AEPC-AHA-JSPCCS Joint Symposium

AEPC-AHA-JSPCCS-TSPC Joint Symposium (I-AJS)
New applications of cardiovascular magnetic resonance in pediatric cardiology

Chair:Satoshi Yasukochi(Heart Center, Nagano Children's Hospital, Japan)
Chair:Brandley S. Marino(President of VDY, AHA)
Chair:Gurleen Sharland(President of AEPC)
Fri. Jul 7, 2017 1:00 PM - 2:30 PM ROOM 3 (Exhibition and Event Hall Room 3)

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[I-AJS-04]Hemodynamic evaluation in patients with congenital heart defects using phase-contrast flow measurements and bloodstream equations

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Over the last several years, cardiovascular magnetic resonance (CMR) has undergone rapid evolution, and tremendous advances have resulted in progressive expansion of the clinical applications. But practically, CMR in patients (pts) with congenital heart defects (CHD) is generally difficult to scan because of their anatomical complexity. Inappropriate CMR imaging protocols and/or inadequate post-examination reviews results in an incomplete or erroneous interpretation. To avoid such situation, we employed " a bloodstream equation" as a hemodynamics validation tool. In a patient with unrepaired simple VSD, for example, the blood flow volume in ascending aorta, the sum of those in supra and inferior venae cavae, and the trans-tricuspid flow should become all equal as systemic blood flow (Qs). And the blood flow volumes in main pulmonary trunk, the sum of those in right and left pulmonary arteries, the sum of those in pulmonary veins, and the trans-mitral flow should become all equal as the pulmonary blood flow volume (Qp). After a validation process, an accurate value of Qp/Qs should be identified. If a validated value of the blood flow is not consistent, the existence of unrecognized shunt is suggested. A value of LV and/or RV output calculated from a ventricular volumetry can be also available for a validation process. From December 2008 to June 2017, those CMR examinations have made in 2350 patients with CHD in Fukuoka children' s hospital and CVIC, including 513 pts with single ventricle physiology after total cavopulmonary connection, 213 pts after bidirectional Glenn procedure, 669 pts with repaired TOF physiology, 143 pts with repaired TGA, 127 pts with ASD, 114 pts with repaired AVSD, 37 pts with VSD. All acquired data were validated using bloodstream equations. In the presentation we introduce those inductive CMR findings in single ventricle physiology.