PROGNOSTIC SIGNIFICANCE OF CARDIOVASCULAR MAGNETIC RESONANCE FEATURE TRACKING DERIVED CIRCUMFERENTIAL STRAIN IN CHILDREN UNDERGOING FAMILY SCREENING AND PAEDIATRIC PATIENTS WITH SUSPECTED CARDIOMYOPATHY

Poster Contributions
Hall C
Saturday, March 29, 2014, 10:00 a.m.-10:45 a.m.

Session Title: CMR in Pediatrics and Animal Models
Presentation Number: 1103-49

Authors: Joanna Petryka, Sadia Quyam, Benjamin Smith, Claire Raphael, Bethan Cowley, Anna N. Seale, Dudley Pennell, Piers Daubeney, Sanjay Prasad, Royal Brompton Hospital, London, United Kingdom

Objectives: Assessment of myocardial deformation using cardiovascular magnetic resonance (CMR) feature tracking-derived circumferential strain measurements in pediatric population with previously diagnosed cardiomyopathy and their first degree relatives aged <18 years undergoing family screening.

Background: The analysis of myocardial deformation using the novel technique of CMR feature tracking software has not been evaluated in children.

Methods: We assessed mid left ventricular whole slice circumferential myocardial strain ($\varepsilon_{cc}$) in 137 consecutive children with known or suspected hypertrophic cardiomyopathy (HCM), dilated cardiomyopathy (DCM) and left ventricular non-compaction (LVNC).

Results: Measurement of short axis circumferential strain was possible in 97% (133) of children. The mean $\varepsilon_{cc}$ was -20.9 ±3.9% in patients with normal CMR scan, -12.2±5.1% in patients with DCM, -22.4±7.1% in patients with HCM and -16.3±4.3% in LVNC patients. Global circumferential strain correlated well with left ventricular ejection fraction ($r=-0.7$; $p<0.001$). In patients with fibrosis as measured by late gadolinium enhancement $\varepsilon_{cc}$ was significantly lower than in patients without fibrosis (-15.4±5.5% vs. -20.7±4.7%; $p=0.0003$). In multivariate analysis global circumferential strain remained independent predictor of major clinical events (HR=1.2, $p=0.0015$), but LVEF did not.

Conclusions: In the population of children screened for cardiomyopathy and paediatric patients with suspected cardiomyopathy, the measurement of CMR feature tracking-derived circumferential myocardial strain is feasible and potentially valuable for prediction of adverse outcome.