Abstract: P1597

15-year follow-up of regional right and left ventricular function after the Senning operation: a colour-Doppler myocardial imaging study

Authors:
A Moya¹, L Roggen¹, E Troost¹, P De Meester¹, W Budts¹, A Van De Bruaene¹, ¹University Hospitals (UZ) Leuven - Leuven - Belgium,

On behalf: Ana Moya, 1994

Topic(s):
Imaging: Congenital Heart Disease

Introduction: Although the development of right ventricular (RV) dysfunction in patients who underwent an atrial switch procedure is a major concern, long-term follow-up data on the evolution of myocardial function over time, especially using deformation myocardial imaging, is still lacking.

Purpose: This study aimed (1) at evaluating regional (base-mid-apex) RV and left ventricular (LV) function using Colour-Doppler myocardial imaging over a 15-year follow-up period (longitudinal analysis) and (2) at comparing results with age- and gender-matched controls (cross-sectional analysis).

Methods: For the longitudinal analysis, we compared systolic and diastolic function between 2004 and 2019 in 10 Senning patients. For the cross-sectional analysis, we compared the subaortic RV (sRV) of Senning patients with the RV and LV of matched controls and the subpulmonary LV (spLV) of Senning patients with the LV of matched controls.

Results: The longitudinal analysis (2004-2019) of sRV function showed a significant decrease in peak systolic strain (-16.9±7.1% vs -12.0±4.0%; P=0.045), peak systolic strain rate (-1.1±0.3s⁻¹ vs -0.8±0.4s⁻¹; P=0.003) and peak early diastolic velocity (-2.0±1.2 cm/s vs -1.0±0.5 cm/s; P=0.036) at the apex. spLV function showed a significant decrease in peak systolic velocity (mid: 5.6±1.8 cm/s vs 3.7±1.1 cm/s; P=0.013 and apex: 5.0±1.7 cm/s vs 2.1±1.2 cm/s; P=0.011) and peak systolic strain rate (mid: -1.7±0.5s⁻¹ vs -1.0±0.4s⁻¹; P=0.048).

The cross-sectional analysis revealed significant lower values for peak systolic velocity, peak systolic strain rate, peak systolic strain at all myocardial regions of the sRV when compared to both LV and RV of matched controls (all P<0.05). Similarly, early and late diastolic velocity were lower when compared to controls (P<0.05). The spLV showed lower values for peak systolic velocity and peak systolic strain rate (mid and apex, P<0.05), but not for peak systolic strain when compared to the LV of matched controls.

Conclusion: Our study shows little change in systolic and diastolic sRV function over a 15-year period, except in the apical region. Interestingly, there was a decline of spLV systolic function which may be of clinical value. On the other hand, when compared to age- and gender-matched controls, both the sRV and spLV of Senning patients exhibit significantly decreased measurements of longitudinal systolic and diastolic function.