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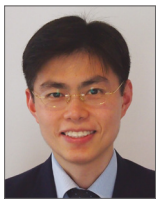
Transcatheter aortic valve implantation in rheumatic aortic stenosis



Paul T.L. Chiam, *Deputy Editor, AsiaIntervention*

Transcatheter aortic valve implantation (TAVI) has become an established treatment for patients with severe aortic valve stenosis (AS) who are inoperable or at high surgical risk[1-6], and an attractive alternative in intermediate surgical-risk patients[7,8]. Two years after TAVI achieved European commercial approval (CE mark), the technology became established in Asia[9]. As with the global experience, TAVI has been increasingly applied in Asia to off-label indications such as bicuspid AS[10], degenerated surgical bioprosthesis (valve-in-valve TAVI)[11], non-calcific AS[12], and pure aortic regurgitation[13].

Rheumatic heart disease (RHD), although declining in incidence over the past few decades, is still relatively prevalent in many parts of Asia. With better treatment of patients with RHD, their life expectancy is expected to increase, and it is likely that we in Asia may face more patients with rheumatic AS. It is not uncommon for patients with rheumatic AS to have had several episodes of heart valve surgery for mitral and tricuspid valve pathologies. Due to the previous sternotomies, longstanding cardiac disease and advancing age, many of these patients will be at elevated risk for aortic valve replacement. Thus, TAVI may have a unique role in such patients.

The pathology of rheumatic AS is, however, quite distinct as it is due to commissural fusion, leaflet fibrosis and thickening, without significant calcification. One of the concerns of using TAVI in such patients is whether the transcatheter heart valve can be well anchored. Our group has previously demonstrated that, in a patient with systemic lupus erythematosus-associated AS (where the pathology was leaflet thickening without valve calcification), a SAPIEN XT valve (Edwards Lifesciences, Irvine, CA, USA) was implanted in a stable position[12]. As rheumatic AS involves a similar pathology to that of leaflet thickening and fibrosis, it is likely that a transcatheter valve could be successfully anchored. What remains uncertain is if the commissural fusion would be "split", as with mitral valvuloplasty, or if the annulus would merely be stretched to accommodate the new valve. There have been very few reports of TAVI in rheumatic AS[14,15], and the latest report by Gunasekaran et al[16] in this issue of AsiaIntervention adds to the growing knowledge of this niche application.

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In their report, Gunasekaran et al[16] describe a 70-year-old lady with mitral valve surgery on two previous occasions and severe comorbidities, presenting with symptomatic severe rheumatic AS. Due to her high surgical risk, TAVI was chosen as the preferred treatment option by the local Heart Team despite a lack of leaflet or annular calcification, and a SAPIEN 3 valve (Edwards Lifesciences) was successfully implanted without paravalvular leak and with satisfactory valve function at six months.

It appears that TAVI is a feasible alternative in rheumatic AS. In this author's experience of seven cases of rheumatic AS (unpublished data), TAVI, using either the SAPIEN or CoreValve (Medtronic, Minneapolis, MN, USA) prostheses, was successful in all cases with durable results at one year. With newer-generation TAVI devices which have an outer skirt (to reduce paravalvular leak) or recapturability (to enhance accurate deployment), the outcomes of TAVI in rheumatic AS can be expected to improve.

As the benefit-risk ratio of TAVI in rheumatic AS becomes more favourable, TAVI may become the first treatment choice for many patients with RHD who have undergone various interventions for mitral or tricuspid disease. This will have a significant impact in Asia where more patients with chronic RHD may present with severe rheumatic AS due to a general rise in longevity.

There are, however, questions that remain unanswered. What is the exact mechanism of the transcatheter valve expansion when deployed within a rheumatic AS, and what is the durability of TAVI in these rheumatic patients who are generally younger and may still have an ongoing low grade inflammatory response? This is one area of TAVI where Asia should and could take the lead to understand better the role(s) of TAVI in rheumatic AS.

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