EXTRACORPOREAL CARDIOPULMONARY RESUSCITATION IN A 33-YEAR-OLD PATIENT WITH ACUTE ON CHRONIC HEART TRANSPLANT REJECTION

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Introduction: The experience with extracorporeal cardiopulmonary resuscitation (E-CPR) using extracorporeal membrane oxygenation (ECMO) as an extension of conventional cardiopulmonary resuscitation (C-CPR) is limited. Due to the emergent scenario surrounding and the extensive resources required for ECMO, outcome studies using E-CPR versus C-CPR are limited. Recent investigations support E-CPR because it offers survival benefit as an adjunct to C-CPR in patients with prolonged arrest, especially of cardiac origin (1). In patients with cardiac arrest due to acute coronary syndrome, ECMO as E-CPR has been studied as a bridge to either revascularization, to permanent mechanical circulatory support such as ventricular assist devices, or to transplantation (2). We present a patient who was bridge to recovery from acute rejection of a remote heart transplant with E-CPR/ECMO.

Case Report: Our patient is a two-year status-post heart transplant admitted with an exacerbation of chronic rejection due to noncompliance with medications. During his early hospital course, the patient became bradycardic and subsequently suffered a witnessed asystolic arrest. After 33 minutes of traditional CPR including chest compressions and administration of epinephrine and isoproterenol, the patient had brief periods of return of spontaneous circulation alternating with electromechanical dissociation (EMD) and asystole. The patient was successfully cannulated for ECMO and treated per our institution’s hypothermia protocol. The patient was successfully weaned from ionotropic and chronotropic support with return of neurologic function. The patient was de-cannulated on ECMO day five. Within an hour, the patient arrested and both E-CPR and hypothermia protocol were reintroduced due to a failed return of spontaneous circulation after prolonged C-CPR. Over the following ten days of ECMO support, the patient received treatment for his acute rejection that included apheresis, high-dose steroids, rituximab, as well as other pharmacologic treatments. Prior to de-cannulation, the patient was extubated to discuss his long-term prognosis and the need for compliance with anti-rejection therapy. These discussions involved multiple teams including palliative care and social work. Fourteen days after his initial arrest, the patient was de-cannulated successfully without further arrests and was discharged to rehabilitation.

Discussion: The patient had multiple episodes of EMD and asystole that were secondary to pharmacologic and mechanical interventions without neurologic insult. Additionally, anti-rejection treatments were not withheld due to the ability for circulatory support despite EMD/asystole. ECMO may be a useful therapy, not only as E-CPR while attempting to establish return of spontaneous circulation, but also to permit other life-sustaining therapies that a patient requires, but would otherwise not tolerate without extracorporeal life support.

References: