WILL IMPROVED TECHNIQUES FOR LEFT ATRIAL VOLUME MEASUREMENTS REQUIRE ADJUSTMENTS IN ENLARGEMENT SEVERITY CUTOFFS?

Poster Contributions
Hall C
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Background: Enlarged left atrial (LA) volume (LAV) is an important predictor of morbidity and mortality and an important indicator of diastolic dysfunction. Two-dimensional echocardiography (2DE) is recommended to measure LAV. These measurements frequently underestimate LAV because they are performed in apical views optimized to depict the longest axis of the left ventricle, while the left atrium is foreshortened. We hypothesized that the use of non-foreshortened apical views of the left atrium would: (1) result in larger LA volumes, (2) indicate enlarged LAV in a sizable percentage of patients, who would be classified as normal using current guidelines, and (3) be more reproducible.

Methods: We studied 104 patients (BSA 1.92±0.25 m²) with a wide range of LA volumes (23-168 ml). LAV was measured at ventricular end-systole using the method of discs approximation from conventional apical 4-chamber (A4C) views and separately from non-foreshortened LA-focused apical views, and indexed by BSA (LAVi). For each technique, LAV was graded as mildly (LAVi≥29 ml/m²), moderately (>33 ml/m²) or severely (>39 ml/m²) enlarged, according to current guidelines. Inter- and intra-observer variability was assessed using repeated measurements by readers blinded to prior results, and calculated as absolute difference between repeated measurements in % of their mean.

Results: LA volumes obtained from non-foreshortened LA-focused views correlated highly with those obtained from conventional A4C views (r=0.94), but were larger (Bland Altman bias 7 ml, limits of agreement ±19 ml). As a result, LAV was reclassified in 31/104 (30%) patients (1 grade up in 21 patients, >1 grade up in 7, and 1 grade down in 3). LA-focused views resulted in better reproducibility compared to the conventional A4C views (inter-observer: 3.6±3.6% vs. 4.6±3.8%; intra-observer: 3.7±3.6% vs 4.6±5.1%).

Conclusions: Non-foreshortened LA-focused apical views result in larger and more reproducible measurements of LAV. As more accurate measurements techniques are adopted, adjustments in LAVi cutoff values should be considered in future guidelines.