

POSTER PRESENTATION

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Changes in ascending aorta dimensions, aortic valve function and systolic ventricular function over time in patients with congenital aortic stenosis

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Introduction

Bicuspid aortic valve (BAV) is one of the most common congenital heart malformations and is a frequent cause of aortic valve stenosis (AoS).

Purpose

The aim of this study was to evaluate the progression of aortic dilatation, aortic valve function, and ventricular function in patients with congenital AoS.

Methods

Twenty-five patients with congenital AoS were prospectively followed with ECG-gated cine-MRI. Aortic root and ascending aorta diameters were measured. Peak aortic velocity and mean gradient were assessed using a retrospectively gated phase contrast sequence. Left ventricular hemodynamic parameters and myocardial mass were calculated using steady-state free precession images.

Results

Sixteen men and 9 women were included in the study (mean age 32.6 ± 7.6 years). The mean time (\pm SD) between baseline and follow-up study was 33.7 ± 6.1 months. During follow-up aortic diameters significantly increased at aortic annulus by 1.4 mm ($p=0.014$), at sinus of Valsava by 2.0 mm ($p=0.003$) and at ascending aorta level by 2.0 mm ($p<0.001$). No significant increase in sinotubular-junction diameter was observed. Peak velocity significantly increased from 329.1 ± 70.2 cm/s at baseline to 353.4 ± 82.6 cm/s at follow-up with a mean progression of

8.0 cm/s/year. Mean aortic valve gradient increased significantly from baseline to follow-up: 44.5 ± 18.6 vs 53.5 ± 25.3 mmHg ($p=0.021$). Ejection fraction significantly increased from 57.6 ± 6.4 to $59.7 \pm 7.1\%$ ($p=0.001$) and a significant increase of myocardial ventricular mass was observed from 129.2 ± 36.2 at baseline to 132.9 ± 37.8 grams at follow-up ($p=0.015$).

Conclusions

After a mean follow-up of 33 months a progression of aortic diameter dilation, aortic peak velocity, mean gradient and ventricular mass occurred in adult patients with congenital AoS.

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