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Letter to the Editor

Aortic aneurysm in patients undergoing transcatheter aortic valve implantation: A prognostic determinant? or just an innocent bystander?

Dear Editor

In clinical practice, transcatheter aortic valve implantation (TAVI) has been the focus of considerable interest as an effective strategy for the management of aortic valve disease particularly in surgically inoperable subjects.[1] However, periprocedural complications as well as long-term mortality among TAVI recipients still remain relatively high largely attributable to the significant baseline comorbidities of these high-risk subjects.[1,2] In their recently published elegant study,[3] Kobayashi et al. have demonstrated the neutral clinical impact of accompanying aortic aneurysms in the setting of TAVI with regard to periprocedural vascular complications along with in-hospital and 6-month adverse cardiovascular events. Within this context, I would like to make a few comments regarding the clinical relevance of aortic aneurysms:

First, periprocedural vascular complications (aortic dissection, etc.) as well as stroke might not only be dependent on baseline aortic features (including aortic aneurysm, mural thrombus, calcification, and so forth) but also be strongly associated with the type of the TAVI delivery system (stiff or resilient), size of the catheter,[4,5] and operator experience. Within this context, certain valve types were previously suggested to be more likely to elicit acute vascular complications including aortic dissection and other life-threatening conditions including late coronary ischemic syndromes etc.[4,5] Accordingly, did the types of TAVI bioprostheses (balloon-expanding, self-expanding, and mechanically expanding) differ significantly between patients with and without an aortic aneurysm in the present study[3]? Importantly, particular performance of TAVI specifically by more experienced operators along with the cautious use of more resilient and smaller delivery systems in patients with an aortic aneurysm might have neutralized the potential difference between the groups particularly in terms of periprocedural vascular complications.[3]

Second, as opposed to the conventional belief, the diameter of a given aneurysm might not serve as the sole determinant of its complication risk (rupture, dissection, and so forth), suggesting the particular roles of certain structural factors including the presence of mural thrombus, degrees of local inflammation, and calcification within the aneurysmatic wall[6] as well as the magnitude of wall thickness. Therefore, relatively small aneurysm sizes, and probably, favorable structural features (diminishing vulnerability of aneurysmal sacs) might have precluded excess iatrogenic or long-term spontaneous complications associated with aneurysms in the present study.[3] Importantly, structural characteristics of aneurysmal sacs (on top of aneurysm diameter) should particularly be evaluated through advanced diagnostic modalities such as magnetic resonance imaging, positron emission tomography, and so forth[6] for the prediction of procedural and long-term

Author response

To the Editor

We would like to thank the readers for their interest and comments regarding our recent article.[1] In our study, the majority of patients (94.0% of the studied patients) who underwent transcatheter aortic valve replacement (TAVR) received balloon-expandable bioprosthesis. The types of bioprosthesis between those with and without aortic aneurysms were comparable (90.9% vs. 94.3%, $p = 0.63$). In addition, all TAVR procedures were performed by a single experienced interventional cardiologist; thus, we do not believe that the experience of an operator influenced the results of our study.

We agree that, in addition to the diameter of aortic aneurysms, some other characteristics of aneurysms such as the presence of mural thrombus, the degree of calcification, wall thickness, mobile atheroma, ulcer, or dissection may also influence the clinical outcomes in patients undergoing TAVR. However, in our study, data regarding aforementioned characteristics were not available. In our study, none of the 22 patients with aortic aneurysms had additional imaging tests such as magnetic resonance imaging or positron emission tomography before TAVR. After the index procedure, three of those 22 patients had another computed tomography performed for non–aneurysm-related medical conditions.

Akihiro Kobayashi
Banner University Medical Center Phoenix, USA

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complication risks (and hence, to implement the most proper therapeutic strategy) in the setting of TAVI. In the presence of high-risk aneurysms, TAVI should be canceled or, if possible, be performed with endovascular aneurysm repair.[3] Accordingly, did the authors perform any other specific imaging tests to further evaluate structural features of these aneurysms in the pre-TAVI setting and on follow-up?

In summary, the authors[3] should be congratulated for their interesting study despite the small sample size (particularly those with an aneurysm) potentially precluding firm conclusions in this setting. In general, it seems more crucial and imperative to also determine the structural characteristics of aortic aneurysms in patients undergoing TAVI (as compared with those having aortic aneurysms in isolation) for the most proper therapeutic decision-making in these high-risk subjects (for instance, perform or cancel TAVI, etc.). Moreover, if TAVI is the planned strategy, it should be performed with the use of resilient TAVI systems and by the most experienced team available. Therefore, a coexisting aortic aneurysm in the setting of TAVI should not be regarded just as an innocent bystander but as a clinical phenomenon with important implications unless proven otherwise in larger patient series.

Conflict of interest

None.

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Kenan Yalta
Trakya University, Cardiology Department, Edirne, Turkey
E-mail address: akenanyalta@trakya.edu.tr.

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