

Adjunctive CytoSorb® Hemoadsorption in H1N1-Related Respiratory Failure

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Introduction

H1N1 virus is a significant cause of respiratory infections, capable of progressing to severe viral pneumonia and acute respiratory distress syndrome (ARDS) in vulnerable populations. In critical cases, the host immune response may trigger a hyperinflammatory state, contributing to respiratory failure and multiorgan dysfunction. CytoSorb®, an extracorporeal cytokine hemoadsorption device, has emerged as a potential adjunctive treatment in critically ill patients experiencing systemic inflammation. By reducing circulating levels of pro-inflammatory cytokines, CytoSorb® aims to restore immune homeostasis and improve organ function.

Methods

We report the case of a 49-year-old patient admitted for H1N1 virus positivity and acute respiratory failure (P/F 84 mmHg). The patient required invasive mechanical ventilation and developed hyperinflammation, associated with hemodynamic instability (Norepinephrine 0.2 mcg/kg). CytoSorb® treatment combined with continuous veno-venous hemodialysis (CVVHDF) was administered, with three cartridges in two days, which led to stop the administration of vasopressors. Three days later, due to respiratory worsening (P/F 60 mmHg, and pronation necessity), a second cycle of CVVHDF plus CytoSorb® was started, for two days.

Results

During the first cycle, the patient showed respiratory recovery with haemodynamic stabilization (stop of norepinephrine on the first day), allowing the patient to recovery from pronation. On second cycle, patient showed a gradual reduction of cytokines and inflammatory markers (IL-6 from 86.5 pg/mL to <2 pg/mL; PCR from 12.2 mg/L to 2.99 mg/L), sign that hemadsorption therapy was working, concomitant with White Blood Cells decrease. gradual weaning from mechanical ventilation and transfer to the medical ward.

Conclusion

The second cycle of CytoSorb® treatment was necessary due to respiratory deterioration after the first cycle, suggesting that in some patients with severe H1N1 virus and persistent hyperinflammation, multiple hemoadsorption sessions may be required to achieve effective modulation of the inflammatory response.

In this case, CytoSorb® proved to be a valuable and well-tolerated adjunctive therapy, contributing to a clear clinical and biochemical improvement. Its use supported the resolution of the hyperinflammatory state and the recovery of respiratory function. These observations reinforce the potential role of CytoSorb® in the management of critically ill H1N1 patients, particularly when conventional therapy alone is insufficient to control inflammation.