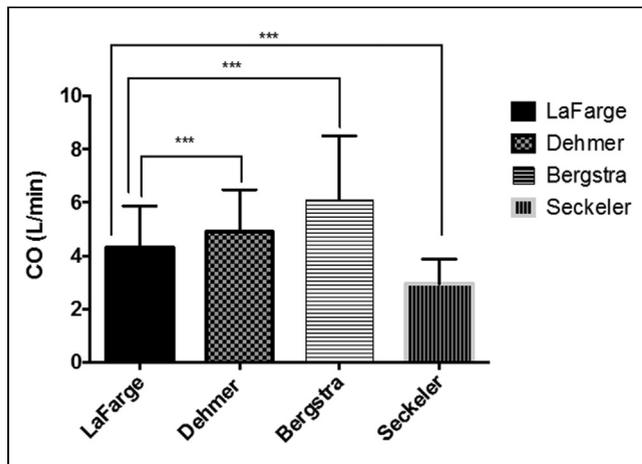


however, due to complexity in their routine use, various formulae derived assumed VO_2 are utilized. The most commonly used formula in catheter laboratories treating adult patients was reported by LaFarge. However, it was based on data from paediatric population, and their use in adult population is not validated. Additionally, limited information exploring agreement between these formulae is available. We sought to compare formulae derived CO measurement.

MATERIALS AND METHODS We sought to compare cardiac output measurement based upon four commonly used formulae, (1) LaFarge and Miettinen, (2) Dehmer, Firth & Hills, (3) Bergstra, Van Dijk, Jillege, and (4) Seckeler, Hirsch, Beekman formula in 112 ACHD patients who underwent diagnostic catheterization between 1st January 2015 to 31st March 2017.

RESULTS CO measured by various formulae is reported here with LaFarge: 4.31 ± 1.43 L/min; Dehmer: 4.91 ± 1.50 L/min; Bergstra: 6.1 ± 2.22 L/min; and Seckeler: 2.96 ± 0.88 L/min. LaFarge and Miettinen formula derived CO was significantly lower than Dehmer and Bergstra formulae ($P < 0.0001$ for each), whereas significantly higher than the formula by Seckeler.

CONCLUSION There is no agreement between the formulae derived assumed VO_2 and resultant CO. Such assumed formulae derived CO may be misleading. Every cardiologist should be cognizant of these limitations. Metabolic apparatus should be routinely used in catheter laboratories to obtain true VO_2 , especially, when such a value is likely to influence major management decisions.



CRT-500.10
Should the Normal Range of Pulmonary Vascular Resistance Be Re-defined in Patients with Fontan Circulation?



Kelly Rohan,¹ Heiko Schneider,² Graeme Kirkwood,³ Vaikom Mahadevan,⁴ Guy Kendall,¹ Mehul Patel,¹ Ashley Stokes,¹ Bawan Hama,¹ Amaran Gill,¹ Tasnime Yearoo,¹ James Carmichael,¹ Ozhin Karadakh,¹ Raveenjot Nagra,¹ Arjamand Shaouq,⁵ Andreas Hoschtitzky,⁶ Petra Jenkins,⁷ Jaspal Dua,⁷ Pradeepkumar Charla,² Purvi Shah,⁸ Ashish Shah⁹
¹University of Manchester, Manchester, United Kingdom; ²Toronto General Hospital, Toronto, ON, Canada; ³University Hospital of South Manchester, Manchester, United Kingdom; ⁴University of California,

San Francisco, San Francisco, CA; ⁵Alder Hey Hospital, Liverpool, United Kingdom; ⁶Royal Brompton and Harefield Hospital, London, United Kingdom; ⁷Central Manchester University Hospitals NHS Trust, Manchester, United Kingdom; ⁸General Dental Practice, Winnipeg, MB, Canada; ⁹St Boniface Hospital, Winnipeg, MB, Canada

BACKGROUND Creation of Fontan circulation helps separating pulmonary and systemic circuits in patients born with single ventricle. They have impaired exercise capacity, mainly due to limited augmentation of cardiac output (CO). Studies have suggested that pulmonary vasodilator therapies improve CO by augmenting venous return. Use of such therapy is significantly sparse, as many of these patients are reported to have normal pulmonary vascular resistance (PVR). However, the normal range of PVR was defined only in those with subpulmonic ventricle and pulsatile pulmonary flow. We sought to evaluate observed PVR in this cohort.

MATERIALS AND METHODS Retrospective review of data from a large tertiary ACHD centre.

RESULTS From a cohort of 4454 patients with complex ACHD conditions, 154 had Fontan circulation; of whom 70 patients with failing Fontan were investigated by cardiac catheterization. Thirty-four (48.6%) were male, mean age of 30.1 ± 6.2 years (17-43), and mean body mass index of 24.1 ± 5.3 kg/m² (16.6-47.7). Mean Fontan pressure was 16 ± 4 mmHg (7-29), mean wedge capillary pressure was 11 ± 3 mmHg (4-19), and mean trans-pulmonary gradient (TPG) was 5 ± 3 mmHg (0-15). Mean CO was 4.1 ± 2.7 L/min and calculated PVR was 1.7 ± 1.2 Wood units (0.25-5.3). Although cardiac output was well maintained, Fontan pressure significantly correlated with capillary wedge pressure ($R^2 = 0.75$, $P < 0.0001$) and PVR ($R^2 = 0.51$, $P < 0.0001$). Rise in Fontan pressure was observed earlier than increase in PVR. Interestingly, 3/4th of patients with failing Fontan were noted to have normal PVR despite elevated Fontan pressure.

CONCLUSIONS In this large series of patients with Fontan circulation, rise in PVR above the normally accepted range was observed only after moderate rise in Fontan pressure. In patients with Fontan circulation, range of normally accepted PVR should be redefined.

