

Does age at aortic coarctation repair have an impact on left ventricle size and function?

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Introduction: Adults with repaired aortic coarctation (CoA) require lifelong follow-up due to late complications, including left ventricular (LV) myocardial dysfunction. Age at the time of CoA repair is an important prognostic factor in these patients (pts).

Purpose: To evaluate LV size, ejection fraction (EF) and global longitudinal strain (GLS) values using 2D speckle tracking echocardiography (STE) in a population of adult pts with repaired CoA and to assess the relationship between these echocardiographic parameters and age at the time of CoA repair.

Methods: Retrospective analysis of adult pts with repaired CoA, followed in a Grown Up Congenital Heart Disease Centre. Pts with hemodynamically significant concomitant cardiac lesions were ruled out. Epidemiologic and clinical data were obtained from clinical records. Transthoracic echocardiograms were reviewed in order to assess GLS using 2DSTE (Echopac Software, GE).

Results: The study population consisted of 63 pts (61.9% male), with a mean age of 35.3 years at the time of the echocardiographic evaluation. The mean age at the time of the CoA repair was 117 months (95% CI 89.8-144.1 months).

Surgical repair was performed in 46 pts (73%): resection with subclavian artery flap aortoplasty (n = 21); patch aortoplasty (n = 15) and head-to-head anastomosis (n = 10). In 10 pts there was no data regarding the type of surgical repair. Seven pts (11.1%) were submitted to percutaneous intervention (6 with aortic stent implantation and 1 with balloon aortic angioplasty).

Mean LVEF was 63.4% (CI 95% 55.6 – 71.2%) and mean LV end-diastolic diameter (LVEDD) was 50mm (CI 95% 43-57mm). Mean GLS was - 17.3 (CI 95% 14.8- 19.8), which is inferior to the mean normal values reported for the software used.

Age at the time of CoA repair had a statistically significant positive linear relationship with LVEDD ($r = 0.282$; $p = 0.026$) and a linear negative relationship with both GLS ($r = -0.29$; $p = 0.022$) and LVEF ($r = -0.33$; $p = 0.05$).

Conclusion: Older age at the time of CoA repair was associated with increased LVEDD and decreased GLS and LVEF. Also, GLS may be an important tool for the identification of subclinical LV dysfunction in adult pts with repaired CoA.