

CYTOKINE HEMOADSORPTION IN THE TREATMENT OF A POSTPARTUM WOMAN WITH COVID-19 PNEUMONIA

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Objective:

It has been suggested that pregnancy induced immune response increases the risk for severe illness and death with COVID-19. Pregnant women who have COVID-19 appear more likely to develop respiratory complications requiring intensive care. Cytokine storm is a critical factor in Acute Respiratory Distress Syndrome (ARDS) development, the most severe presentation of COVID-19. We present a patient in whom a cytokine adsorbing filter was used with the aim to reduce pro-inflammatory cytokine level.

A 35-year-old woman was admitted to the Emergency Department, pregnant at 31+5 weeks of gestation. Rapid antigen test from a nasopharyngeal swab was positive for SARS-CoV-2. On admission, the patient described a five-day history of shortness of breath and fever. The patient had also noticed reduced fetal movements for the last two days. Obstetric examination, including cardiotocography (CTG) and abdominal ultrasound, showed no abnormalities. The patient oxygen



saturation was 88%, blood pressure 135/80 mmHg, the pulse beats 122/minute and temperature 37.7 degrees Celsius (°C). Her condition deteriorated on day two, and she required invasive mechanical ventilation. Blood test results showed that her white blood cell count was $9.0x10^9$/L, the neutrophil ratio was 84.0%, lymphocyte count was $1.26x10^9$/L and C-reactive protein was 223.5 mg/L. Chest X-ray showed bilateral patchy infiltrates. Since the patient's general condition had worsened, a decision was made to deliver by Caesarean section on the third day. An uncomplicated operation was completed, and the patient returned to the intensive care unit and was placed in a completely prone position for alveolar recruitment. She was treated with Remdesivir and corticosteroids. The progression of the patient's COVID disease prompted us to initiate cytokine filter therapy. Since the pathogenic mechanism of ARDS is an uncontrolled inflammatory state, we speculated that removing inflammation effectors from blood may contrast tissue injury and improve the clinical outcome of our patient. Hemoperfusion was delivered for 72 h. Soon after initiation of the filter, chest X-ray showed improved aeration. Laboratory results were monitored daily as well, and a significant decrease in inflammatory parameters was observed.

CytoSorb is an extracorporeal cytokine adsorber designed to reduce cytokine storm and other inflammatory mediators in the blood that could otherwise lead to uncontrolled systemic inflammation, organ failure, and death in many life-threatening illnesses. We believe that the presented case will encourage the early application of cytokine filter therapy in severe COVID-19 patients.