CytoSorb®

Clinical Evidence in **Infective Endocarditis**



Name	Title	Aim	Number of patients	Type of study	Outcome
Haidari et al., ICV&TS 2023; 36(1):ivad010	Effect of intraoperative haemoadsorption therapy on cardiac surgery for active infective endocarditis with confirmed Staphylococcus aureus bacteraemia	Retrospective study of prospectively collected data from consecutive patients operated on for confirmed staphylococcus aureus infective endocarditis (SA-IE) from two centres, either with or without intraoperative use of CytoSorb®	130 (75 v 55)	Retrospective cohort study	Intraoperative use of CytoSorb® during cardiac surgery for SA-IE was associated with significantly lower postoperative vasopressor and inotropic requirements and resulted in lower sepsis-related and overall 30- and 90-day mortality in this high-risk population.
Rao et al., J Cardiovasc Dev & Dis 2023; 10(9):366	Hemoadsorption Using CytoSorb® in Patients with Infective Endocarditis: A German-Based Budget Impact Analysis	Theoretically investigate the budget impact of a reduced intensive care stay in infective endocarditis (IE) patients treated with intraoperative CytoSorb® in the German Healthcare System.	N/A	Cost effectiveness model	Use of intraoperative hemoadsorption resulted in 2,298€ saved per pt in the base-case scenario without reimbursement. Savings increased to 3,804€ where there was full device-specific reimbursement. Deterministic and probabilistic analyses confirmed the robustness of savings, with a probability of savings of 99% and 100% in the base-case and full reimbursement scenarios, respectively.
Haidari et al., PLoS One 2022; 17(7):e0266820	Intraoperative hemoadsorption in high-risk patients with infective endocarditis	Propensity score matched comparison of pts with high risk infective endocarditis treated with and without CytoSorb® intraoperatively	70 (35 v 35)	Retrospective cohort study	Intraoperative use of CytoSorb® significantly reduced sepsis associated mortality (4 pts versus 11 pts, p=0.041), and resulted in significantly faster recovery of hemodynamics (requirement for vasopressors and systemic vascular resistance) and organ function.
Kalisnik et al., Journal Clinical Medicine 2022; 11(14):3954	Single-Centre Retrospective Evaluation of Intraoperative Hemoadsorption in Left-Sided Acute Infective Endocarditis	Propensity score matched comparison of pts with active left sided infective endocarditis treated with and without CytoSorb® intraoperatively	198 (99 v 99)	Retrospective cohort study	Postoperative sepsis and sepsis-related mortality was reduced in the hemoadsorption group (22.2% vs. 39.4%, p = 0.014 and 8.1% vs. 22.2%, p = 0.01, respectively). In-hospital mortality tended to be lower in the hemoadsorption group (14.1% vs. 26.3%, p = 0.052). Use of CytoSorb® intraoperatively was reported to be safe and easy to use without any adjustments needed for the intraoperative anticoagulant (heparin) regime.

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Holmén et al., Journal of Cardiothoracic & Vasc Anesth 2022; 36(8 PtB):3015-3020	Whole blood adsorber during CPB and need for vasoactive treatment after valve surgery in acute endocarditis – a randomized controlled study	Randomized control trial enrolled pts with infective endocarditis requiring urgent surgery to be treated intraoperatively with either CytoSorb® or standard care.	19 (10 v 9)	RCT	At 6 hours postop the median accumulated amount of norepinephrine (NE) was 28 µg vs 82 µg, 24 hours 36 µg vs 114 µg, and 48 hours 36 µg vs 261 µg (CytoSorb® v control). Duration of NE dose was numerically longer in controls. Chest tube output at 12 hours was 305 mL vs 500 mL and 24 hours 380 mL vs 810 mL in the CytoSorb® v controls and there was a significantly lower need for red blood cells in the CytoSorb® group (285 mL vs 1940 mL, p=0.03). The amount of transfused plasma and platelets were greater in the control group with a trend towards shorter time on the ventilator, time in ICU and better renal outcome in the CytoSorb® group 48 hours after surgery.
Naruka et al., Heart, Lung & Circ 2022; 31(11):1493-1503	Use of Cytokine Filters During Cardiopulmonary Bypass: Systematic Review and Meta-Analysis	Systematic review and meta-analysis of the use of hemoadsorption during cardiopulmonary bypass	N/A	Systematic Review & Meta-Analysis	A subgroup of non-elective surgeries (including emergency and infective endocarditis where there is a high inflammatory response), significantly favoured the intraoperative use of hemoadsorption, in terms of 30 day mortality and shorter intensive care unit stay.

CytoSorbents™

CytoSorbents Europe GmbH

Müggelseedamm 131
12587 Berlin | Germany

T +49 30 65 49 91 45
F +49 30 65 49 91 46
support@cytosorbents.com

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June 2024