Clinical factors affecting survival in patients with D-transposition of the great arteries after atrial switch repair: a meta-analysis

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Background: Atrial switch repair (AtrSR) was the initial method of operation in patients with D-transposition of the great arteries (D-TGA) constituting the right ventricle as a systemic one. Currently, it has been replaced with arterial switch operation (ASO), but the cohort of adults after AtrSR is still large and requires strict cardiological management of late complications. For this reason, we aimed to evaluate potential long-term mortality risk factors in patients with D-TGA after AtrSR (either Mustard or Senning procedure)

Method: We searched MEDLINE database for suitable trials. We included 22 retrospective and prospective cohort studies of patients with D-TGA with at least 5 years mean/median follow-up time after Mustard or Senning procedure, with an end-point of non-sudden cardiac death (n-SCD) and sudden cardiac death (SCD) after at least 30 days after surgery.

Results: A total of 2912 patients were enrolled, of which 351 met the combined endpoint of n-SCD/SCD. The long-term mortality risk factors were: NYHA > II/heart failure hospitalization (OR=7.25; p=0.0001), tricuspid valve regurgitation (OR=4.64; p=0.0005), Mustard procedure (OR=2.15; p=0.0008), complex D-TGA (OR=2.41; p=0.005), right ventricle dysfunction (OR=1.94; p=0.05). Supraventricular arrhythmia (SVT; OR=2.07; p=0.09) and pacemaker implantation (OR=2.37; p=0.29) did not affect long-term survival in this group of patients. In an additional analysis, SVT showed a statistically significant impact on SCD (OR=2.74; p=0.005) but not on n-SCD (OR=1.5; p=0.57).

Conclusions: This meta-analysis identified that at least moderate tricuspid valve regurgitation, NYHA class > II/heart failure hospitalization, right ventricle dysfunction, complex D-TGA and Mustard procedure as risk factors of long-term mortality in patients after AtrSR.