Letters to the Editor

Transfemoral transcatheter aortic valve implantation and aortic calcification

Dear Editor,

We read with great interest the article by Gonska et al. [1] titled *The balloon-expandable Edwards Sapien 3 valve is superior to the self-expanding Medtronic CoreValve in patients with severe aortic stenosis undergoing transfemoral aortic valve implantation*. The authors compared 100 consecutive patients treated with the balloon-expandable Sapien 3 (ES3; Edwards Lifesciences, Irvine, CA, USA) for severe aortic stenosis with 100 patients treated with the self-expanding CoreValve (CV; Medtronic, Minneapolis, MN, USA) [1]. The authors concluded that there is a significantly higher rate of device success with the ES3 in comparison to the CV and also a significantly lower rate of moderate or severe aortic regurgitation [1]. We totally agree.

However, calcification of the device landing zone and its extension into the left ventricular outflow tract (LVOT) is a major concern in certain patients, due to the high risk of annulus rupture during transcatheter aortic valve implantation (TAVI), as well as its link to paravalvular regurgitation. Self-expanding valves are more favorable in these patients with heavily calcified annulus as they allow a more progressive expansion and compliant adaptation to the native annulus by being less sensitive to oversizing and generating less stress on the calcified annulus [2,3].

The 2017 American College of Cardiology Expert Consensus Statement for TAVI also suggests that a self-expanding device may be preferable to a balloon-expandable one in some situations. These include severe calcification of the aortic annulus/LVOT with an attendant risk of rupture, an extremely oval-shaped annulus, or cases with transfemoral access when femoral artery diameter is between 5.0 mm and 5.5 mm [3]. Additionally, the newer generation of self-expanding valves (CoreValve Evolut R, Medtronic) can be repositioned and recaptured prior to full deployment, conferring the advantage in reducing complications from malpositioning [3]. A balloon-expandable valve is the only option in patients needing a transapical approach such as those with a significant aortic valve calcification and peripheral vascular disease [3].

Furthermore, valve sizing has to be especially accurate when LVOT calcification is present, as even minor oversizing of the prosthesis or too aggressive balloon aortic valvuloplasty may lead to catastrophic outcomes [4].

All in all, via transfemoral approach, a self-expanding TAVI is currently the optimal management to avoid potential complications due to the calcification landing zone. A self-expandable valve for calcification patterns that extend down to the LVOT may be a more suitable option than a balloon-expandable one as it conforms better to the aortic anatomy, reducing the risk of annulus rupture during implantation. Repositionability potentially represents a crucial step toward higher safety and efficacy of TAVI.

Nevertheless, the final treatment decision should be individualized using clinical and imaging evaluation, patient goals and expectations, risk category, and futility considerations as recommended in the updated American Heart Association/American College of Cardiology Guideline for the management of patients with valvular heart disease [5].

Conflict of interest

None declared.

References


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