

POSTER PRESENTATION

Open Access

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

Alexia Rossi\*, Denise van der Linde, Tirza Springeling, Adriaan Moelker, Gabriel P Krestin, Robert J van Geuns, Jolien Roos-Hesselink

From 2011 SCMR/Euro CMR Joint Scientific Sessions  
Nice, France. 3-6 February 2011

## 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  $32.6 \pm 7.6$  years). The mean time ( $\pm$ SD) between baseline and follow-up study was  $33.7 \pm 6.1$  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  $329.1 \pm 70.2$  cm/s at baseline to  $353.4 \pm 82.6$  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:  $44.5 \pm 18.6$  vs  $53.5 \pm 25.3$  mmHg ( $p=0.021$ ). Ejection fraction significantly increased from  $57.6 \pm 6.4$  to  $59.7 \pm 7.1\%$  ( $p=0.001$ ) and a significant increase of myocardial ventricular mass was observed from  $129.2 \pm 36.2$  at baseline to  $132.9 \pm 37.8$  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.

Published: 2 February 2011

doi:10.1186/1532-429X-13-S1-P211

**Cite this article as:** Rossi et al.: Changes in ascending aorta dimensions, aortic valve function and systolic ventricular function over time in patients with congenital aortic stenosis. *Journal of Cardiovascular Magnetic Resonance* 2011 **13**(Suppl 1):P211.