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Relationship between left ventricular global function index and cardiac systolic functions in patients with chronic ischemic disease of the heart and diabetes mellitus

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Topic(s):
Cardiac Magnetic Resonance

Citation:
Background: Previous studies have suggested that the left ventricular global function index (LVGFI) might be a new prognostic indicator for the assessment of heart function. Role of the LVGFI in patients with chronic ischemic disease of the heart (CIDH) on the background of diabetes mellitus (DM) was not studied. We estimated the relationship between the LVGFI and cardiac systolic functions in patients with CIDH and diabetes mellitus.

Materials and methods: 118 patients with CIDH with concomitant diabetes mellitus (mean age 48 ± 14 years, mean age 54.6 years, male 45%) were enrolled in this study. All patients underwent laboratory, instrumental, 3D Echocardiogram, cardiac magnetic resonance (CMR) imaging and coronary angiography at baseline.

Results: The mean LVGFI was 29±12 %. Male patients showed a higher LVGFI than female patients (p = 0.043). LVGFI was related with ejection fraction (r = 0.84), minute volume (r=0.94), systolic index of contractility (r=0.74) and fractional shortening (r=0.36), and reverse related with end systolic size (r = - 0.39), end diastolic size (r= - 0.25) and CMR-determined ischemia size (r = -0.56, for all p < 0.05). Significantly, decreased LVGFI values were also observed in patients with INOCA patients with DM and patients with microvascular dysfunction (for all p < 0.05).

Conclusion: This study demonstrates that the LVGFI is strongly associated with systolic functions of the heart. LVGFI might be a predictor and assessment tool of the heart functional performance in patients with chronic ischemic disease of the heart and DM.