

Evaluation of Left Atrial Volumes and Ejection Force by Real-Time Three-Dimensional Echocardiography

We read with great interest the article by Zhong et al¹ entitled 'Effects of age and gender on left atrial ejection force and volume from real-time three-dimensional echocardiography'. The authors determined the normal reference values for left atrial (LA) volumes and LA ejection force (LAEF) assessed by real-time three-dimensional echocardiography (RT3DE). The study was interesting, but we have a few additional comments on the evaluation of LA volumes and LAEF.

Anwar et al were the first to demonstrate that RT3DE provides a reproducible assessment of active and passive LA function by volumetric cyclic changes.^{2,3} They confirmed that a Frank-Starling mechanism in the LA could be described by RT3DE, shown by an increase in LA contractility in response to an increase in LA preload up to a point, beyond which LA contractility decreased.² Moreover, this working group was the first which used RT3DE in calculating LAEF by RT3DE.^{4,5} Hypertrophic cardiomyopathy (HCM) and noncompaction cardiomyopathy (NCCM) were found to be associated with higher LAEF than in normals (and higher in obstructive HCM than in non obstructive HCM) indicating a higher atrial workload reflected by LAEF.^{4,5} The usefulness of strain-based three-dimensional speckle-tracking echocardiography (3DSTE) has also been demonstrated in the evaluation of LA volumes, functional properties and LAEF in a patient with NCCM.⁶

All these results could bring our attention on RT3DE and 3DSTE in the accurate assessment of LA volumes and function. However, further studies are warranted to confirm the above mentioned facts.

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