

Left Ventricular Systolic and Diastolic Functions After Cardiac Rehabilitation in Successfully Revascularized Patients With Acute Myocardial Infarction

Mohamed Ismail Abdel Rahman Sayed Rashed

BACKGROUND

Coronary artery disease (CAD) is a widely prevalent disease with many adverse sequelae. As survival after myocardial infarction or coronary revascularization has improved, cardiac rehabilitation and secondary prevention services have become more important. Advances in ultrasound such as Doppler imaging, strain or strain rate imaging provide comprehensive information on left ventricle (LV) myocardial contractility.

OBJECTIVE

to evaluate the possible early effect of intensive supervised Cardiac rehabilitation on the LV systolic and diastolic functions in patients with acute myocardial infarction (AMI) who had been successfully revascularized by primary percutaneous coronary intervention (PCI) using two dimensional (2D) speckle tracking and Doppler imaging.

MATERIALS AND METHODS

thirty patients with AMI and successfully revascularized by primary PCI were enrolled in the study. LV global longitudinal strain (LVGLS) analysis was performed using 2D speckle tracking echocardiography before and after Cardiac rehabilitation. LV ejection fraction (EF) was measured using the modified Simpson's method.

Pulsed-wave Doppler at the tip of mitral valve leaflets was also done allowing us to measure the early (E) and late (A) diastolic filling velocities, E/A ratio. The LV tissue velocity was measured by TDI of the lateral mitral annulus (e') and E/e' was calculated and LV diastolic dysfunction (DD) grade was estimated.

RESULTS

There was significant improvement in LVEF measurements before and after Cardiac rehabilitation (47.50 ± 6.42 before vs. 52.17 ± 6.64 after; $p=0.000$). The improvement in 2D speckle tracking LVGLS after Cardiac rehabilitation was statistically significant ($p=0.000$). the diastolic function as assessed by TDI after a 3- month program of exercise-based cardiac rehabilitation has improved with decrease in the number of patients with DD grade I and increase in the number of normal diastolic function with p-value $P < 0.01$ (highly significant).

CONCLUSION

cardiac rehabilitation has beneficial effects on LVGLS, LVEF as well as diastolic function after AMI and successful revascularization.