ECMO

CytoSorb®

Clinical Evidence for CytoSorb® Therapy in ECMO

Name	Title	Aim	Number of patients	Type of study	Outcome
Hayanga et al., Crit Care; 27(1):243	Extracorporeal hemoadsorption in critically ill COVID-19 patients in VV ECMO: The CytoSorb® Therapy in COVID-19 (CTC) Registry	Final report from CTC Registry from 5 US centres in patients on veno-venous extracorporeal membrane oxygenation (VV ECMO) and CytoSorb® for COVID-19 related acute respiratory distress syndrome (ARDS)	100	Registry	This multicentre registry is the largest systematically collected dataset looking at use of CytoSorb® in VV ECMO patients. Results confirm that the approach is easy-to-implement, safe, and associated with high survival rates (74% at 90 days compared to ELSO registry data 52%). Early start may improve outcomes by reducing organ support requirements and length of ICU stay.
Akil et al., J Clin Med 2022; 11(20):5990	Use of CytoSorb® Hemoadsorption in Patients on Veno-Venous ECMO Support for Severe Acute Respiratory Distress Syndrome: A Systematic Review	Systematic review of all published data reporting on the use of CytoSorb® in patients with acute respiratory distress syndrome (ARDS) and veno-venous extracorporeal membrane oxygenation (vvECMO)	N/A	Systematic Review	Despite low patient numbers, there was a trend towards effective inflammatory biomarker reduction, decreased vasopressor dosage and improved lung function. Exploratory analyses suggest that these clinical benefits may also translate into lower mortality. Early initiation of CytoSorb® in the ECMO circuit might offer a new approach to enhance lung rest and promote recovery in these difficult to treat patients.
Soltesz et al., J Clin Med 2022; 11(21):6517	Influence of Venoarterial Extracorporeal Membrane Oxygenation Integrated Hemoadsorption on the Early Reversal of Multiorgan and Microcirculatory Dysfunction and Outcome of Refractory Cardiogenic Shock.	Patients with refractory cardiogenic shock on vaECMO with or without integrated CytoSorb® were propensity matched to compare rates of reversal of multiorgan and microcirculatory dysfunction, and early mortality.	58 (29 versus 29)	Retrospective Propensity Matched Pairs	There was a lower mean sequential organ failure assessment (SOFA) score ($p = 0.04$), lactate ($p = 0.015$), P(v-a)CO2 gap ($p < 0.001$), vasoactive inotropic score ($p = 0.007$), and reduced delta C-reactive protein level ($p = 0.005$) in the CytoSorb® group after 72 hrs of therapy. In-hospital mortality was much lower than predicted in the CytoSorb® group (44.8%) with less ECMO-associated bleeding complications ($p = 0.049$). Overall, 90-day survival was better in the hemoadsorption group.

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Rieder et al., ASAIO J 2021; 67(3): 332 - 8	Cytokine adsorption in severe acute respiratory failure requiring veno-venous extracorporeal membrane oxygenation.	Patients with severe acute respiratory distress syndrome (ARDS) treated with veno-venous extracorporeal membrane oxygenation (vv-ECMO) plus CytoSorb® compared to propensity score matched patients.	18 (9 versus 9)	Registry	Survival in the CytoSorb® group was 55.6% compared to 22.2% in the control group. Need for fluid resuscitation and vasopressor support and lactate levels all significantly decreased in the CytoSorb® but not the control group.
Akil et al., Thorac Cardiovasc Surg 2021; 69(3): 246 - 251	Combined use of CytoSorb® and ECMO in patients with severe pneumogenic sepsis.	Patients with pneumogenic sepsis on high flow veno-venous extracorporeal membrane oxygenation (vv-ECMO) plus CytoSorb® compared to patients treated with ECMO alone.	20 (13 versus 7)	Prospective case series	Use of CytoSorb® resulted in a rapid and significant reduction in inflammatory markers and quicker weaning off high dose catecholamine therapy within 48 hrs.

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