The value of Mitral annular plane systolic excursion for detection and significance of coronary artery disease in Dobutamine stress echocardiography.

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Abstract

Dobutamine stress echocardiography (DSE) is a test recommended for diagnosing coronary artery disease (CAD), which can also assess its severity. MAPSE (M-mode-derived long axis, mitral annular plane systolic excursion) can be used to measure the longitudinal shortening of the Left Ventricle (LV) which plays a major role in the pumping function of the cardiac muscle. For detecting early abnormalities, this parameter appears to be much more sensitive than global EF. **Objective:** In order to determine whether Delta change MAPSE in Dobutamine stress Echocardiography predicts ischemic heart disease and whether it correlates with coronary artery disease severity in patients with ischemic heart disease. **Patients and Methods:** This study evaluated 60 patients between April 2020 and July 2021, 30 of whom were ischemic (ischemic group) and 30 of whom were not (normal group). The MAPSE (septal, lateral, anterior, inferior anulus) is measured at each stress echo stage and the Delta MAPSE (Peak MAPSE – rest MAPSE) is calculated. Additionally, the EF is measured using modified Simpson's method for each stage and the Delta EF (Peak EF – rest EF) is determined. These measurements are then compared between two groups. The severity of coronary artery disease is assessed using the Gensini score (GS). **Results:** Our study comprised a total of 60 patients, with an average age of 59.5 ± 7.3 years. The male gender was predominant, accounting for 74% of the participants. A notable disparity was observed between the two groups in terms of their diabetic history, which was statistically significant. Specifically, 53% of the patients had diabetes, whereas only 27% of the control group had the condition (p=0.035). There was a statistically significant difference observed between the two groups in terms of Delta MAPSE (p<0.0001). The Delta MAPSE in patients was recorded as -0.54 ± 0.3, whereas in the control groups it was 0.88 ± 0.7. Additionally, a statistically significant difference was found between the two groups based on Delta EF (p=0.012). The Delta EF in patients was measured as 1.5±5.6, while in the control groups, it was 4.8±3.9. There was a significant negative correlation observed between delta MAPSE and Gensini score in the patients' group (P= 0.0085; r = - 0.47). Conversely, a negative correlation was also observed between delta EF and Gensini score in the patients' group, although it was not statistically significant (P= .029; r = - 0.2). **Conclusion:** The reduced MAPSE in dobutamine stress echocardiography (DSE) is an efficient and straightforward quantitative echocardiographic technique that can accurately anticipate both the existence and the extent of coronary artery disease (CAD).

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