Letter by Ozkan Regarding Article, “Low-Flow, Low-Gradient Severe Aortic Stenosis Despite Normal Ejection Fraction Is Associated With Severe Left Ventricular Dysfunction as Assessed by Speckle-Tracking Echocardiography: A Multicenter Study”

To the Editor:

I read with a great interest the study of Adda and colleagues,1 who investigated myocardial dysfunction in low flow-low gradient severe (LFLG) aortic stenosis (AS) despite preserved left ventricular ejection fraction (LVEF) by using 2D speckle-tracking echocardiography and compared severe AS patients by dividing into 4 groups, based on their flow/gradient pattern to identify their characteristics. They concluded that severe LV longitudinal dysfunction can explain LFLG despite preserved LVEF. However, results of this multicenter study have merit further discussion.

Although LVEF looks apparently preserved, impaired LV mid wall fractional shortening (MWFS)2 and decreased LV global longitudinal strain (GLS) have been shown in severe AS patients. Interestingly, there is no difference between groups in terms of LV MWFS; decreased GLS and impaired LV basal deformation were found in all groups, most pronounced in group 2 (LFHG) rather than group 4 (LFLG). Although the authors could not demonstrate a significantly lower GLS in the LFLG group, they concluded it as if only LFLG patients had severe myocardial dysfunction.

Low basal longitudinal strain was also found in all groups. However, in a study of healthy individuals, the normal value of segmental analysis revealed that deformation of basal LV segments, in particular the inferoseptum (14.6%) and the anteroseptum (13.9%), were lower than in the other segments.3 In another multicenter study, deformation of basal septum was found lower in comparison to the other wall and was reported as 13.7±4.4 These findings are related to the natural course of LV deformation and may not be attributed only to specific LV dysfunction in any AS cohort.

From a clinical standpoint, symptomatic status of AS patients is of particular importance in making a clinical decision; however, symptomatic status was surprisingly not reported in this study. Low strain values may provide risk stratification in particular for asymptomatic severe AS patients.

Interestingly, 78% of patients were found hypertensive in group 3 but still had normal (or lower in comparison to other groups) global load as reflected by valvulo-arterial impedance (Zva). This is a very important point that clinicians should consider because of pseudo-normalization of blood pressure. It should be kept in mind that in addition to pressure overload, both increased afterload (which may cause low gradient itself) and decreased systemic arterial compliance are the main mechanisms of LV dysfunction in AS.

Because stroke volume index (SVi) is used to define flow and to calculate Zva, underestimation of LVOT measurements may yield an overestimation of Zva. Because the blood pressures were not statistically different in all groups, finding decreased SVi (low flow) with increased Zva was therefore not an unexpected result. Not surprisingly, the highest value of Zva with the lowest GLS was found in group 2 (LFHG), not in group 4 (LFLG); however these findings are not consistent with the title, the conclusion, and clinical implications of the study.

Disclosures

None.

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References


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