

Use of CytoSorb in a patient with septic shock after anastomosis insufficiency with abscess following pancreatic resection

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This case reports on a 76-year-old male patient, who was admitted to the emergency department two weeks after an elective and initially complication-free pancreas resection with acute abdomen, signs of shock, and progressive somnolence.

Case presentation:

- The patient had already been complaining about a progressive deterioration of his general condition and abdominal discomfort for 2 days
- Also over the following day the patient was in a clearly reduced general condition with signs of circulatory depression, hypovolemia, fever, tachycardia and dyspnea at rest
- Following the indication for emergency laparotomy the patient was transferred to the intensive care unit for stabilization and preparation for surgery
- Intraoperatively, an anastomosis insufficiency with abscess as a result of the previous pancreas resection was observed
- Start of a high-dose catecholamine therapy during the operation with continuation also in the postoperative phase. A further deterioration of his overall clinical condition also required prolonged ventilation after surgery. Broad-spectrum antibiotic therapy with imipenem was started accompanied by the application of mycafungin
- Over time, the patient developed an absolute tachyarrhythmia with atrial fibrillation, after which he was cardioverted followed by treatment with amiodaron
- The patient showed significantly increased inflammatory parameters (IL-6 444 pg/ml, PCT 289 ng/ml) and pronounced myoglobinemia (1130 µg/l)
- In the following hours, however, his renal function worsened with the necessity for establishing continuous renal replacement therapy (CRRT)
- Due to progressive multiple organ dysfunction and septic shock with a pronounced hyperinflammatory component and hemodynamic instability, a CytoSorb hemoadsorber was additionally installed into the CRRT circuit

Treatment

- Two consecutive treatment sessions with CytoSorb for 24 hours each
- CytoSorb was used in combination with CRRT (Prismaflex, Gambro) run in CVVHD mode
- Blood flow rate: 100 ml/h
- Anticoagulation: citrate and prophylactically heparin (10,000 IU/24 h)
- CytoSorb adsorber position: post-hemofilter

Measurements

- Hemodynamics and need for catecholamines
- Inflammatory parameters
- Lactate
- Myoglobin plasma concentrations

Results

- Treatment was associated with clear and rapid hemodynamic stabilization. The initial norepinephrine dose of 2 mg/h could be halved after only 24 hours and was finally stopped 48 hours after the start of CytoSorb therapy
- Treatment further resulted in control of the hyperinflammation accompanied by a significant reduction in inflammatory parameters during therapy (PCT from initial 286 ng/ml to 49 ng/ml after 24 hours and to 16 ng/ml after 48 hours, IL-6 from initial 444 pg/ml to 56.6 pg/ml after 48 hours)
- Normalization of plasma lactate concentrations could be achieved while CytoSorb therapy was still running, after that values continued to fall
- Myoglobin plasma levels could be also reduced from 1130 µg/l to 187 µg/l during the course of the two treatments

Patient Follow-Up

- Discontinuation of renal replacement therapy 3 days after the last CytoSorb treatment. However, a few days later, another renal replacement therapy cycle had to be started as renal function was still impaired
- Delayed weaning from mechanical ventilation 7 days after the last CytoSorb treatment due to delirium and persistent weakness of the patient
- During his follow-up the patient developed a critical illness polyneuropathy and myopathy
- 17 days after initial admission, the patient was transferred to the normal ward with stable hemodynamics, without fever and restored kidney function
- Another 3 weeks later he was then transferred to a geriatric facility in a clinically stable condition

Conclusions

- The use of CytoSorb in this patient with septic shock after anastomosis insufficiency with abscess following pancreatic resection was associated with a rapid hemodynamic stabilization, improvement in metabolic acidosis, control of the hyperinflammatory situation and a sustained reduction of myoglobin levels
- According to the medical team, the extremely critical clinical situation could be very well stabilized under adjuvant CytoSorb therapy with a rapid response to the treatment. They also state that CytoSorb may have contributed significantly to the good outcome of the patient
- CytoSorb was complication-free, safe and easy to use together with continuous renal replacement therapy