

Effects of Continuous Veno-venous Hemodiafiltration on Biomarkers and Outcomes in Acute Liver Injury Induced by Abdominal Sepsis Using CytoSorb®: A Case Report

Giuseppe Risalvato¹, Giulia Scimonello¹, Maria Lo Magno², Ignazio Fidone¹, Rosario Trombadore¹

¹ Complex Operational Unit of Anesthesia and Intensive Care, Maggiore Hospital, Modica, Ragusa; Italy
² Complex Operational Unit of Anesthesia and Intensive Care, Guzzardi Hospital, Vittoria, Ragusa; Italy

Introduction

Acute hepatocolangitis is an infection of the biliary tract that can rapidly progress to abdominal sepsis and subsequent acute liver injury if not promptly treated. The standard management involves broad-spectrum antibiotics, supportive medical therapy, and surgical intervention when needed. However, in cases of septic shock, conventional treatment may not be sufficient. CytoSorb® hemoabsorption therapy has been developed to remove excessive cytokines and other inflammatory mediators from the bloodstream, aiming to modulate the hyperinflammatory state and stabilize hemodynamics^{1;2;3}

Methods

We report the case of a 56-year-old Caucasian woman, admitted for surgical revision due to anastomotic stenosis. Postoperatively, she developed acute hepatocolangitis. Upon ICU admission, she presented a qSOFA score of 2 and lactates at 9.3 mmol/L. Despite broad-spectrum antibiotics and vasopressor support, her condition deteriorated with a progressive rise in lactate levels (14.5 mmol/L). Continuous Veno-Venous hemodiafiltration (CVVHD) was initiated, resulting in a modest lactate reduction (12 mmol/L). Due to persistent Hyperbilirubinemia and abnormal liver function parameters, CytoSorb® was integrated into the extracorporeal circuit. At the time of CytoSorb® initiation, lactate was measured at 9.8 mmol/L.

Results

Following the combination of CytoSorb®, a rapid decrease in lactate levels was observed: 1.9 mmol/L within three hours (figure 1). Hemodynamic stabilization enabled the cessation of norepinephrine infusion. Renal function improved with spontaneous diuresis recovery, while hepatic and inflammatory markers normalized. By the third day, CVVHD was discontinued, and the patient was transferred back to the surgical unit in stable condition.

Conclusion

This case highlights the critical role of extracorporeal blood purification in septic patient resuscitation. The early integration of CytoSorb® into standard CVVHD significantly enhanced lactate clearance and inflammatory biomarker reduction, promoting rapid clinical stabilization. Our findings suggest that hemoabsorption may serve as a valuable adjunctive therapy in abdominal sepsis complicated by acute liver dysfunction, with potential benefits in improving clinical outcomes.

