

MP4-15

Rigid body rotation is a robust and highly reproducible marker of cardiac dysfunction in children and young adults with heart disease.

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Objective: Reversed left ventricular (LV) twist, so-called rigid body rotation (RBR), is a marker of cardiac dysfunction. Speckle tracking echocardiography (STE) is commonly used for the assessment of LV twist mechanics. Region of interest (ROI) width variability affects the reproducibility of strain measurements. The aim of this study was to investigate the effect of ROI width variability on the reproducibility of RBR patterns in children and young adults.

Methods: Our echocardiographic database was searched to identify all patients with a RBR pattern who underwent STE between January 2010 and August 2014. LV twist was assessed using STE. A predetermined protocol of ROI width variability was applied. Blinded review of the RBR pattern was performed independently by two investigators for all patients.

Results: A total of 374 STE datasets were reviewed. A RBR pattern was recognized in 21 patients (5.6%; mean age 11.2 ± 6.6 ; male 61.9%). Patients with a RBR pattern were diagnosed having dilated cardiomyopathy (n = 12, 57.1%), LV non-compaction (n = 6, 28.6%), hypertrophic cardiomyopathy (n = 2, 9.5%), restrictive cardiomyopathy (n = 1, 4.8%). RBR patterns included: reversed apical rotation (n = 12, 57.1%), reversed basal rotation (n = 7, 33.3%), and mirror-image rotation (n = 2, 9.6%). ROI width variability did not affect the RBR pattern in any of the patients, reproducibility was excellent. In addition, there was 100% agreement on the observed RBR pattern between investigators.

Conclusions: RBR is not affected by ROI width variability, suggesting that the presence of a reversed LV twist pattern is a robust marker of impaired cardiac function in children and young adults with heart disease.