days after the last CytoSorb treatment
- Weaning and extubation successful 6 days after CytoSorb application
- 11 days after the CytoSorb application, the patient could be transferred to the normal surgical ward
- Over the following days the patient was clinically stable, awake, adequately alert, mentally appropriate, and with complete oral nutrition
- Final surgical healing successful following installation of a terminal ileostoma

CONCLUSIONS

- The treatment with CytoSorb resulted in stabilization of vital functions (improvement in the circulatory and renal function) as well as declining doses and finally complete cessation of catecholamines
- CytoSorb was safe and easy to use