Aortic Elastic Properties in Patients With Bicuspid Aortic Valve

We read with great interest the report by Siu and Silversides (1) and we congratulate the investigators on their intriguing review. In this study, the authors tried to summarize available information on pathology, genetics, and clinical aspects of bicuspid aortic valve (BAV) disease. However, due to recent publications on aortic elasticity alterations in BAV disease, we believe that a few additional comments are necessary.

On the basis of published reports, BAV should be considered a disease of the entire aortic root and is associated with increased aortic stiffness (1–10). Schaefer et al. (5) described differences in aortic elasticity among different BAV phenotypes. Patients with anterior–posterior leaflet orientation had increased aortic stiffness at the sinuses of Valsalva compared with those with right–left leaflet orientation, but no difference in stiffness was found at the ascending aorta and aortic arch (5). Moreover, Biner et al. (6) found that the aortic root is functionally abnormal and dilation is common in first-degree relatives of BAV patients, as well. Nistri et al. (7) demonstrated that the ascending aortas of BAV patients with aortic regurgitation were less stiff and more distensible compared with those of subjects with normally functioning BAVs. In contrast, Grotenhuis et al. (8) found reduced aortic wall elasticity in patients with BAVs, which was associated with the severity of aortic regurgitation and left ventricular hypertrophy. Yap et al. (9) demonstrated that patients with congenital aortic valve stenosis have an abnormal aortic elasticity, which seems to be related to the dimensions of the aorta, but is independent of stenosis severity. Tzemos et al. (10) found that in young men with BAV, in which the comparison groups had similar baseline characteristics, those with dilated proximal ascending aorta manifested increased carotid-femoral pulse wave velocity, systemic endothelial dysfunction, and higher plasma matrix metalloproteinase-2 levels compared with either BAV subjects without dilated ascending aorta or control subjects.

Due to the aforementioned clinical studies, we know more on alterations in aortic elasticity in BAV disease. However, it should also be interesting to see whether other vascular functional parameters (myocardial or coronary flow reserve, and so on) are even altered in BAV patients. Moreover, further studies are warranted to evaluate changes in aortic elasticity (and other vascular functional properties) in BAV patients following invasive procedures.

REFERENCES


TGFB2 Gene Mutational Spectrum in Aortic Pathology

We have read with great interest the excellent paper recently published in the Journal by Siu and Silversides about bicuspid aortic valves (1). As mentioned, bicuspid aortic valve (BAV) is a congenital anomaly of great importance, not only because of its prevalence (affecting 0.5% to 2% of the population), but also because of its clinical implications, since it is associated both with early valve disease and the development of aneurysms and aortic dissections. However, this is still an incompletely understood entity in terms of both its genetic predisposition and pathogenesis. On the other hand, several genes involved in the development of thoracic aortic aneurysms and type A dissections have been described, and how mutations in the transforming growth factor beta receptor type I and II genes (TGFBRI and TGFBRII) cause

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