

ECMO as a Bridge to Recovery in Patients with Intractable Arrhythmias

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Introduction:

Pharmacological treatment and cardioversion are the mainstay of antiarrhythmic treatment but few arrhythmias remain refractory to maximal conventional treatment.

ECMO facilitates myocardial recovery by establishing a period of haemodynamic stability, during which antiarrhythmic medication can be optimized. However in rare cases the patient can be stabilized on VA-ECMO and then taken to catheter lab for intra cardiac ablation.

The benefits have to be balanced against potential ECMO related complications.

Methods:

Review of all paediatric patients cannulated for ECMO during the last 7 years at the Heart Link ECMO Centre with the primary diagnosis of an intractable arrhythmia. Patients with arrhythmias secondary to an other underlying cardiac condition such as cardiomyopathy, myocarditis or post cardiac surgery were excluded .

Results:

Seven patients were cannulated for VA-ECMO for intractable arrhythmias (5 male), Median age 4.5 months (13 days – 14 months), Median weight (3.4-12.9 kg). Four had SVT (supraventricular tachycardia) and 3 had VT (ventricular tachycardia). Median maximal HR 272 bpm (220-350 bpm) . Six out of seven patients required cardio pulmonary resuscitation prior to ECMO cannulation. Median hours on ECMO 108 hours (53-195hrs). Median ECMO flow 4 hours post cannulation 93ml/kg/h (63-148ml/kg/h). Three patients were taken to the catheter lab on ECMO and underwent successful radiofrequency ablation. One patient underwent balloon atrial septostomy on ECMO to off load the left heart. All patients came off ECMO in Sinus Rhythm / Junctional Rhythm. There were no relevant ECMO related complications. On follow up three months post de-cannulation all patients had normal systolic function parameters and normal chamber sizes on echocardiography.

Conclusion:

VA-ECMO in patients with intractable arrhythmias provides sufficient cardiac output until adequate levels of antiarrhythmic drugs are achieved and allows to wean inotropic support which is potentially pro arrhythmic. VA-ECMO can be used to stabilize a patient to perform curative intracardiac ablation. The prognosis and recovery of cardiac function for patients who went onto VA-ECMO for arrhythmias is excellent once control of the underlying arrhythmia is achieved.

In this patient group we had no relevant ECMO related complication.