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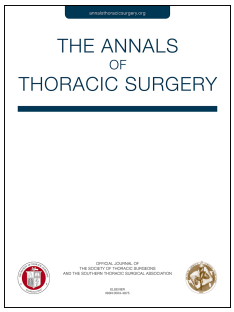

Type A aortic dissection in patients with bicuspid aortic valve aortopathy (Commentary)

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Dr. Kreibich and colleagues (1) report on type A aortic dissection comparing patients with tricuspid aortic valve (TAV) with bicuspid aortic valve (BAV).

They report comparable outcomes following dissection repair in both groups. They conclude that a significant number of patients had pre-dissection aortic diameters that did not meet the threshold for elective prophylactic aortic surgery.

The authors have highlighted the important question of timing for elective surgery on the aorta of BAV patients. The risks of aortic emergencies are higher in BAV patients. Optimum time of intervention when the risks of conservative management become higher than the risks of surgery is unclear. In finding this timing several factors other than size of the aorta should be considered.

The authors report that up to two thirds of the patients presenting with dissection had smaller aortas than the guideline for intervention. The literature on timing of surgery on the aorta based on size in BAV patients is mainly derived from patients with connective tissue disease. Considering that mortality following type A dissection at best is 10-15% (that is if the patient makes it to the hospital), this timing becomes paramount in a condition which affects 2% of the population. In contrast, mortality for even the more extensive aortic intervention in aneurysms associated with BAV like aortic root replacement and valve sparing root surgery is 1-2% in experienced groups.

Regarding the sizing of the aorta the current reports of measurement in the literature are inconsistent. Some use echocardiograms without specifying whether the sizing was performed during systole or diastole. Using CT or MRI, some measure inner edge to inner edge and others outer edge to outer edge. With these inconsistencies of measurement, it is difficult to base the decision to operate on pure size of the aorta. The authors as well as others and our group have highlighted the importance of indexing the size of the aorta (2,3) as well as being consistent using imaging techniques.

The morphology of the aorta and AV can affect the risk of dissection: supra-coronary as opposed to root dilatation. In supra-coronary dilatation, elective replacement of just ascending aorta, which has minimal additional risks, should suffice. The shape of the aorta whether it is symmetrical or asymmetrical dilatation, with bulging of the greater curve is important. There is higher imbalance of extracellular matrix proteins in the greater curve when there is asymmetrical dilatation of the aorta (4), presumably making the aorta more prone to dissection.

Kreibich and colleagues report that dissection extending to the abdominal aorta was more common in the TAV group. Does the BAV aortopathy involve the arch and descending aorta? Our recent follow-up study of BAV patients after aortic root replacement shows that the arch does not grow (5).

Measurement of wall sheer stress using MRI combined with biomarkers with detailed attention to valve and aortic morphology for each patient can improve prediction of aortic events and timing of surgery.

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