**EVALUATION OF ATRIAL ASYNCHRONY IN HEART FAILURE PATIENTS BY 2D SPECKLE TRACKING USING VELOCITY VECTOR IMAGING**

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Background: 2D speckle tracking–derived left atrial (LA) strain facilitates comprehensive evaluation of LA function.

Objectives: We aimed to evaluate inter and intra-atrial asynchrony in heart failure patients by speckle tracking echocardiography.

Methods: 25 patients (51±13.3 years) with systolic dysfunction (LV EF less than 40%) were compared with 24 normal subjects (41.5±14.5 years). Time difference from onset of P wave to late negative LA strain (considered as LA contraction) on three points of lateral LA(P-LA), interatrial septum (P-IAS), and RA free wall (P-RA) were measured.

Results: There was significant delay from onset of P wave to late negative LA strain (214±30 versus 249±56 msec, P=0.009) and LA strain rate (157±26 versus 191±45 msec, P=0.003) in heart failure patients. The onset of P wave to late negative interatrial septum strain (P-IAS) and time difference between peak negative strain of LA free wall and IAS [(P-LA)-(P-IAS)] was significantly prolonged in heart failure patients (149±27 versus 198±26 msec, P=0.048 and 15.47±3.7 versus 30.56±4.8, P =0.014 respectively).Strain rate measures showed significant differences in interatrial synchrony (3.5±4.7 versus 22±3.7msec, P=0.02).We found a moderate direct correlation between interatrial asynchrony with systolic pulmonary arterial pressure (P=0.022, r=0.5) and a weak negative correlation between LA and interatrial asynchrony with LV ejection fraction and weak positive correlation between indexed LA Volume and interatrial asynchrony (P =0.011, r =0.325).

Conclusion: In patients with HF, significant LA and interatrial asynchrony was documented by 2D speckle tracking. Asynchrony was related to systolic pulmonary artery pressure, LVEF and LA volume index.