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Bicuspid aortic valve and aorthopathy: two sides of the same coin?

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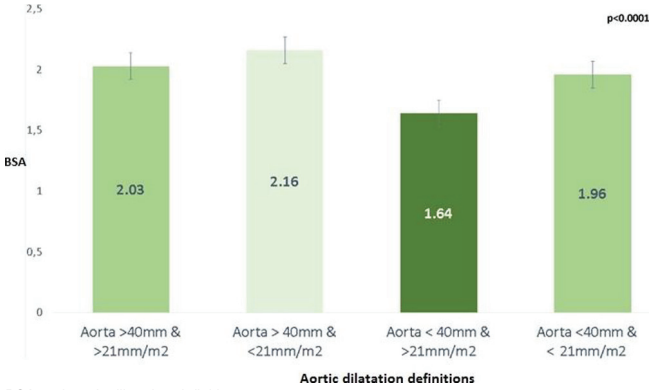
Objectives: We conducted a cohort study to assess baseline characteristics of aorthopathy and progression to aneurysm formation in adults with bicuspid aortic valve (BAV) followed-up in our health network.
Methods: We recruited all consecutive asymptomatic patients (p) with definite diagnosis of BAV since 2009 after approval of informed consent. We analyzed baseline charachteristics of aorthopathy and incidence of aortic complications (aneurysm>45mm, dissection or aortic intervention) during follow-up.
We assessed aortic dimensions at 6 different levels and, incidence of aortopathy with 2 definitions (absolute ≥40mm and indexed, 21mm/m^2).
Results: The cohort included 220 p (43±15.2 y/o, 75% male, 7% with familial BAV). Age at diagnosis was 37±15.5 yrs. Most of the p had fusion of coronary cusps (Type I BAV: 175, 79.4%) and a raphe in 155 p (70.4%). 20 p (9.1%) had severe aortic valve dysfunction at baseline.
The mean maximum aortic diameter was 36±6.8mm and 1 out of 2.5 p (42%) had aortic dilatation at baseline. We found 24 patients (10.9%) with aneurysm criteria at BAV diagnosis with a mean diameter of 47.2±5mm. 63 patients (29%) had aortic diameters >21 mm/m^2, mostly smaller patients. p<0.0001,Figure 1).
Tubular ascending aorta dilatation was present in 36 (41%) p, followed by root dilatation in 30 (33%) p. We found no association between aortopathy patterns and BAV phenotype (Table 1).
There were 2 deaths during follow-up (4.1±2.3y). The most frequent procedure (10, 55.5% of all interventions) was AVR, followed by Bentall de Bono (5, 27.7%). The primary indication for intervention was severe aortic stenosis (8, 44%), followed by asymptomatic aortic dilatation (4, 22%).
16 (8.2%) p developed aneurysm and there were no aortic dissections during follow-up.

Comparison of diameters between valve phenotypes I and II at six levels showed non-statistically significant differences

Aortic dimensions	Indexed diameters (cm/m^2) (n=220)	BAV Type I indexed (cm/m^2) (n=175)	BAV Type II indexed (cm/m^2) (n=27)	p
Aortic annulus	1,19 (1,06–1,29)	1,22 (1,07–1,29)	1,19 (1,07–1,26)	NS
Sinus of Valsalva	1,89 (1,71–2,07)	1,91 (1,71–2,07)	1,91 (1,65–2,23)	NS
Sinotubular junction	1,62 (1,44–1,81)	1,62 (1,43–1,79)	1,63 (1,45–1,82)	NS
Proximal Ascending aorta	1,88 (1,67–2,09)	1,87 (1,67–2,05)	1,91 (1,77–2,06)	NS
Aortic arch	1,25 (1,11–1,55)	1,26 (1,10–1,51)	1,25 (1,18–1,56)	NS
Isthmus	0,93 (0,81–1,21)	0,93 (0,81–1,19)	0,96 (0,90–1,24)	NS

Data are expressed as median (IQR). *p<0.05.



BSA and aortic dilatation definitions.

Conclusions: The incidence of intervention on aortic valve or ascending aorta and death over a mean of 4.1 y was high. We identified a clinical aortopathy associated to BAV, with excess risk of aneurysm formation. There were no aortic dissections during follow-up.

