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SEPTIC ABORPTION-INDUCED AKI: EXTRACORPOREAL CYTOKINE REMOVAL IN AN UNUSUAL CLINICAL CONTEXT

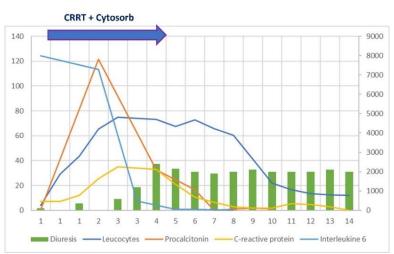
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Background: Pregnancy-related acute kidney injury (PR-AKI) is associated with high maternal and foetal morbidity and mortality. The changing landscape of epidemiological characteristics of the pregnant population has impacted the incidence, etiology and outcomes of PR-AKI: septic abortion, even if rarely observed in Western Countries, may lead to renal cortical necrosis.¹ Sepsis mortality is attributable not only to the infection per se but rather from overwhelming inflammatory response. In this context, proinflammatory mediators reduction by hemoadsorption has been proven to be helpful². We applied extracorporeal cytokine adsorption with the CytoSorb cartridge in addition to regular therapy with the aim of a better management of septic shock ³. This is a biocompatible, highly porous polystyrenedivinylbenzene copolymer beads which can adsorb a broad spectrum of hydrophobic compounds with a molecular weight between 10 and 55 kDa, a range where most cytokines reside. Along with the effective removal of inflammatory mediators, the most prominent effect observed with the use of CytoSorb combined with CRRT is the improvement in hemodynamics accompanied by a reduction in vasopressor doses ⁴.

Methods: case report: The report describes the case of a 31-year-old female patient admitted to Emergency Room of Metropolitan Hospital "Ospedale Maggiore" of Bologna (Italy) complaining cough and fever for two days. An hypertensive state (AP 130/100 mmHg) was documented. After a few hours she developed an intense abdominal pain and, during clinical observation, she delivered a stillborn foetus, presumably in the fifth month of pregnancy. In the following hours she showed a severe worsening of clinical condition until severe shock and overt coagulopathy overcame, causing petechiae on her face and both superior arms. She underwent an urgent radical hysterectomy and bilateral salpingectomy. After the intervention, she was admitted to Intensive Care Unit. Inotropic support trough first and second line of vasopressors was started together with empirical antibiotic therapy with Ceftriaxone, Metronidazol, Levofloxacin (for meningococceal sepsis suspicion), then shifted to Amikacin and Piperacillin/Tazobactam, according to E. Coli blood colture isolation of. In this clinical context, she developed persistent anuria even though fluid replacement therapy and inotropic support were administered; CRRT treatment therefore started. Extracorporeal cytokine adsorption with CytoSorb (2 cartridge, used each for a 24 h cycle) were then combined as an adjuvant therapy in managing cytokines storm, typical of septic state. The adsorptive column was installed in series into the CVVHDF circuit.

Results After 4 days, patient's clinical condition noticeably improved, haemodynamic stability was reached, a valid diuresis could be documented, and a normalization of blood count (leucocytosis, anemia and piastrinopenia improved) and reduction of inflammatory markers could be documented (reduction in CRP, procalcitonin and IL6 levels, disappearance of fever) (main results on Table). The patient was then discharged from ICU. After 14 days, the patient showed a complete recovery of AKI and a complete resolution of infection.



Conclusion Even though septic aborption is very rare in Developed Countries, it is associated with an high risk of mortality; early treatment is

associated with better outcomes and an higher likelihood of complete recovery of renal function. Along with aggressive therapy with fluid infusion, resuscitation support, vasopressors and broad-spectrum antibiotics, an efficient removal of inflammatory mediators is helpful in blocking inflammatory cascade and therefore organ-specific damage. Multidisciplinary medical team is always the best approach to critical patient with challenging clinical state.

- 1. Bhaduaria, D. et al. Acute cortical necrosis in pregnancy still an important cause for end-stage renal disease in developing countries. Saudi J. Kidney Dis. Transpl. 30, 325-333 (2019).
- 2. Monard, C., Rimmelé, T. & Ronco, C. Extracorporeal blood purification therapies for sepsis. Blood Purif. 47, 2–15 (2019).
- 3. Leonardis, F. et al. Effect of Hemoadsorption for Cytokine Removal in Pneumococcal and Meningococcal Sepsis. Case Reports Crit. Care 2018, 1-7 (2018).
- 4. Kogelmann, K., Jarczak, D., Scheller, M. & Drüner, M. Hemoadsorption by CytoSorb in septic patients: A case series. Crit. Care 21, 1-10 (2017).

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