

### Criteria for aortic dilatation diagnosis in adolescents with Bicuspid Aortic valve

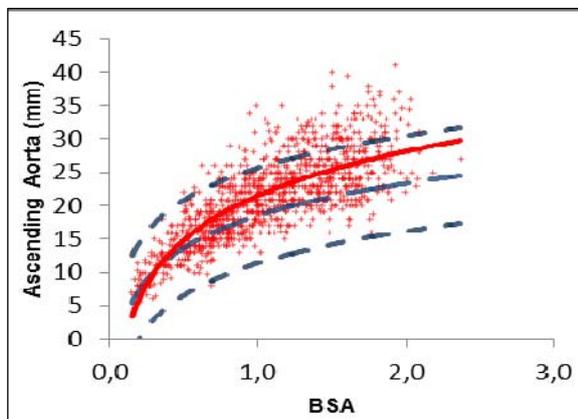
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**Objectives:** Establish the threshold to define aortic root and ascending aorta dilatation in adolescents with bicuspid aortic valve. Specifically in those adolescents with adult body surface area (BSA).

**Methods:** From the Spanish registry for children ( $\leq 18$  years) with bicuspid aortic valve (REVAB), under the Spanish Society of Pediatric Cardiology and Congenital Heart Diseases (SECPCC), patients  $\geq 10$  years were analyzed (N=464). The aortic root and the ascending aortic measures were compared in absolute value, value indexed by BSA and z-score, with the threshold of 40mm, 27.5mm/m<sup>2</sup> and +2/+3 respectively according to AHA guidelines. A second analysis was performed comparing patients  $\geq 10$  years with BSA  $< 1.5\text{m}^2$  and BSA  $\geq 1.5\text{m}^2$ .

**Results:** Overall, adolescents had a higher z-score of the ascending aorta than  $< 10$  years:  $1.82 \pm 1.8\text{SD}$  vs  $0.92 \pm 2.1\text{SD}$ ,  $p = 0.02$  (see figure); while there was no difference for the aortic root:  $0.40 \pm 1.3\text{SD}$  vs  $0.16 \pm 1.4\text{SD}$ . When analyzing patients  $\geq 10$  years, a total of 214 patients (46.1%) had a z-score of the ascending aorta  $\geq 2$  and 126 patients (27.1%) had a z-score  $\geq 3$  while only 7 (1.5%) had an indexed value  $\geq 27.5\text{mm/m}^2$  ( $p = 0.003$  and  $p = 0.002$  respectively) and 2 had an absolute value  $\geq 40\text{mm}$  ( $p = 0.195$  and  $p = 0.067$  respectively). For the aortic root, 51 patients (10.9%) had a z-score  $\geq 2$  and 13 (2.8%) a z-score  $\geq 3$  while 1 patient had an indexed value  $\geq 27.5\text{mm/m}^2$  ( $p = 1$  for both) and 1 patient had an absolute value  $\geq 40\text{mm}$  ( $p = 0.105$  and  $p = 0.027$  respectively). Almost half of the adolescents had a BSA  $\geq 1.5\text{m}^2$  (231, 47.7%), of those, 109 (47.2%) had an ascending aorta z-score  $\geq 2$ , 67 (29%) had a z-score  $\geq 3$ , none had an indexed value  $\geq 27.5\text{mm/m}^2$ , and 2 had an absolute value  $\geq 40\text{mm}$  (0.9%). For the aortic root, 20 (8.7%) had a z-score  $\geq 2$ , 4 (1.7%) had a z-score  $\geq 3$ , none had an indexed value  $\geq 27.5\text{mm/m}^2$ , and 1 had an absolute value  $\geq 40\text{mm}$  (0.4%).



**Conclusions:** There are a considerable number of patients who, depending on the dilatation criteria used, can be considered patients with a normal or dilated aorta, especially regarding the ascending aorta. This discrepancy is clinically significant, especially in the adolescent population when recommendations for lifestyle, follow-up and prognosis must be made.

**Figure:** Relationship between ascending aorta diameter and BSA. Dashed lines represent mean  $\pm 2$  standard deviation of expected size. Continuous line represent mean of our series size.