RIGHT VENTRICULAR MECHANICS IN ADOLESCENTS AND YOUNG ADULTS LATE AFTER REPAIR OF COARCTATION OF THE AORTA

Poster Contributions
Hall C
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Background: Alteration of right ventricular (RV) function has been found in patients with pressure-loaded left ventricles due to systemic hypertension and aortic stenosis. We tested the hypothesis that RV mechanics may be altered in adolescents and adults with repaired coarctation of the aorta (CoA) and related to left ventricular (LV) mass.

Methods: Twenty-eight (15 males) patients with CoA, aged 23.7±6.5 years, at 20.6±5.4 years after surgical repair and 28 (14 males) aged matched healthy controls were studied. Patients with significant residual CoA were excluded. M-mode, tissue Doppler imaging, and speckle tracking echocardiography were performed to assess LV mass and shortening fraction, anterior RV wall thickness, and RV myocardial tissue velocities and deformation.

Results: Systolic (p=0.14) and diastolic (p=0.32) blood pressure was similar between patients and controls. Compared with controls, patients had significantly greater LV shortening fraction (p=0.028), indexed LV mass (p=0.016), and indexed RV anterior wall thickness (p=0.012). With regard to RV mechanics, patients had significantly lower tricuspid annular systolic (p<0.001) and early diastolic (p<0.001) velocities, global RV systolic longitudinal strain (p=0.03), systolic strain rate (p=0.012), and early (p=0.021) and late (p=0.012) diastolic strain rates than controls. Patients with an associated ventricular septal defect (n=6) requiring closure compared to those without had even lower tricuspid annular systolic (p=0.01) and early diastolic (p=0.041) velocities. For the whole cohort, LV mass correlated negatively with RV systolic strain rate (r=-0.27, p=0.045) and tricuspid annular early diastolic velocity (r=-0.40, p=0.002), while RV anterior wall thickness correlated negatively with tricuspid annular systolic (r=-0.42, p=0.002) and late diastolic (r=-0.40, p=0.003) velocities, and positively with e/a ratio (r=0.31, p=0.024).

Conclusion: RV systolic and diastolic mechanics are impaired in patients late after repair of CoA, which are related to increased LV mass and RV thickness, even in the absence of residual CoA and systemic hypertension.