4 - Title: Biventricular percutaneous ventricular assist device and two extracorporeal membrane oxygenation runs as a bridge to orthotopic heart transplant in giant cell myocarditis: A Case Report

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Case presentation: A 45-year-old male with a history of asthma and Lyme disease presented to a local hospital after several days of dyspnea. He was found to have nonspecific EKG findings; elevated troponins and his left heart catheterization revealed no coronary disease with severe left ventricle dysfunction (LVD). He was transferred to our hospital on inotropes for management of acute decompensated heart failure by the cardiogenic shock team. Upon arrival, laboratory studies showed shock liver and acute kidney injury. Echocardiogram demonstrated severe LVD and moderate right VD with no ventricular dilatation nor heart block or arrhythmia. His right heart catheterization showed: cardiac index 1.9, CVP 20, PA pressure 32/22 and PA saturation 53%. Endomyocardial biopsy was performed, inotropic support was increased and diuresis started with improvement in end organ dysfunction (EOD). After 5 days, ventricular tachycardia occurred requiring cardioversion when his clinical status deteriorated with worsening renal function and mental status warranting femoral veno-arterial ECMO. Preliminary biopsy results were suspicious for eosinophilic vs giant cell myocarditis and started on pulse dose steroids. Biopsy tissue was sent for a second opinion. After 6 days of ECMO, hemodynamics and EOD improved with no complications, and he had a successful weaning trial. He was then transitioned to an axillary Impella 5.5 but the RVD was severe requiring escalation of inotropic support. The decision was made to place an RP flex Impella and transfer to a collaborating transplant center. The final diagnosis was giant cell myocarditis. He then developed HIT and had early RVAD failure requiring escalation back to ECMO with Impella 5.5 kept for LV venting. He was listed status 1A for a heart transplant and a suitable donor identified after 10 days of second ECMO support. The patient underwent a heart transplant with ECMO and Impella decannulation and continues to recover.

Discussion: This case report reiterates the importance of mechanical circulatory support in the setting of acute cardiogenic shock to prevent end organ dysfunction while diagnostic workup is conducted. Timelyescalation and de-escalation of mechanical support is key in preventing complication of devices and carrying the patient towards recovery or long-term cardiac replacement therapy. Early referral to a transplant center ensures early transplant listing and mitigation of complications of prolonged temporary mechanical support.