

Extracorporeal Blood Purification with CytoSorb® in Patients with Shock: Standalone Circuit Configuration Versus Integrated Use Within Extracorporeal Membrane Oxygenation

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Introduction

Extracorporeal hemoadsorption with CytoSorb® is being increasingly adopted in different critically ill settings to allow for both enhanced organ protection and control of inflammation derangement. We evaluated the characteristics and performances of two different CytoSorb® circuit configurations to generate data that may contribute to optimize and inform clinical practice.

Methods

We performed a secondary analysis of the largest currently available cohort of critically ill patients undergoing extracorporeal hemoadsorption with CytoSorb® at a referral center (doi: 10.1159/000530872). Data from 148 patients (41%) receiving CytoSorb® as a standalone circuit were compared to data from 211 patients (59%) who had the CytoSorb® cartridge integrated within the ECMO circuit.

Results

Patients with concomitant ECMO were admitted to ICU mainly for cardiac arrest or cardiogenic shock (73.9%) and underwent hemadsorption with CytoSorb® to mitigate inflammatory derangement, while patients without contemporary ECMO were admitted for either cardiogenic shock or after cardiac surgery (77.3%) and the prevalent indication for CytoSorb® treatment was hyperbilirubinemia ($p < 0.001$). Patients in the ECMO group exhibited more severe shock and higher inotropic load at baseline (20 (10-35) vs 15 (5-30), $p = 0.001$). 80.3% were administered renal replacement therapy, with a prevalence in patients undergoing concomitant ECMO ($p < 0.001$). Patients received a median of 2 CytoSorb® cartridges within a single cycle. The duration of each cartridge and CytoSorb® efficacy, as documented by improvement in shock and organ failure laboratory parameters and inotropic score reduction (Figure 1), was comparable in both groups. ICU and hospital survival were higher in patients treated with CytoSorb® as a standalone circuit (54.1% vs 34.1%, $p < 0.001$ and 49.3% vs 30.8%, $p < 0.001$, respectively) (Figure 1).

Conclusion

CytoSorb® treatment proved safe and effective in both configurations. Despite great inter-group diversity at baseline and in their clinical outcomes, the choice of CytoSorb® configuration had no impact on cartridge performance and duration.

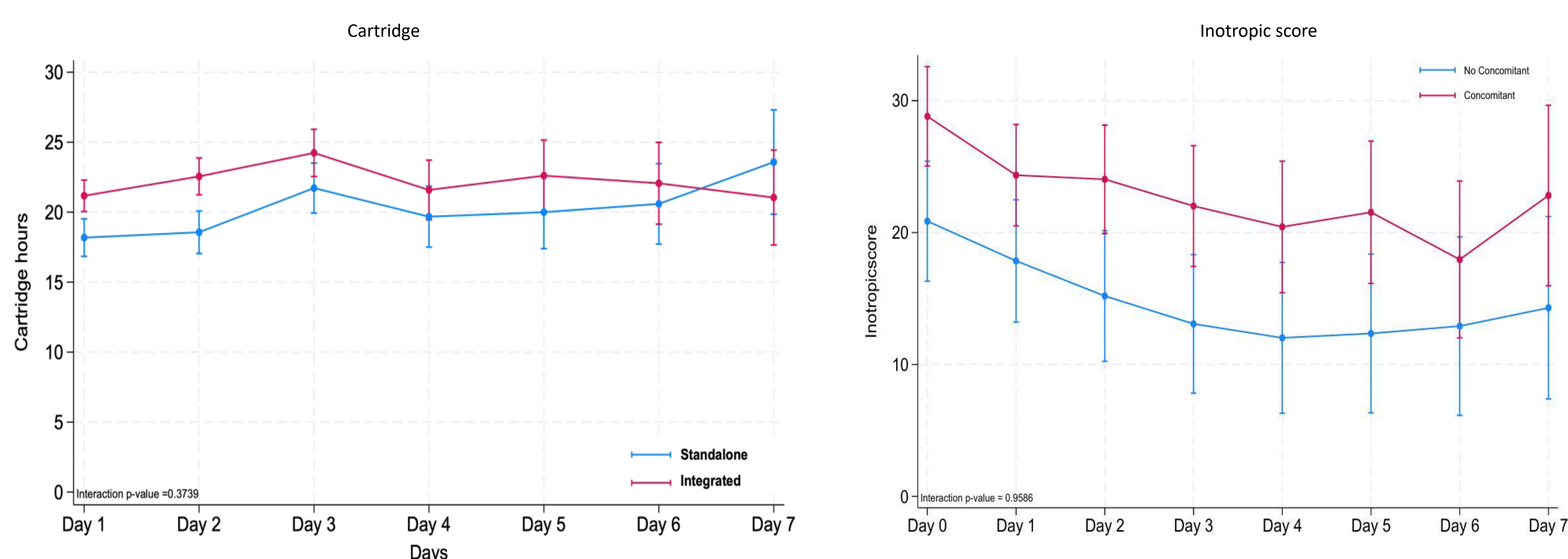


Figure 1: Comparison of cartridge duration and inotropic score variation during CytoSorb treatment between the two groups under study