

**Evaluation of ventricular function in Fontan patients undergoing feature tracking magnetic resonance strain**

*Inage A.*

*Division of Paediatric Cardiology, Sakakibara Heart Institute, Tokyo, Japan*

Introduction: Feature tracking strain (FTS) is a new technique to assess cardiac function from cardiac magnetic resonance (CMR). We compared FTS with conventional function parameters in single ventricle subjects with Fontan physiology undergoing CMR.

Methods: 18 Fontan subjects (mean age 17.6 +/- 9.2 years, post Fontan period 14.2 +/- 8.2 years, 13/18 morphologic right ventricle, 5/18 morphologic left ventricle) underwent a CMR study. Ventricular volumes and cardiac output were calculated off-line (Medis QMass advanced edition, the Netherlands). Off-line strain and strain rate (SR) analyses were performed (TomTec Image Arena, Germany) on the 4-chamber and short-axis views at the basal, mid, and apical levels of the ventricle.

Results: Basal endocardial circumferential strain/SR (-11 +/- 9 % and -0.8 +/- 0.5 1/s) were lower than it at the mid (-17 +/- 6 % and -1.1 +/- 0.5 1/s; p = 0.02 and 0.02) and apical (-26 +/- 9 % and -1.9 +/- 1.0 1/s; p = 0.001 and 0.003) levels. There was correlation between average endocardial longitudinal strain /SR and ventricular end-diastolic volume (r = 0.73 and 0.68). At the mid and apical levels, there was correlation between average endocardial circumferential strain/SR and ventricular end-systolic volume, and ejection fraction (r = 0.53 to 0.85). There was also correlation between average endocardial radial strain/SR and ventricular stroke volume at the mid level (r = 0.69 and 0.77).

Conclusions: There is correlation between strain/SR and measures of ventricular volume, ejection fraction and cardiac output in single ventricle subjects with Fontan physiology. FTS is independent of inadequate acoustic windows unlike echocardiography and could have clinical relevance. Analysis of regional strain may be helpful in understanding myocardial mechanics in the single ventricle in further studies.