



Service Priorities and Programmes
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Veno-Arterial Extracorporeal Membrane Oxygenation (VA-ECMO) Therapy to Support Acute Myocarditis in Children

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Introduction

Acute myocarditis is an uncommon but significant disease in children and is the most common cause of severe cardiac failure in healthy children. In children with severe cardiac failure, VA-ECMO can take over the work of the child's heart. This provides time for the heart to rest and recover, while maintaining a blood supply to the brain and other organs.

Objectives

(1) To promote a nurse-led ECMO service for children with acute myocarditis; (2) To enhance a better partnership with patients and their families.

Methodology

A retrospective review for the eleven children, who required temporary VA-ECMO therapy under emergency circumstances between 2005 and 2012, suffered from acute myocarditis. VA-ECMO central (n=9, 81.8%) implantation was performed through the right atrium and ascending aorta. VA-ECMO peripheral (n=2, 18.2%) implantation was performed through the femoral vessels.

Result

Survival in children with acute myocarditis was (n=9, 81.8%). Patients ranged in age from 6 years to 16 years. Mean age was 11 years. Subjects (n =1, 9.1%) were male and (n =10, 90.9%) were female. VA-ECMO started during ongoing cardiopulmonary resuscitation (CPR) (n=6, 54.6%) to supplement CPR in children. Most frequent indications for VA-ECMO therapy were cardiogenic shock (n=8, 72.7%), septic shock, (n=1, 9.1%), rhinovirus isolated from NPA (n=1, 9.1%) and parainfluenza (n=1, 9.1%). Complications with VA-ECMO therapy included bleeding (n=4, 36.4%), intracranial haemorrhage (n=1, 9.1%) and lower limbs ischemia (n=2, 18.2%). Nurses played a significant role to prevent potential bleeding complications of VA-ECMO. Monitoring of CBC and blood clotting profiles were essential. One paediatric 13-year-old girl had an implantation of VA-ECMO peripheral for nine days. She was changed to Thoratec CentriMag ventricular assist device (VAD) as a bridge-to-cardiac transplantation. Having had the CentriMag VAD for 13 days, the girl had a first Hong

Kong successful pediatric cardiac transplantation using Thoratec CentriMag BiVAD as a bridge-to-cardiac transplantation in September 2012. Outcomes of VA-ECMO therapy to support acute myocarditis in children appeared to be very encouraging according to our past review. The main benefit of VA-ECMO was that it could keep up the supply of oxygen to the body while resting the heart and lungs. As with children admitted to critical care for VA-ECMO, the nursing team provided ongoing psychological care, support, monitor and safeguard the quality of care.