

Use of CytoSorb in a case of toxic shock syndrome

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This case study reports on a 17-year-old male who reported to the pediatrician at a local rural hospital with complaints of pretibial pain in his right leg, after he accidentally cut his leg while in the fields a few days earlier.

Case presentation

- Diagnosis of a phlegmon with an abscess followed by surgical debridement with wound nettoyage with no clinical signs of subcutaneous emphysema or necrotising fasciitis
- Postoperatively the patient's condition deteriorated and after admission to ICU he developed erythema, spreading from the right lower leg to the right upper leg, abdominal wall and the left leg, consistent with toxic shock syndrome
- Development of septic shock due to invasive *S. aureus* infection with respiratory failure, hemodynamic instability treated with vasopressors, hydrocortisone, antibiotic therapy
- Due disease severity, CRRT was initiated with a CytoSorb adsorber with the only goal to remove cytokines (despite absence of acute kidney injury and no need/indication for renal replacement therapy)

Treatment

- Cytosorb was used in conjunction with CRRT (Baxter HF 19 Aquamax)
- One treatment was performed for 24 hours in total
- Blood flow rate between 240 ml/min
- Regional anti-coagulation was achieved using a citrate-based protocol

Measurements

- Need for norepinephrine throughout the treatment period
- CRP, hemoglobin, Hct, MCV (fl), thrombocytes, leucocytes, INR, aPTT, Urea, Crea, Phosphate, Bilirubin, Gamma GT, Alkaline phosphatase, ALAT, ASAT, LDH, Creatine kinase, Albumin, Lactate, pCO₂, pO₂ HCO₃⁻, Base excess, Saturation, SvO₂, PaO₂:FiO₂ ratio

Results

- Within six hours after start of CytoSorb therapy, the erythema progression stopped and after 12 hours the need for vasopressors diminished
- After 24 hours, vital signs were: sinus tachycardia (112 beats/min), blood pressure 117/49 mmHg without vasopressors, no more fever
- The erythema diminished after a few hours and had disappeared after 24 hours

Patient Follow-Up

- After cessation of CytoSorb diuretics were started because of fluid overload
- Respiration improved, the ventilator support was diminished and the patient was extubated on day 5 after admission, within 72 hours of cessation of CRRT
- On day 6, patient was transferred back to the local hospital for further revalidation

CONCLUSIONS

- The progression of the erythema, together with that of the respiratory and circulatory failure, seemed to stop after six hours of CytoSorb therapy
- The reduction in the erythema after the start of CytoSorb was remarkable and the need for vasopressors stabilized and decreased within six hours after initiation
- In the authors opinion, the patient would have survived without CytoSorb, but they feel that his stay in the ICU might have been shortened by the CytoSorb adsorber
- Randomized controlled trials will have to be performed to find out whether the theoretical beneficial effects of CytoSorb are clinically relevant, as well as the possibilities of unwanted side effects
- Although the clinical value still has to be established, the first experiences with the CytoSorb adsorber are promising and justify further investigation