

## P811

## More than aortic measurements: evaluation with TTE and angioCT in bicuspid aortic valve yields useful information about valvular compromise

Carrero MC.; De Stefano L.; Constantin I.; Masson G.; Mezzadra M.; Diaz Babio G.; Ruano M.; Veron F.; Vera Janavel G.; Stutzbach P.  
Cardiovascular Institute of San Isidro (ICSI), Buenos Aires, Argentina

**Background:** 2D transthoracic echocardiogram (TTE) is the technique of choice in the diagnosis of bicuspid aortic valve (BAV). Computed tomography (CT) is widely used in BAV to measure aortic diameters. However, in some cases CT or magnetic resonance (MRI) can add important information to TTE regarding valvular degeneration and morphotype.

We designed the present prospective study to determine the agreement between TTE and gated CT in the assessment of aortic valve morphology, fibrosis, calcification and measurements of thoracic aorta. We also aimed to analyze the utility of CT in the evaluation of BAV patients, in addition to aortic measurements.

**Methods:** We included 30 consecutive patients with BAV (mean age  $45 \pm 15.7$  years ; 73.3% men) who underwent both TTE and ECG-gated cardiac and aortic CT for valvular and aortic assessment in a follow-up protocol with a time interval between TTE and CT of  $4 \pm 2.6$  months.

We performed measurements of thoracic aorta at 6 levels (annulus, Valsalva sinus: VS, sinotubular junction, ascending, arch and isthmus) with both techniques following guideline recommendations blinded to the results of the other technique.

Several measurements of VS were performed in short-axis view (double-oblique method) (maximal diameter perpendicular to the valve opening, sinus to sinus, raphe to sinus, commissure to commissure) at systole and diastole with CT.

Valve phenotype, presence of raphe, calcification scoring, aortic valve prolapse and fibrosis were also determined with both techniques and maximum aortic diameters were compared. An indexed aortic diameter  $> 21$  mm/m<sup>2</sup> was considered as aortic dilation and asymmetry root was defined when differences between CT measurements were  $\geq 5$ mm.

### Results

In 7 patients (23.3%) aortic diameter differences at Sinus by TTE and CT were  $\geq 3$ mm. Concerning ascending aorta measurements, there was better agreement and only 2 cases (6.6%) showed differences  $\geq 3$ mm.

In 2 patients with severe calcification valve morphology was identified only with CT. There was good agreement between TTE and CT in calcium quantification in patients with valvular calcium score over 2000 AU (n = 5) and in those without calcification. However, TTE failed in identification of valvular fibrosis in 5 patients.

10 patients (30%) had aortic dilatation with CT and 7 according to TTE measurements. The 3 patients that were not identified as dilated in TTE had dilatation at the distal tubular portion.

CT led to identification of coronary anomalies in 5 patients (16.7%), most of them anomalous high origin above the sinotubular junction.

### Conclusions

Although TTE is the gold-standard in the diagnosis and follow-up of patients with BAV, CT was useful to confirm aortic measurements and to identify valvular fibrosis, asymmetry, coronary anomalies and dilatation at the tubular portion. CT can add important information to TTE regarding valvular morphotype and aortic measurements, although radiation and cost should be evaluated.

Abstract P811 Figure. Calcification agreement TTE and CT

