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COMBINATION ECMO AND CYTOKINE ADSORPTION THERAPY FOR SEVERE SEPSIS WITH CARDIOGENIC SHOCK AND ARDS

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Case Report: A 33 year old previously fit female, 5 mo postpartum, presented with a four-day history of flu-like symptoms, breathlessness, delirium, chest and abdominal pains. On initial assessment she was pyrexial, tachypneic and shocked, with ARDS (Murray score 3.7), metabolic acidosis (pH 7.1) and neutropenia. Transthoracic echocardiography showed a severely impaired, nondilated left ventricle (ejection fraction <15%) and normal right ventricle. She rapidly deteriorated requiring mechanical ventilation and treatment was initiated for community-acquired pneumonia. but requiring significant vasopressor support (norepinephrine (1-1.5mcg.kg-1.min-1) and vasopressin 0.04U.hr-1) in addition to dobutamine. She was transferred to our center for consideration of extracorporeal life support. In view of the severity of the combined respiratory and cardiac failure and worsening organ function with rising lactate, venoarterial ECMO (percutaneous femoral cannulation) was instituted within 5 hr of arrival. A cytokine hemoadsorption column (Cytosorb™, Linc Medical, Leicestershire, UK) was added to the hemofilter circuit (Prismaflex®, Gambro, Sweden) and continued for 24hr. Anticoagulation was achieved with unfractionated heparin. From direct bronchoscopy staphylococcus aureus expressing Panton-Valentine leukocidin (PVL) and H1N1 Influenza A were isolated. Clindamycin was added and intravenous immunoglobulin G (IVIg) therapy was commenced. There was improvement in oxygenation and gradual resolution of lactic acidosis after institution of these therapies. Most notably the vasopressors could be weaned off after 12 hr. Levosimendan was loaded. There was recovery and LV function was normal by day 9 when ECMO was discontinued. The patient was discharged to the ward on day 30. She was reviewed two mo later and was asymptomatic. This case demonstrates the novel and successful use of ECMO and cytokine removal in severe PVL-S.aureus sepsis with ARDS and cardiomyopathy and adds to the evidence showing cytokine adsorption as a compelling adjuvant therapy in severe sepsis.