

Use of CytoSorb in a patient with puerperal septic shock and multiple organ failure following cesarean section with subsequent peripartum cardiomyopathy

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The following report describes the case of a 31-year-old female patient who was transferred from a peripheral hospital to the Medanta hospital with the diagnosis of peripartum cardiomyopathy.

Case presentation:

- At the local hospital, she had undergone cesarean section followed by the development of high fever and decreased urine output progressing to anuria. Due to increasing breathlessness, the patient had to be intubated and mechanically ventilated with a PEEP of 14 mmHg (FiO₂ of 0.7). Furthermore, she required catecholamine support for hemodynamic stabilization
- On admission to the Medanta hospital, the patient was on high-dose vasopressor support (norepinephrine 2 µg/kg/min, vasopressin 0.3 IE/h) and so she was transferred directly to the intensive care unit (ICU) for close monitoring and management
- Intravenous antibiotic therapy including meropenem, teicoplanin, and polymyxin-B along with supportive drug therapy was commenced
- Furthermore, due to persisting renal failure, the patient also required renal replacement therapy in the form of sustained low-efficiency dialysis (SLED)
- Liver failure was evident as indicated by elevated bilirubin (18 mg/dL) and liver enzymes (GOT 480 U/L, GPT 273 U/L)
- She was given a platelet transfusion to address the severe thrombocytopenia (34 x 10³/µL)
- The patient was diagnosed with having puerperal sepsis post lower (uterine) segment cesarean section as well as septic shock with multiple organ dysfunction syndrome (MODS)
- With the rationale to stabilize the critical situation in the context of septic shock with severe hemodynamic instability and multiple organ failure, the decision was made to integrate a CytoSorb adsorber into the running dialysis circuit on day 1 after admission

Treatment:

- The patient received one treatment with CytoSorb for 8 hours
- CytoSorb was used in conjunction with SLED (Multifiltrate, Fresenius Medical Care)
- Blood flow rate: 120 ml/min
- Anticoagulation: No anticoagulant was used
- CytoSorb adsorber position: pre-hemofilter

Measurements:

- Hemodynamic stabilization and catecholamine requirement
- Inflammatory response
- Renal function
- Liver function
- Respiratory parameters

Results:

- After completion of CytoSorb therapy, hemodynamics had stabilized accompanied by a decrease in catecholamines demand (norepinephrine 0.05 µg/kg/min) while vasopressin support had already been discontinued during treatment
- Control of the hyper-inflammatory response indicated by platelet count (127 x103/µL) as well as leucocyte count within normal range
- Creatinine levels gradually decreased to 1.10 mg/dL after the treatment followed by signs of renal recovery
- Throughout the treatment total bilirubin levels could be significantly reduced and subsequently reached levels of 0.8 mg/dL
- Respiratory parameters improved as evidenced by a decrease in FiO₂ to 0.4 and a reduction in PEEP to 6 mmHg

Patient follow-up:

- Over time, norepinephrine infusion could be reduced and finally tapered off
- One single dialysis session was required post CytoSorb treatment in view of still slightly deranged kidney function tests
- The patient was extubated on day 4 of ICU admission and was subsequently put on non invasive BiPAP support
- Chest X-ray showed a decrease in bilateral infiltrates
- Finally, she was transferred to the normal ward on day 7 and discharged home 5 days later

Conclusion:

- Treatment with CytoSorb therapy in this patient with puerperal septic shock and multiple organ failure following cesarean section with subsequent peripartum cardiomyopathy was associated with a significant improvement in hemodynamics, a control of the inflammatory response as well as an improvement in renal and liver function
- CytoSorb appears to be a promising therapy for preventing progression of organ failure and treating sepsis
- Application of CytoSorb was safe and easy with no adverse events occurring during or after treatment