Aim: Declining RV-function is a major problem late after atrial switch repair in patients with d-transposition of the great arteries (d-TGA). The adequate therapeutic strategy remains unclear. Load independent indices of RV-function may be potentially helpful in decision making.

Methods: Between 2011-2013 16 patients with d-TGA underwent spiroergometry, cardiac MRI and invasive conductance studies 27.1 ± 6.7 years (21.3 - 46.1 years) after atrial switch repair.

Results: All patients have been in NYHA-Class I-II, they reached step 6 - 11 (median 8) during exercise test with O2-uptake of 30.1 ± 5.8 ml/min/kg (22.7 - 45.5 ml/min/kg). The mean enddiastolic RV-volume amounted to 110 ± 22 ml/m² (78 - 156 ml/m²), the end systolic RV-volume to 66 ± 19 ml/m² (41 - 110 ml/m²), stroke volume to 44 ± 9 ml/m² (32 - 67 ml/m²) and cardiac index to 3.2 ± 0.8 ml/min/m² (2.1 - 4.6 ml/min/m²). The conductance study showed an increase of end systolic elastance (Ees), enddiastolic stiffness (Eed) as well as arterial elastance (Ea) during dobutamin stress test (Ees from 0.80±0.44 to 1.89±0.72 mmHg/ml, Eed from 0.11±0.07 to 0.13±0.15 mmHg/ml, Ea from 0.97±0.29 to 1.4±0.45 mmHg/ml). A diastolic dyssynchrony (36±6%) mainly in the apical segments was found in all patients, a systolic dyssynchrony (22±10%) in 8 of 16 patients.

Conclusion: Although there is a remarkable reserve of contractility, all indices of RV-function are in the range of a failing left ventricle. Perhaps the course of RV-function could be better estimated by the extent of dyssynchrony, which started as disturbed diastolic function and may end as disturbed systolic function.