We read the article by Stassen et al.\(^1\) with great interest showing the remarkable impact of left ventricular (LV) concentric hypertrophy on mortality in moderate aortic stenosis (AS). Segmental LV remodelling analysis by real-time three-dimensional echocardiography (RT3DE) showed non-uniform morphology in patients with pressure overload. We previously developed a quantitative volume index to separate long-axis LV cavity to three equal slices as base, mid, and apex using RT3DE to visualize segmental details of LV cavity and realized that secondary LV hypertrophy to both AS and hypertension are associated with a diminished basal intracavity volume like ampulla shape two decades ago, while hypertrophic cardiomyopathy had a reduced midsegmental volume that represents the catenoid geometry.\(^2\)

Predominantly developed septal base is a conjunctive point of determination in both emotion-mediated acute stress cardiomyopathy and increased afterload-mediated chronic hypertensive heart disease and called stressed heart morphology (SHM). We have recently mentioned the mechanic component of SHM in AS patients in addition to emotional and functional components of SHM.\(^3\) Regular LV remodelling distribution using third-generation microscopic ultrasonographic data in animal validation studies was different from extremely heterogenous morphology in human data.\(^4\) This observation provided us great opportunity to think some other factors which possibly have an impact on irregular morphology in humans. Then, we reported the difficulty in the determination of certain prevalence.
of SHM and suggested that scientists should be cautious in quantification of this morphological finding. We have recently started to focus on cognitive functions in SHM patients and our initial data have been accepted for exhibition at the ESH 2022.

According to these observations, we believe that segmental remodelling as detected in hypertensive heart disease could also be a potential underlying mechanism in moderate AS leading to advance disease. In fact, determination of predominant LV base in advance AS (Figure 1) in contrast to decreased mass over midapical segment in disease course could be related to intensive sympathetic innervation on LV base and superior to cross-sectional analysis for global LV geometric assessment and contributing on prognostic evaluation in AS.

However, increased mortality which is dependent on the concentric LV hypertrophy in the interesting article by Stassen et al. does not practically provide any new paradigm over classical knowledge that increased myocardial mass in AS contributes to the morbidity and mortality due to pathological hypertrophy, then ultimately leads to heart failure. Therefore, the absence of any information regarding LV segmental data could possibly be pointed out as the limitation in the article because segmental analysis of heterogenous myocardial mass distribution could be more informative than cross-sectional data for mortality assessment in AS.

As the conclusion, morphological and functional discrepancy between LV base and midapical segments in LV remodelling seems important according to segmental remodelling data. On the other hand, since there is no collective segmental data in clinical practice rather than cross-sectional assessment of global LV morphology seems an obstacle to evaluate segmental remodelling details individually which could contribute to mortality assessment in AS.

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References