

HEMOADSORPTION WITH CYTOSORB (R) IN SMALL CHILDREN – REPORT OF THREE CASES

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Introduction

Cytosorb(R) is widely used for removal of inflammatory mediators and other endo- and exogenous molecules in adult population. We present our experience with CytoSorb(R) use in small children, treated in pediatric intensive care unit of University Medical Centre Ljubljana between 2018-2020.

Case reports

All children received hemoadsorption with CytoSorb(R) coupled with continuous venovenous hemodialysis (CVVHD, Prismaflex system, Gambro) in pre-filter (ST60 set, Gambro) position, after standard treatments for their underlying conditions had been insufficient. Extracorporeal circuit was prefilled with a 1:1 mixture of packed red blood cells and saline, with heparine added. Automated regional citrate anticoagulation was used, blood flow was 30-100 ml/min and dialysate flow 500 ml/h.

The youngest child was 10 days old, 1.9 kg premature female with an acute liver failure due to gestational alloimmune liver disease. CVVHD was started for hyperammonia and CytoSorb(R) for hyperbilirubinemia. Normalization of ammonia and reduction of bilirubin was achieved, but treatment was discontinued after 6 hours due to uncontrollable sepsis and hemodynamic collapse. Because of irreversible multiorgan failure further treatment was withdrawn.

The second child was 3 years old, 17 kg male with meningococcal sepsis. Venoarterial extracorporeal membrane oxygenation (VA-ECMO) was started due to septic shock and Cytosorb with CVVHD was attached to the ECMO circuit. A significant decline of interleukine-6 (IL-6) was achieved without procedure-related side effect and the procedure was discontinued after 68 hours because of an improvement in patient's clinical status.

The third child was 1 year old, 15 kg male with Wiskott-Aldrich syndrome, graft-versus-host disease after allogeneic bone marrow transplant and Staphylococcus aureus sepsis. CVVHD was started due to hypervolemia and CytoSorb(R) was added after cytokine storm was diagnosed. IL-6 levels decreased significantly, but refractory hypotension persisted despite triple vasoactive support and the procedure was discontinued after 47 hours due to asystole.



Conclusions

Performing CytoSorb adsorption in small children is challenging, since large extracorporeal volume can contribute to hypotension at the time of connection or during the procedure. With skilled dialysis and intensivists teams, treatment with CytoSorb is feasible even in very small children. The overall outcome is relatively poor and related to severe underlying conditions.

