

## MP3-11

### Longitudinal myocardial deformation as a predictor of impaired ventricular function in children after the Fontan operation

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**Introduction:** The short term survival of children with single ventricle (SV) heart defects after the Fontan operation has improved over the last decades, but impaired cardiac function is a major cause of morbidity and mortality over time. Cardiac magnetic resonance imaging (cMRI) is the golden standard in assessing SV function, but high costs and limited availability hamper its routine use. A cheaper and more available alternative for assessing SV function is echocardiography. **Study aim:** To describe the association between myocardial deformation parameters assessed by speckle tracking echocardiography (STE) and SV function assessed by cMRI. **Methods:** Cross-sectional, multicenter study in 109 children after completion of the Fontan circulation. Echocardiography and cMRI were performed on the same day. STE peak longitudinal strain ( $\epsilon$ ) and systolic strain rate (SR) of the lateral wall of the dominant ventricle were measured off-line using the apical SV echocardiographic view. Impaired SV function by cMRI was defined as ejection fraction (EF) < 45%. Pearson correlation was used to assess associations between methods and independent T test was used to compare groups. **Results:** Mean age at study was 12,0 (range 9,7-14,6) years. Feasibility of STE was 80%. cMRI was performed in 70/109 participants. Mean cMRI EF was 53% (range 34-75%). Pearson R for cMRI EF versus global lateral peak longitudinal  $\epsilon$  and SR was -0,30 ( $p=0,01$ ) and -0,21 ( $p = 0,07$ ) respectively. Children with impaired EF by cMRI ( $n=8$ ) had reduced  $\epsilon$  and SR values compared to children with normal EF ( $n = 61$ ):  $-15,5 \pm 3,7\%$  versus  $-18,9 \pm 3,5\%$  ( $p=0,01$ ) and  $-0,85 \pm 0,21$  1/s. versus  $-1,13 \pm 0,30$  1/s ( $p=0,01$ ) respectively. The figure shows the sensitivity and specificity of SR to predict abnormal SV EF by cMRI. **Conclusions:** Although SV systolic function is generally well preserved in contemporary pediatric patients after the Fontan operation, some patients have impaired SV function assessed by cMRI. STE myocardial deformation parameters are moderately correlated with SV EF by cMRI but might be of use in predicting impaired EF in children after the Fontan operation.

