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EXTRACORPOREAL MEMBRANE OXYGENATION AND CYTOKINE ADSORPTION THERAPY FOR SEVERE LEGIONELLA PNEUMONIA WITH ACUTE RESPIRATORY FAILURE

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Objective: Introduction: Hemoperfusion through sorbent-containing cartridges wich remove inflammatory molecules is a novel treatment approach in sepsis. CytoSorb is a hemadsorption device that contains porous polymer beads designed to remove substances in the 5-60 kDa molecular weight range, targeting cytokines responsible of systemic hyperinflammation. We present a case of severe Legionella pneumonia successfully treated with venovenous extracorporeal membrane oxygenation (vvECMO) and Cytosorb.
Case report: A 66 year old female patient with a prior histoy of rheumatoid arthritis (RA) on biological therapy initially presented to her local emergency departement with a history of 8 days of high fever and caugh. Right sided pneumonia was diagnosed and antibiotic therapy was started, but her condition rapidly deteriorated requiring referral to our center. Upon arrival the patient was sedated, intubated, with a PaO2/FiO2 ratio of 45 mmHg, and MAP of 55 mmHg requiring hemodynamic support with norepinephrine. Initial laboratory work showed leukocytosis with a CRP of 381, procalcitonin of 6.61 and metabolic acidosis. A HRCT chest scan revealed diffuse



billateral ground glass opacities and consolidations with air bronchograms consistent with bilateral pneumonia and ARDS. Urine antigen testing for Legionella pneumophila was positive while the microbiological analysis of all samples obtained by bronchoscopy returned negative. VvECMO was initiated and Cytosorb was added to the circuit on day 1. High dose metilprednisolone was continued due to her RA and empirical antibiotic therapy was further adjusted after receiving the microbiological work-up. With vvECMO and treatment with Cytosorb (24 hours) the patient showed respiratory improvement and rapid hemodynamic stabilzation allowing the discontinuation of norepinephrine on the second day. ECMO treatment was continued for a total of 8 days with a PaO2/FiO2 of 232mmHg after weaning. Further clinical improvement followed allowing for extubation on day 10. The patient was discharged from the ICU and later from the hospital with complete recovery after physical therapy and rehabilitation.
Conclusion: While vvECMO is a well established treatment for acute respiratoy failure, the addition of CytoSorb is still not routinely recommended with more data from randomized trials neccesary to confirm routine use. To our knowledge, this is the first report of cytokine hemadsorption therapy for severe Legionella pneumonia ARDS. Although multiple treatment modalities were used in the treatment of our patient, we believe that the early addition of Cytosorb to the ECMO circuit played an important role in stabilizing the patient early in the course of her illnes.