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CytoSorb in treatment of abdominal septic shock secondary to ileum necrosis after hemicolectomy

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This case study reports on a 76-year-old female patient, who was admitted to the ICU with septic shock after undergoing video-assisted dextral hemicolectomy to surgically treat a colonic carcinoma two days previously.

Case presentation

- On admission the patient presented with dyspnea, progression of enteroparesis, mental distress, pronounced arterial hypotension (arterial pressure 80/30 mmHg), and respiratory distress (pO2 74 mmHg, pCO2 33 mmHg)
- Venous blood tests showed further signs of ongoing severe systemic inflammation (leucocyte count of 11,000/µl, CRP 183 mg/l, PCT > 10 ng/ml), metabolic acidosis (lactate 5.1 mmol/l, pH 7.336, BE -6.7, HCO3 18.0 mmol/l) as well as an impairment in renal function (oliguria, creatinine 213 µmol/l, urea 10 mmol/l)
- Antibiotic therapy was initiated with meropenem and vancomycin
- The patient was intubated and ventilated and measures for hemodynamic stabilization were commenced (fluid management 30 ml/kg/hr and continuous norepinephrine infusion of 0.5 µg/kg/min)
- Subsequent re-laparotomy showed ileum necrosis and fecal 4-quadrant peritonitis. Patient had resection of ileum and transverse colon with abdominal lavage and drainage
- Due to persisting septic shock and acute kidney injury, continuous renal replacement therapy was started 6 hours after the re-laparotomy and, in addition, a CytoSorb adsorber was added into the CRRT circuit

Treatment

- One treatment with CytoSorb for a total treatment time of 24 hours
- CytoSorb was used in conjunction with CRRT (Diapact, BBraun) performed in CVVHDF mode
- Blood flow rate: 150-200 ml/min
- Anticoagulation: nadroparin (1.2 mg for total procedure)

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Measurements

- Hemodynamics: need for catecholamines
- Lactate level
- Respiration: FiO2/pO2
- Systemic inflammation parameters: leucocytes, CRP, procalcitonin
- Renal function: creatinine, urea, diuresis

Results

- Rapid and clear hemodynamic stabilization with discontinuation of norepinephrine support already after the first treatment
- Reduction in lactate to normal levels during the single treatment session
- Ventilation parameters markedly improved as evidenced by an increase in oxygenation index, lung infiltrates radiologically decreased
- Systemic inflammation markers concentration could be significantly reduced
- Resolution of acute kidney injury including a restoration of diuresis and a decrease of uremia

Parameters	Before CytoSorb	25 hrs after CytoSorb start
Noradrenaline infusion, µg/kg/min	0.5	discontinued
Lactate, mmol/l	5.1	1.9
FiO_2/pO_2, mmHg	182	325
Leucocytes, $*10^3/\mu l$	11	9.0
CRP, mg/l	183	73
PCT, ng/ml	10	2
Creatinine, µmol/l	213	110
Urea, mmol/l	15	10
Diuresis, ml/kg/hr	0	1.5

Patient Follow-Up

- Within the following 24 hours a "second look" surgery was carried out, confirming the resolving abdominal inflammation
- After 3 days the patient could be extubated and after 10 days she was transferred to the general ward
- The patient was discharged on day 27 of the total hospital treatment

CONCLUSIONS

- **According to the medical team, CytoSorb not only complemented but also optimized the abdominal septic shock therapy in this case and helped to regain control over hemodynamics, ARDS, systemic inflammation and acute kidney injury**
- **Cytosorb therapy was easy to use and safe for the patient**