

Hemodynamic and Metabolic Impact of CytoSorb in ECMO-Supported Patients

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Introduction

In the cardiothoracic intensive care setting, patients receiving extracorporeal membrane oxygenation (ECMO) often present severe inflammatory responses and multi-organ dysfunction, for which hemofiltration has emerged as a potential adjunctive therapy to modulate the inflammatory milieu and support hemodynamic stability. The aim of this study was to assess the efficacy of hemofiltration using CytoSorb in terms of clinical outcomes and mortality.

Methods

Demographic data and hemodynamic parameters were retrospectively collected from patient records. Baseline data included patient demographics, reason and dates of ICU admission and discharge, as well as the start date and duration of CytoSorb therapy. Data were recorded at ICU admission, at baseline (prior to CytoSorb initiation), and 24 hours after therapy. The vasoactive inotropic score (VIS) was used to objectively quantify the level of hemodynamic support required.

We included 11 ECMO-supported patients (64% male) with a mean age of 55 ± 9 years at the time of ICU admission. The patients were admitted to the ICU: post-valve replacement (36%); post-endovascular pulmonary artery intervention (27%); and chronic thromboembolic pulmonary hypertension (18%). The remaining two patients were admitted to the ICU for acute respiratory failure due to pneumonia and post-bilateral lung transplantation.

Results

The mean length of stay (LoS) was 46 ± 26 days, and the ICU mortality rate was 36%. A total of 55% of patients demonstrated a reduction in VIS and lactate levels 24 hours after CytoSorb therapy, suggesting a positive clinical response with decreased need for inotropic and vasopressor support. However, a subset of patients showed an increase in VIS and lactate levels at 24 hours, indicating hemodynamic deterioration or lack of treatment efficacy. No CytoSorb-related complications were observed.

Conclusion

These preliminary data suggest a potential benefit of CytoSorb use in ECMO patients in the cardiothoracic ICU setting across different admission diagnoses, particularly in terms of reducing VIS and lactate levels. However, the heterogeneity of the study population and the presence of numerous confounding variables limit the ability to draw definitive conclusions. Further studies involving more homogeneous patient populations are needed to better evaluate the clinical impact of CytoSorb therapy and to clarify its role within specific diagnostic subgroups.