



ACC.15

TCT@ACC-12 | innovation in intervention

A561
JACC March 17, 2015
Volume 65, Issue 10S

Congenital Heart Disease

THREE-DIMENSIONAL EVALUATION OF REGIONAL RIGHT VENTRICULAR CURVATURE IN REPAIRED TETRALOGY OF FALLOT

Poster Contributions

Poster Hall B1

Monday, March 16, 2015, 9:45 a.m.-10:30 a.m.

Session Title: The Right Heart in Congenital Heart Disease

Abstract Category: 10. Congenital Heart Disease: Adult

Presentation Number: 1255-317

Authors: *Waseem Cossor, Francesco Maffessanti, Karima Addetia, Victor Mor-Avi, Keigo Kawaji, David Roberson, Karin Dill, Peter Varga, Roberto Lang, Amit Patel, University of Chicago, Chicago, IL, USA, Advocate Children's Hospital, Oak Lawn, IL, USA*

Background: Patients with repaired Tetralogy of Fallot (rTOF) often have residual pulmonic valve abnormalities and surgical scars, leading to maladaptive remodeling of the right ventricle (RV). We hypothesized that 3D analysis of regional RV shape may provide new insight into RV remodeling in these patients.

Methods: CMR (1.5T Philips) was performed on 17 subjects with rTOF (age 9-53), and 10 controls (age 23-43). RV end-systolic and end-diastolic endocardial borders were manually traced on contiguous short-axis cine slices, and a 3D model was constructed using custom software. Local endocardial curvature, indexed to RV volume, was mapped in color onto the 3D endocardial surface (figure). Regional curvature was calculated for the RV inflow, outflow, trabecular, free wall, and septal segments. The parameters from rTOF patients were compared to those obtained from controls.

Results: Compared to controls, patients with rTOF had: (1) higher global curvature (0.55 ± 0.05 vs. 0.39 ± 0.08 , $p < 0.01$); (2) convex septal curvature, as opposed to concave in controls (0.18 ± 0.14 vs. -0.12 ± 0.09 , $p < 0.01$); (3) higher free-wall (0.64 ± 0.04 vs. 0.57 ± 0.07 , $p = 0.01$) and trabecular (0.60 ± 0.08 vs. 0.31 ± 0.09 , $p < 0.01$) curvature with less pronounced differences in the inflow (0.55 ± 0.07 vs. 0.51 ± 0.07 , $p = 0.07$) and outflow (0.37 ± 0.09 vs. 0.47 ± 0.14 , $p = 0.14$) regions.

Conclusion: Novel 3D analysis of RV endocardial curvature in patients with rTOF demonstrates significant variation in regional remodeling.

