

Systolic longitudinal function of the left ventricle, as assessed by speckle-tracking (2D-Strain) in patient with diastolic dysfunction and normal ejection fraction

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Background: Heart failure with normal ejection fraction (HFNEF) is common in clinic. Echocardiographic evaluations of longitudinal axis of left ventricle function have been reported useful in understanding HFNEF. Global and segmental peak systolic longitudinal strain (LPS) which is evaluated by 2D speckle-tracking echocardiography (STE), is possible to be related to conventional echocardiography findings. In this study we aim to use STE for evaluation of longitudinal function of left ventricle in patients with HFNEF.

Methods: In this cross-sectional analytical study, 126 patients with HFNEF and diastolic dysfunction and 60 normal subjects underwent conventional echocardiography and STE evaluations. Findings from conventional echocardiography and STE were compared.

Results: HFNEF group had significantly higher septal thickness, PWT, LAVI, IVRT, E/E' ratio and deceleration time and lower peak E, E/A ratio and septal E' compared to normal group. Global, basal, mid and apical LPS were significantly lower in HFNEF group. There was significant positive correlation between global LPS with septal E' and negative correlation between E/E' ratio with mid LPS and basal LPS, and positive correlation between septal E' with mid PLS and basal PLS. Correlation between GLPS and Mid LPS with IVRT was negative, as well as negative correlation between Basal and Mid LPS with NYHA function class.

Conclusion: Patients with HFNEF have different STE and conventional echocardiographic findings compared to normal subjects. Also, longitudinal systolic function of left ventricle which is measure by STE, is reduced in all segments which is indicator of some degrees of subclinical systolic dysfunction in these patients.

Keywords: Speckle tracking; Longitudinal function; Strain; Heart failure; Diastolic Dysfunction