

## MP3-12

### Arterial functions and the effect of valve morphology in children with bicuspid aortic valve

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#### Introduction

We investigated aortic elasticity and flow mediated dilation (FMD) of brachial artery in children with bicuspid aorta and the effect of valve morphology on aortic elasticity.

#### Methods

The study included 39 patients (mean age=9.7±5.1; range: 1.5-18) with bicuspid aorta (BAV group) and 39 healthy children (mean age=9.8±3.82; range: 4-16) as control group. None of the patients had more than mild stenosis (gradient>20 mmHg), mild regurgitation or associated congenital heart disease. Echocardiography was performed using Philips IE33 Echocardiography machine equipped with 5MHz and L-11 Mhz linear transducer. LV systolic and diastolic functions, morphology of aortic valve, systolic and diastolic diameters of aortic annulus, sinus valsalva (SV), sinotubular junction (STJ), ascending aorta (AscAo) were obtained and aortic strain (AS), aortic distensibility (AD), aortic stiffness index (ASI) were calculated. Flow mediated dilatation (FMD) of brachial artery was measured. The study group was divided into two subgroups as horizontal opening (AP; fusion between right and left coronary cusps) and vertical opening (LR; fusion between right and noncoronary cusps).

#### Results

Valve morphology was AP in 27 and LR in 12 patients. Aortic root and AscAo of the patients were larger than the controls according to Z-scores ( Annulus, SV, STJ and AscAo were p:0.001, p=0.001, p=0.02, p=0.001, respectively). Stiffness index of SV, STJ and AscAo were higher than controls (p=0.015, p=0.001, p=0.02, respectively). AS and AD has increased at SV and STJ levels in patients (p=0.01,p=0.04; p=0.001,p=0.001 respectively). FMD did not differ between groups. Z scores of aortic root were not significantly different between AP-LR subgroups. Asc Ao Z score was over 2SD in 14 patients (10 of them had AP and 4 LR morphology, which was statistically significant, p=0.05). AS (p=0.02) and AD (p=0.001) were lower and ASI (p=0.001) was higher in the AP subgroup than LR subgroup in AscAo. Valve morphology had no effect on valve function. FMD was not different between two valve morphologies.

#### Conclusion

We showed that bicuspid aortic valve, especially with AP valve morphology, causes stiffer and less distensible aorta and dilation of AscAo is more likely with AP valve morphology unrelated to valve function.