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Echocardiographic assessment of the proximal aorta after tetralogy of fallot repair

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Background: An intrinsic aortopathy can lead to aortic (Ao) dilatation late after tetralogy of fallot (ToF) repair. Its extension and prevalence is not clearly defined.

Objectives: We aimed to compare the proximal aorta dimensions and elasticity assessed by transthoracic echocardiography in ToF and normal controls, and to find possible predictors of Ao dilatation.

Methods: We included 127 consecutive adults after ToF repair and 63 sex- and age-matched healthy controls. We estimated the Ao z-score at the level of the sinuses of Valsalva (SoV) and ascending aorta (AAo) and defined Ao dilatation for a z-score >2. We assessed Ao strain, distensibility and stiffness index by transthoracic echocardiography using accepted formula.

Results: One hundred-twenty seven patients (pts) (mean age 30±9 years; 52% males) had a mean follow-up time since ToF repair of 23±7 years. In 59 cases, an aortopulmonary shunt was done prior to repair, with a median interval of 3 years. In 57 patients complete repair used a transannular patch. A right Ao arch coexisted in 29 cases. The prevalence of SoV and AAo dilatation were 29.9% and 23.8%, respectively. No differences were found between ToF pts and controls regarding systolic blood pressure and pulse pressure. ToF pts had a bigger Ao z-score (1.4±1.2 vs. -0.6±1.2, P<0.01 and 1.2±1.1 vs. -0.7±0.7, P<0.01, at the level of SoV and AAo, respectively), lower Ao strain [6.9 (2.6-61.5) vs. 15.4 (3.7-45.0), P<0.01] and distensibility [1.4 (0.4-1.4) vs. 3.7 (0.1-1.4) KPa-110-3, P<0.01], and a higher Ao stiffness index [7.4 (0.8-23.6) vs. 3.1 (0.9-14.1); P<0.01]. There was a significant positive correlation between the Ao z-score and left ventricular (LV) mass and volumes indexed to body surface area (AAo z-score and LV mass index in Pearson's correlation (r)=0.26, P<0.01), Ao stiffness index and SAo (r=-0.21; P=0.007). By multivariate analysis, the sinotubular junction effacement was an independent predictor of AAo dilatation [odds ratio 4.1, 95% confidence interval (CI) 1.4-12.3, P=0.01].

Conclusion: It can be concluded that tetralogy of fallot patients have a bigger and stiffer ascending aorta, and transthoracic echocardiography can be used as a screening tool for this aortopathy.

Biography

Cristina Cruz she is affiliated from Saint John Hospital, Portugal, her research interest mainly focus her research interest mainly focus on tetralogy of fallot repair, and she belongs to department pediatric Cardiology. Till now she published many of the articles in reputed journals.

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