**VALIDATION OF SPECKLE TRACKING STRAIN MEASUREMENTS AS AN ACCURATE AND REPRODUCIBLE TECHNIQUE FOR DETECTING GLOBAL AND SEGMENTAL MYOCARDIAL DEFORMATION**

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Aim: To study the feasibility, reproducibility and accuracy of speckle tracking echocardiography STE strain as compared with left ventricular segmental wall motion score (SWMS) by two-dimensional echocardiography (2DE).

Methods: 2DE and STE was performed in 40 individuals (29 males, mean age 59.4±13.6 years). Study population included 2 groups, (GI) 20 patients with ischemic heart disease and (GII) 20 healthy volunteers with matched age and sex. Quantitative segmental STE strain and SWMS from the 2DE images were analyzed by 2 different experienced blinded observers. The 16 segments model was used for analysis of both modalities.

Results: Left ventricular ejection fraction by biplane modified method was 41.9±14.1% and 58.2±11.1% for GI and GII respectively. STE strain analysis was feasible and improved analysis of myocardial segments as it reduced the non interpretable segments to 15/480 (2.6%) as compared to 25/480 (5%) by 2DE-SWMS. This was more evidenced for basal lateral segment (non adequate segments reduced to 4 by STE strain as compared to 10 for 2DE-SWMS). Global STE strain was (GI= -9.3±7.1 and GII= -15±3.7, p=0.02), while 2DE-SWMS was (GI=24.9±6.4 and GII=16.0±0.0, P=0.0001. Inter-observer variability of segmental STE strain were (-0.0±2.3 and -0.0±1.9 for GI and GII respectively) which was found to be less than that of 2DE-SWMS (-2.1±5.9, -2.4±5.9 and -1.7±5.9 respectively).

Conclusions: STE strain is feasible and provides an accurate technique for calculating global and segmental myocardial deformation as compared with 2DE-SWMS. STE Strain has better segmental myocardial visualization with less inter-observer variability as compared to 2DE-SWMS.