Abstract:  

Background: It has been prove that the extracorporeal membrane oxygenation (ECMO) therapy its associate with increase of after-load in the left ventricle, with risk of worsening the left ventricular function; to solve this situation, it has been describe the use of mechanical unloading systems (Impela, Intraaortic Balloon Pump (IABP) or Vent). Echocardiogram parameters (Left ventricle ejection fraction, interventricular dependence and integral velocity time (ITV)) and invasive measures (cardiac power output and pulmonary artery pulsatility index) are main variables of hemodynamic monitoring in Veno arterial ECMO to evaluate left ventricle dilation and worsening in performance.

Methods: We use a retrospective observational cohort of patients, that had ECMO therapy and in which a mechanical unloading system of the left ventricle was used. We compare the progressive variations in the hemodynamic state using these systems with several hemodynamic variables.

Results: A total of 18 patients that had ECMO therapy with mechanical unloading of the left ventricle (16 IABP, 2 Vent). The intrahospitalary mortality was 38,9%. By comparing the pulsatility index (initial - final) and early mortality, using Pearson correlation, there was a statistical significance (p=0.026, p= 0.01 respectively). There was not a statistical significance comparing the ventricular power index with mortality.

Conclusions: The use of mechanical unloading devices (IABP and Vent) in ECMO therapy are useful to improve left ventricle performance and to avoid worsening in afterload. In patients with veno-arterial ECMO therapy, secondary to cardiogenic shock, the pulsatility index must be measure as a predictor of mortality.