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Association of alcohol consumption with aortic root dilatation: Corinthia study

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Introduction: The harmful effects of excessive alcohol consumption on the cardiovascular system as well as on general health are already known. However, data on the incidence of alcohol in aortic diseases are isolated.
Purpose: The aim of this study was to investigate the possible association of excessive alcohol consumption with aortic root dilation.
Methods: We examine 1043 participants (467 men, aged between 30 and 98) of the Corinthia study. Among other tests, echocardiography was performed and subjects were asked to complete questionnaires. Several demographic and clinical characteristics were recorded. Alcohol consumption was assessed on the basis of the questionnaire replies. Subjects with daily consumption of alcohol were categorized as habitual alcohol consumers (HAC) and those consuming alcohol occasionally were categorized as social drinkers (SD).
Results: Of the total studied population, 448 individuals (43%) were found to be HAC. Between HAC and SD there was no difference in age (65±12y vs. 64±11y, p=0.12) and the indidence of hypertension, whereas there was an increased prevalence of male gender in the HAC groups compared to SD (60% vs. 40%, p<0.001). Also, HAC had an increased aortic root diameter (AoRD) (33.61±4.13mm vs. 31.83±4.41mm, p<0.001) and an elevated AoRD index (17.43±2.23mm/m^2 vs. 16.84±2.32mm/m^2, p<0.001). Interestingly, individuals with an aortic root aneurysm (AoRD>40mm) were more often HAC (61% versus 39%, p=0.01). In addition, depending on the daily alcohol consumption, a gradual increase in the dimensions of AoRD (0–1glass: 31.99±3.65mm vs. 1–2 glasses: 33.65±3.73mm vs. >3 glasses: 34.58±4.44mm, p<0.001) and in AoRD index (0–1 glass: 16.95±2.18mm/m^2 vs. 1–2 glasses: 17.45±2.07mm/m^2 vs. >3 glasses: 17.39±2.39mm/m^2, p<0.04) was observed (Figure 1, panel A, B). Even after adjustment for many confounders such as age, gender, smoking, hypertension and body surface area, the amount of alcohol consumption appeared to be significantly associated with aortic root dilation (B coefficient = 0.55, 95% CI: 0.09–1.01, p=0.02) (Figure 1, panel C).

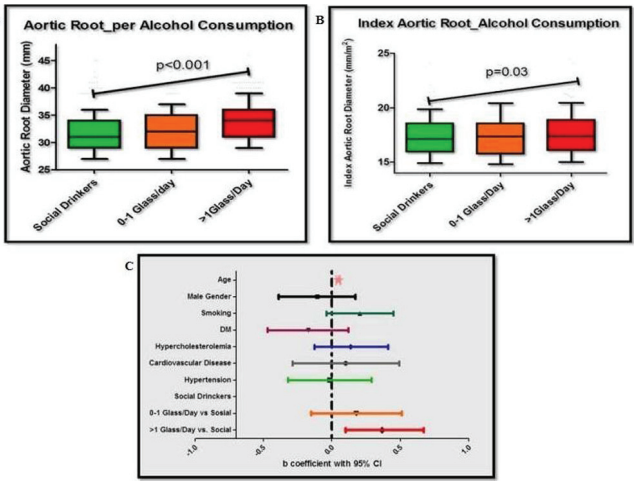

Figure 1

Conclusion: Systemic alcohol consumption is associated with increased aortic root diameter. These findings shed light on the pathophysiologic mechanisms underlying dilatation of ascending aorta and may be used to highlight novel risk factors.

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Long-term efficacy of losartan vs atenolol for the prevention of aortic dilation and clinical complications in Marfan syndrome

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Background: Beta-blockers are the standard treatment for preventing aortic dilation in Marfan syndrome (MFS). Recent clinical trials on the effectiveness of Losartan in MFS have resulted in conflicting results. The LOAT trial did not show benefit from losartan compared to atenolol in these patients. However, all these studies have a limited follow-up (3 to 3.5 years). Therefore, the aim of the present study was to evaluate the benefit of losartan compared to atenolol for the prevention of aortic dilatation and aortic complications in MFS patients over a longer period of observation (>5years).
Methods: The MFS patients included in the previous LOAT clinical trial were followed up over a non-blinded extension of the study, maintaining the initial treatment (losartan or atenolol). Clinical events were registered and, after at least 5 years from the start of the clinical trial, a new MRI study was performed.
Results: A total of 128 patients were included in the study (64 in the atenolol and 64 in the Losartan group). Mean clinical follow-up was 6.7±1.5yrs. A total of 9 (14.1%) events occurred in the losartan group and 12 (18.8%) in the atenolol group. Survival analysis showed no differences in the combined endpoint of need for aortic surgery, aortic dissection or death (p=0.462) or for the