

Two Dimensional Speckle Tracking Echocardiography Assessment of Left Ventricular Remodeling in Patients after Myocardial Infarction

Abstract

Background: Adverse Left Ventricular Remodelling (LVR), defined as progressive ventricular dilatation, distortion of chamber shape, myocardial hypertrophy and deteriorating function, begins in some patients who suffered from Acute Myocardial Infarction (AMI), sometimes even after successful Percutaneous Coronary Intervention (PCI). If uninterrupted, it could lead to Congestive Heart Failure (CHF) and a poor clinical outcome.

Aims: This study aims at evaluating the value of Speckle Tracking Echocardiography (STE) in predicting LVR after successful PCI in AMI patients.

Materials and Methods: Eighty-four AMI patients had a complete echocardiographic study, including speckle tracking, performed two days after PCI and then two months afterwards. The patients were then divided into two groups based on the presence of remodelling; R+ (remodelling) group and R- (non-remodelling) group.

Results: At the baseline study, group R+ showed significantly lower strain parameters than group R-. These included Global Longitudinal Strain (GLS) (-11.14 ± 0.5 VS -16.78 ± 0.4 , $p < 0.0001$), longitudinal strain rate (-1.01 ± 0.05 VS -1.07 ± 0.04 , $p < 0.0001$), Culprit Longitudinal Strain (CulLS) (-9.74 ± 0.59 VS -15.68 ± 0.49 , $P < 0.0001$), and culprit longitudinal strain rate (-0.95 ± 0.05 VS -1.02 ± 0.04 , $P < 0.0001$). In the follow up study, all of the strain parameters studied were again significantly lower in the R+ than the R- group. The most sensitive and specific parameters were the GLS and CulLS (sensitivities of 91.7% and 95.8% respectively and specificities of 95% and 96.7% respectively).

Conclusion: Our findings show that impaired indices of LV deformation detected two days after successful PCI for AMI may provide a predictive value in early detection of LV remodelling.