

Abstract:

Background: There is risk of stenosis and thrombosis of the superior vena cava after upper extremity central catheter replacement. This complication is more serious among patients with single ventricle physiology, as it might preclude them from undergoing further life-sustaining palliative surgery.

Aim: To describe complications associated with the use of upper extremity percutaneous intravenous central catheters (PICCs) in children with single ventricle physiology.

Methods: A single institution retrospective review of univentricular patients who underwent superior cavopulmonary anastomoses as their stage 2 palliation procedure from January 2014 until December 2018 and had upper body PICCs placed at any point prior to this procedure. Clinical data including ultrasonography, cardiac catheterization, echocardiogram reports and patient notes were used to determine the presence of thrombus or stenosis of the upper extremity and cervical vessels. Data regarding the presence and duration of upper extremity PICCs and upper extremity central venous catheter (CVC), and use of anticoagulation were recorded.

Results: Seventy-six patients underwent superior cavopulmonary anastomoses, of which 56 (73%) had an upper extremity PICC at some point prior to this procedure. Median duration of PICC usage was 24 d (25%, 75%: 12, 39). Seventeen patients (30%) with PICCs also had internal jugular or subclavian central venous catheters (CVCs) in place at some point prior to their superior cavopulmonary anastomoses, median duration 10 d (25%, 75%: 8, 14). Thrombus was detected in association with 2 of the 56 PICCs (4%) and 3 of the 17 CVCs (18%). All five patients were placed on therapeutic dose of low molecular weight heparin at the time of thrombus detection and subsequent cardiac catheterization demonstrated resolution in three of the five patients. No patients developed clinically significant venous stenosis.

Conclusion: Use of upper extremity PICCs in patients with single ventricle physiology prior to super cavopulmonary anastomosis is associated with a low rate of catheter-associated thrombosis.

Reference:

Kaipa S, Mastropietro CW, Bhai H, Lutfi R, Friedman ML, Yabrodi M. Upper body peripherally inserted central catheter in pediatric single ventricle patients. *World J Cardiol.* 2020 Oct 26;12(10):484-491. doi: 10.4330/wjc.v12.i10.484. PMID: 33173567; PMCID:



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