Abstract: **P2459**

**Do left atrial strain measurements provide information independent from left ventricular function parameters?**

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**Topic(s):**
Tissue Doppler, Speckle Tracking and Strain Imaging

**Citation:**

Introduction: LA strain has been proposed to be a reliable and independent prognostic marker, as well as a useful surrogate of LA function.

Purpose: To assess if LA deformation measurements add independent information to standard echocardiographic measurements.

Methods: We included 66 normals and patients with a wide range of pathology and diastolic dysfunction grade from the echo data base of our hospital if image quality was sufficient for both LA and LV strain analysis. Patients with a mobile interatrial septum, arrhythmias and more than mild valvular regurgitation were not considered. Standard echocardiographic measurements including LA and LV volumes were performed according to current guidelines. LA and LV longitudinal strains were assessed by 2D speckle tracking in the same cardiac cycle in apical 4 and 2 chambers views using peak R as time reference. Peak LA and LV strain as well as LA and LV strain at onset of LA contraction were measured to calculate the strain components of all three phases of the cardiac cycle (systolic, early diastolic and late diastolic).

Results: In our cohort, the ratio of LA and LV systolic strain was directly and strongly related to the volume ratio of the two chambers ($R^2=0.894$, slope=−1.001, $p<0.0001$, see Figure 1). This was confirmed by a multivariate regression analysis, where systolic LA strain proved to be strongly dependent on systolic LV strain, LA volume and LV volume ($R^2=0.872$, $p<0.0001$ for the final model). For early diastolic strain, confounders were LV early diastolic strain, LA volume, LV volume and lateral wall E’ tissue velocity ($R^2=0.784$, $p<0.0001$); while LA late diastolic strain was dependent on LV late diastolic strain, LA volume, LV volume and lateral wall A’ tissue velocity ($R^2=0.823$, $p<0.0001$).

Conclusions: Our data suggest that systolic LA strain (reservoir strain) is strictly dependent on systolic LV strain and the volume ratio of both chambers and, therefore, its measurement cannot provide additional information beyond classical measurements. Diastolic LA strain components show a less strict dependence on LV function and may therefore provide additional information.
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