

### Assessment of right ventricular performance by right ventricular speckle-tracking strain in teenage patients with repaired Tetralogy of Fallot. Comparison with Magnetic Resonance Imaging

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**Background:** Right ventricular performance is a major prognostic factor in patients with repaired tetralogy of Fallot (TOF). The objective of this study was to evaluate the utility of right ventricular speckle-tracking strain as an assessment tool for right ventricle (RV) function in patients with repaired TOF compared with magnetic resonance imaging (MRI) parameters

**Methods:** Twenty-six consecutive surgically corrected TOF patients aged 12–18 years (mean  $14.35 \pm 1.8$ ) were studied. Echocardiographic recordings of two-dimensional [2D] strain measurements from apical four chamber views focus on right ventricle were evaluated offline. Right ventricle free wall longitudinal speckle-tracking strain and RV septal wall longitudinal speckle-tracking strain were measured. Results were compared to RV indexed end-diastolic volume (EDV), indexed end-systolic volume (ESV), RV ejection fraction (EF) and pulmonary rejection fraction at MRI obtained in three to seven days after echocardiographic study.

**Results:** Correlations between global, lateral, septal longitudinal RV strain measurements and MRI derived parameters were assessed by stepwise linear regression analyses. RV apical longitudinal strain could be identified as an independent variable for MRI derived RVEF ( $\beta$ : -0.48,  $p$ :0,02) and basal infero septal longitudinal strain was found to be an independent variable for RV EDV measured by MRI ( $\beta$ : -0.52,  $p$ :0,01) through a stepwise multivariate linear regression model.

**Conclusions:** Although MRI is the gold but not feasible technique for assesment of right ventricle in daily practice, echocardiographic measurement of 2D regional speckle tracking of RV is a promising method to estimate RV systolic function in patients operated on for TOF

**Table1:** Stepwise linear regression analysis of variables predicting right ventricular ejection fraction and end-diastolic volume measured by MRI.

	$R^2$	$\beta$	95 % Confidence Interval	P value
<b>Right ventricular ejection fraction</b>				
RV apical longitudinal strain (APEX)	0.23	-0.48	(-2.38) – (-0.18)	0.02
<b>Right ventricular end-diastolic volume</b>				
Basal infero septal longitudinal strain (BIS)	0.27	-0.52	(-5.99) – (-0.71)	0.01