Commentary: Bicuspid Aortic Valves and Infective Endocarditis: A real problem without clear solutions.

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Central Message: Endocarditis prevention and use of mechanical valves that assures the lowest reoperation rate are essential aspects in the management of patients with bicuspid aortic valves

Central Picture: Bicuspid aortic valve and infective endocarditis: management strategy
While aortic dissection is the most recognized life-threatening complications associated with bicuspid aortic valve (BAV), it is not the most common. Infective endocarditis in BAV is at least three times more common than aortic dissection (10 cases vs. 3 cases per 10,000 patient/year) and has an incidence that is 17 times higher than in the general population often requiring surgical treatment.\textsuperscript{1-3}

Le and colleagues present a single center retrospective study comparing baseline characteristics, short, and long-term outcomes of surgeries for aortic valve endocarditis in patients with bicuspid and tricuspid aortic valves (TAV)\textsuperscript{4}. Patients with BAV were younger with fewer comorbidities and not unexpectedly, better outcomes. BAV had lower numerical operative mortality, better long-term survival, but higher reoperative rates compared with TAV. Although the subtypes of Streptococci were not specified, Streptococcus was most common organism in BAV while Enterococcus was more common in TAV. Mouth flora (i.e., Streptococcus Viridans) has been demonstrated to account for most cases of BAV IE\textsuperscript{5}. Therefore, prophylaxis for dental procedures in “high-risk” BAV patients was proposed for IE prevention. However, after guidelines recommended no dental prophylaxis for BAV in 2007\textsuperscript{6}, there has been no evidence of increasing streptococcus viridans IE. Additionally, adverse drug reactions and antibiotic resistance development do not support the use of prophylactic antibiotics. Therefore, strict adherence to general preventive measures put forth by the American and European societies is paramount\textsuperscript{7,8}. It is unknown whether patients were aware of their BAV or if they followed guideline recommendations. It is reasonable that at least some IE cases could have been prevented with careful guideline adherence.
Le et al., report a higher degree of calcification and aortic stenosis in BAV with IE, as compared to TAV. The hypothesis that turbulent flow from calcification and stenosis generates endothelial damage contributes to IE, is a notion that needs to be demonstrated further. Nonetheless, most “normally functioning” BAV have some “intrinsic” obstruction due to distorted anatomy, which generates turbulence and could predispose to IE.

TAV patients had higher rates of reoperation, primarily due to recurrent endocarditis (50%) and valve deterioration (50%). For BAV the most common indication for reoperation was valve deterioration (86%). This highlights the younger patient population and importance of considering mechanical valves for age appropriate candidates (45 to 55 years-old), where compared with bioprostheses in the aortic position are associated with better survival and less re-intervention.

BAV is the most common congenital cardiac defect, and streptococcus viridans IE represents its most frequent life-threatening complication. This requires the attention of the public health and scientific communities. Until high-quality data demonstrates benefit of antibiotic prophylaxis, early diagnosis of BAV, strict dental hygiene, and early detection/treatment of bacterial infections, continues to be the best management.
References:


Bicuspid Aortic Valves (BAV) and Infective Endocarditis

1) Early Identification of BAV
2) Endocarditis Prevention
3) Use of Mechanical Valves