ABSTRACT

Title of study:
Use of Two-Dimensional Speckle-Tracking Echocardiography for Quantitative Assessment of Global Left Ventricular Function in comparison to 2 D ejection fraction and 3 D ejection fraction

Objective:
1. To determine whether global strain derived from 2 D speckle tracking echocardiography(STE) are as accurate as three dimensional (3D) ejection fraction and two dimensional left ventricular (LV) ejection fraction.
2. To see intra-observer and inter-observer variation in measuring 2D global strain and 2 D ejection fraction and 3 D ejection fraction.
Methods:

This prospective observational study was planned to include 100 patients with LV systolic dysfunction (defined as patient with EF less than 50%) from cardiology inpatient and outpatient. All the patients underwent detailed Echocardiography with 2D speckle tracking and 3D echocardiography. Baseline characteristics of patients were noted. The aim of study was to determine whether global strain derived from 2D speckle tracking echocardiography (STE) is as accurate as three dimensional (3D) ejection fraction and two dimensional ejection fraction.

Results:

This study showed that there is strong co-relation between speckle tracking echocardiography derived 2D global strain and LV ejection fraction. Although both global longitudinal strain (GLS) and global circumferential strain (GCS) has co-related well with LV function assessment using 2D and 3D echocardiography, but GLS has better co-relation than GCS in our study. This study also showed low inter-observer and intra-observer variability in calculating 2D STE derived global strains and 3D ejection fraction.
Conclusion:

This study has proved that the feasibility and accuracy of 2D speckle tracking echocardiography assessment in a wide range of LV function. This study population also enabled us to understand that these results can be generalised and can be applied in real life clinical practice. The strong reproducibility as shown by low intra-observer and inter-observer variability makes 2D STE derived global strains a robust marker with potential clinical use.
KEYWORDS

3D: THREE DIMENSIONAL

2D: TWO DIMENSIONAL

GLS: GLOBAL LONGITUDINAL STRAIN

GCS: GLOBAL CIRCUMFERENTIAL STRAIN

STE: SPECKLE TRACKING ECHOCARDIOGRAPHY

LV: LEFT VENTRICLE

EF: EJECTION FRACTION