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Role of 2-dimensional speckle tracking echocardiography in improving diagnosis of coronary artery stenosis in stable angina pectoris patients

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Background: Conventional echocardiography at rest provides little information regarding the presence of coronary artery disease (CAD), longitudinally orientated myocardial fibers are located subendocardially, the area most susceptible to ischemia, that is why measurements of longitudinal motion and deformation may be the most sensitive markers of CAD using (2DSE) The aim of this study was to determine if 2DSE performed at rest can enhance the sensitivity of exercise test and if it can predict the presence of CAD in patients with stable angina pectoris.

Methods: The study includes (120) subjects suspected to be stable angina pectoris patients presented for evaluation of chest pain at Al-Hussein University Hospital – Al-Azhar University – Cairo – Egypt between December 2013 and December 2015, the patients were classified according to coronary angiography results in to two groups:

Group (A): 40 patients with normal coronary angiography as a control subjects.

Group (B): 80 patients with significant coronary artery disease.

Results: There was statistically significant difference between the two groups as regard E wave, A wave, E/A ration, DT, Em and E/Em, there was statistically significant difference between the two groups as regard SLSS and GLS 17 and GLS 12, there was statistically significant difference between the two groups as regard SLSr and Sr17and Sr 12, there was statistically significant difference between the two groups as regard ST segment deviation during stress ECG, exercise capacity (METs) and Duke Score; in this study we found that strain parameters at BA, BAS, MA, MIS, MAS, AI and AL segments were found to be significant predictor of LAD stenosis and BP, MP were found to be significant predictor of LCX stenosis and BI was found to be predictor of RCA stenosis, also we found that strain rate parameters at BA, MA, MAS, AI, AL and apex segments were found to be significant predictor of LAD stenosis. BL, BP and ML were found to be significant predictor of LCX stenosis and BI, MI were found to be predictor of RCA stenosis, the diagnostic performance of the exercise test was significantly improved by GLS17 in terms of a significant increased AUC for the exercise test in combination with GLS17

Conclusion: In patients with suspected SAP, GLS assessed by 2DSE at rest is a predictor of significant CAD and significantly improves the diagnostic performance of exercise test, and capable of identifying which coronary artery is stenotic.

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