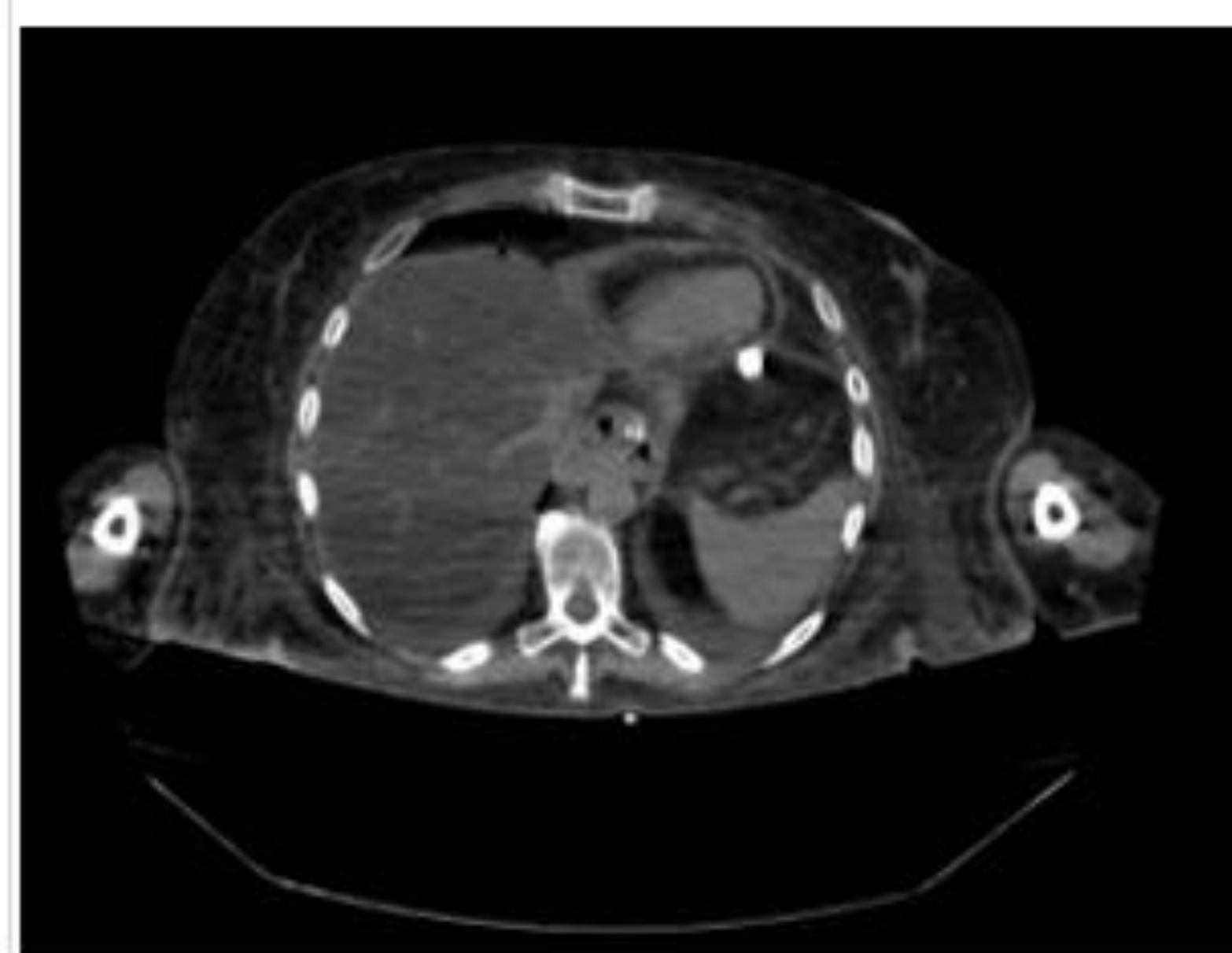
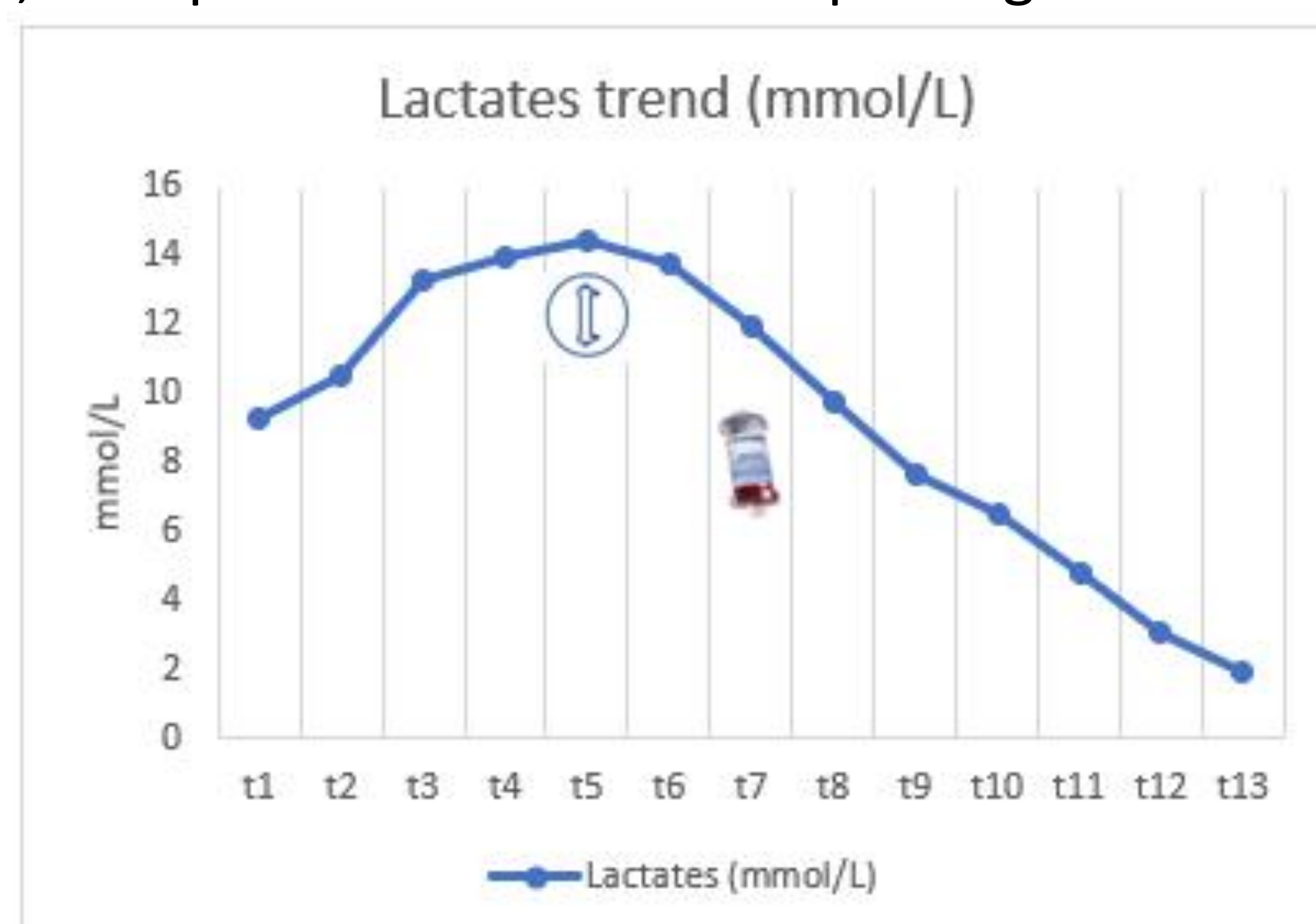


Figure 1: lactates trend and diagnostic imaging

References:

- [1] Jansen A, Waalders NJB, van Lier DPT, Kox M, Pickkers P. CytoSorb hemoperfusion markedly attenuates circulating cytokine concentrations during systemic inflammation in humans in vivo. Crit Care. 2023 Mar 21;27(1):117. doi: 10.1186/s13054-023-04391-z. PMID: 36945034; PMCID: PMC10029173.
- [2] Berlot G, Carocci P, Votrico V, Iacoviello B, Taverna N, Gerini U, di Maso V, Tomasini A. Real-World Outcomes of Hemoabsorption with CytoSorb® in Patients with Septic Shock: Insights from a Single-Center Study. J Intensive Care Med. 2025 Apr 1:8850666251331905. doi: 10.1177/08850666251331905. Epub ahead of print. PMID: 40170437.
- [3] Friessecke S, Stecher SS, Gross S, Felix SB, Nierhaus A. Extracorporeal cytokine elimination as rescue therapy in refractory septic shock: a prospective single-center study. J Artif Organs. 2017 Sep;20(3):252-259. doi: 10.1007/s10047-017-0967-4. Epub 2017 Jun 6. PMID: 28589286.