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Diffuse fibrosis in the ventricles of patients with transposition of great arteries late after atrial switch

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Objectives: In adult patients with transposition of great arteries late after atrial switch (Mustard or Senning), the subaortic morphologic right ventricle (RV) is hypertrophic, while the subpulmonary morphologic left ventricle (LV), is usually hypotrophic.

The extent of diffuse fibrosis in the RV and LV in these patients remains unclear. Therefore, the aim of this study was to determine myocardial extracellular volume (ECV) in both ventricles in these patients.

Methods: We determined ECV by cardiac magnetic resonance (CMR) in 10 patients (36.8 ± 5.3 years old), without relevant pulmonary stenosis, late after atrial switch by acquiring T1-maps of the myocardium before and 10 minutes after injection of Gadolinium-based contrast agent. Furthermore, we obtained interobserver agreement of determining ECV.

Results: ECV of the LV was significantly increased compared to the RV ($36 \pm 4\%$ vs. $27 \pm 3\%$, $p < 0.01$).

Conclusions: In patients late after atrial switch, ECV of the hypotrophic, subpulmonary morphologic LV is significantly increased compared to ECV of the hypertrophic, subaortic morphologic RV. ECV of the RV is in the upper normal range. Increased ECV in the LV may be due to diffuse fibrosis, induced by long time reduced activity of LV, or simply due to relatively higher ECV surrounding hypotrophic myocardial cells of the LV.