3D Right ventricular strain: comparative analysis of Tetralogy of Fallot and atrial septal defect

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Methods

3D RV echocardiographic sequences from:
- 15 patients > 16yo with ASD (31.0[17.3-58.5] yo, 4 male)
- 5 patients with small defects, 10 with large defects
- 15 TOF > 16yo (34.0[24.1-36.5] yo, 6 male)
- 8 with severe pulmonary regurgitation
- No pulmonary stenosis (exclusion criteria)

- 21 healthy controls (36.0[28.0-46.0] yo) matched for age and sex

Myocardial tracking through semi-automatic Tomtec 4D RV-Function 2.0 software. Volumes and ejection fraction directly from the software.

Variables of interest:
- Local deformation (area strain, circumferential/longitudinal strain)
- Temporal alignment to allow pattern comparisons. Spatial correspondences obtained from the software.

Aim of the study

To assess RV remodelling differences between ASD, TOF patients and controls

Results

- Patients with TOF had more hypertrophic right ventricle (p=0.03) but reduced systolic function (TAPSE, RV FAC, 3D RV EF) compared with ASD and controls
- No difference was found between ASD patients and controls in terms of RV area strain, longitudinal or circumferential strain.
- TOF patients had lower RV area and longitudinal strain, especially in the inferior, lateral wall and in the trabecular septum as compared with controls
- TOF patients had lower circumferential strain, especially at the apex
- TOF patients had predominant circumferential over longitudinal strain.

Conclusions

- Volume overload has differential effects on strain.
- In ASD patients strain is relatively preserved
- In TOF patients, longitudinal strain is had particularly impaired.
- These data could help understanding RV remodeling in congenital heart disease (role of myocardial damage in TOF ?)


Disclosures: None.