

JCK E-Oral Presentation

## JCK E-Oral Presentation 2 (III-JCKEOP02)

Chair: Atsuko Kato (Division of Cardiology, The Labatt Family Heart Centre, Department of Pediatrics, The Hospital for Sick Children, University of Toronto, Toronto, Canada)

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Sun. Jul 9, 2017 1:00 PM - 2:00 PM E-Oral Presentation Area (Exhibition and Event Hall)

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1:00 PM - 2:00 PM

### [III-JCKEOP02-02] Effect of fenestration on ventricular-vascular coupling chronically after Fontan operation - Cardiac magnetic resonance study

○Yoichi Iwamoto, Seiko Kuwata, Akiko Yana, Hirotaka Ishido, Satoshi Masutani, Hideaki Senzaki (Division of Pediatric Cardiology, MFN Center, Saitama Medical University Saitama Medical Center, Japan)

[Background] We assessed how fenestration affects ventricular contractility and ventricular-vascular coupling (VVC) chronically after Fontan operation employing cardiac magnetic resonance imaging (cMRI).

[Methods] This study included consecutive 44 Fontan patients ( $8.8 \pm 4.2$  years) with cMRI. EDVI, ESVI and stroke volume index (SVI) were measured by volumetry. Arterial effective elastance (Ea) was calculated as mean blood pressure (BP) divided by SVI. End-systolic elastance (Ees) was calculated by our developed single-beat method using BP, arm equilibrium pressure, and ESVI. We measured circulating blood volume by dye dilution method and calculated venous capacitance (VC) by blood volume and arm equilibrium pressure. We compared those in patent fenestration group (N=15, F group) with those in closed fenestration group (N= 29, non-F group).

[Results] F group had significantly lower central venous pressure (CVP) and higher VC than non-F group (9.4 vs. 11.4 mmHg, 3.5 vs. 2.5 ml/mmHg,  $p < 0.05$ ). F group had significantly higher EDVI and ESVI than non-F group (111.5 vs. 96.0 ml/m<sup>2</sup> :  $p = 0.02$ , 62.5 vs. 50.5 ml/m<sup>2</sup> :  $p < 0.01$ ). F group had tendencies toward higher SVI and lower Ea than non-F group. There was no significant difference between F group and non-F group in Ees (2.3 vs. 2.4 mmHg/ml/m<sup>2</sup>), or in biomarker levels on renin-angiotensin-aldosterone system, heart failure, and fibrosis.

[Conclusion] Fenestration may be protective in suppressing venous maladaptation, keeping lower CVP and contributing to keep preload reserve and VVC in those chronically after Fontan operation.