

### **Correlation between Basic Echocardiogram and Cardiac Magnetic Resonance of the Right Ventricle in Repaired Tetralogy of Fallot**

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**Introduction:** Cardiac magnetic resonance (CMR) has become a standard tool to evaluate the right ventricle (RV). In repaired tetralogy of Fallot (rTOF), the right ventricular volume load is considered to be one of the key criteria for the pulmonary valve replacement. The objective of this study is to define whether the conventional echocardiographic measurement could be used as a parameter to define the right ventricular dilatation in comparison with the CMR measurement.

**Methods:** Patients with rTOF underwent CMR and echocardiogram. From the 4-chamber view and parasternal view in long axis, the right atrium (RA), RV and left ventricle (LV) dimensions were measured during diastole and indexed by body surface area. The RV echocardiographic measurement was compared and correlated with the RV volume index obtained from CMR. The sensitivity and specificity of the echocardiographic threshold value to predict the RV volume were determined.

**Results:** A total of 91 patients (mean age 14, range 12-18, 64 male) were recruited. The echocardiographic measurement of RV end diastolic diameter (RVEDD) index and RV/LV dimension ratio and the RA dimension were correlated with the RV end diastolic volume index (RVEDVi) obtained by CMR. The RVEDD index  $> 1.55 \text{ cm/m}^2$  had 81% sensitivity and 60% specificity to predict RVEDVi  $> 150 \text{ mL/m}^2$  with area under the curve of 0.79. The ratio of the RV/LV dimension  $> 0.5 \text{ cm/m}^2$  had 86% sensitivity and 60% specificity to predict RVEDVi  $> 150 \text{ mL/m}^2$  with area under the curve of 0.79. While the RA dimension  $> 10 \text{ cm/m}^2$  had 65% sensitivity and 69% specificity to predict RVEDVi  $> 150 \text{ mL/m}^2$  with area under the curve of 0.73.

**Conclusion:** The basic echocardiogram parameter of the RV dimension could be used to assess the right ventricle volume load in rTOF with reasonable CMR correlation. The RVEDDi has a better prediction of the RV volume in comparison with the RV/LV and RA dimension.