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Titel des Beitrags: Increased aortic blood pressure augmentation in patients with congenital heart defects - A cross-sectional study in 1125 patients and 322 controls.

Abstract: Multiple studies have demonstrated the predictive value of arterial stiffness parameters like augmentation index (AIx) for cardiovascular events, the onset of hypertension, and the progression of heart failure. There is evidence that arterial stiffness is increased in some diagnostic subgroups of patients with congenital heart defects (CHD). This study aims to investigate AIx in a large cross-sectional cohort of patients with CHD. We prospectively examined 1125 consecutive patients with various congenital heart defects (27.3 ± 12.1 years, 464 female) referred for routine cardiopulmonary exercise testing (CPET) in our institution, and 322 healthy volunteers (29.4 ± 18.4 years, 165 female). AIx was estimated in supine position using the oscillometric Vicorder device (SMT medical, Würzburg, Germany). Afterward patients performed a CPET. In multivariable regression, presence of a CHD emerged as independent risk factor for higher AIx (p<.001). AIx was also higher in older (p<.001), smaller (p<.001) and heavier (p<.001) patients and in females (p=.008). Patients with aortic stenosis (p<.001), Tetralogy of Fallot (p<.001), transposition of the great arteries after atrial switch (p<.001) or Rastelli procedure (p=.013) and after Fontan procedure (p=.002) had higher AIx. Higher peak oxygen uptake (p<.001) and an ACE-inhibitor (p=.088) were associated with a lower AIx. AIx is
increased in patients with CHD. Several diagnostic subgroups are at risk. A better understanding of pathophysiologic mechanisms, genetic predisposition, the role of surgical aortic scars or implanted conduits/patches and medication is needed to define the value of AIx for further cardiovascular risk assessment in this cohort.

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