Aortopathy in tetralogy of Fallot has a negative impact on left ventricular function

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Aim: To evaluate influences of increased aortic stiffness on the left ventricle (LV) in adults with repaired tetralogy of Fallot (TOF). Methods: Prospectively, 50 consecutive adults with repaired TOF (35.5 +/- 11.6 yrs, 24 males) were enrolled and assessed aortic wave reflection and central pressure using HEM 9000AI. A surrogate maker of aortic wave reflection, augmentation index (AI), was calculated reflection wave divided by ejection wave. We also evaluated LV function using echocardiography and magnetic resonance images. We measured global longitudinal strain (GLS) as a parameter of LV systolic function and early diastolic SR as a parameter of diastolic function. Age-matched 10 controls were enrolled. Results: AI in repaired TOF was significantly higher than that in controls (76.9 +/- 14.3 vs 57.8 +/- 7.3, P<0.01). AI related to age, central pressure, heart rate, LV GLS, LV early diastolic SR, LV mass index, LV end diastolic volume (LVEDV) index, BNP. On multi liner regression analyses, age, central blood pressure, LV mass index and LVEDV index were the most important determinants of AI (β coefficient 0.47, 0.24, 0.21, 0.06. P<0.01, P<0.05, P<0.05, P<0.05). As for LV function, early diastolic SR and cardiac index were the most important factors of LV GLS (P<0.001 and P<0.05). LV mass index was the determinant of LV early diastolic SR. Conclusions: Aortic wave reflection in repaired TOF has a negative impact on LV function.