Assessment Of Left Ventricular Strain in The Pre-Diabetic Patients Using Two-Dimensional Speckle Tracking Echocardiography

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Abstract

Background:

Individuals with prediabetes are at a significant risk of acquiring type 2 diabetes and its consequences. Measures of atherosclerotic load were considerably greater in prediabetic patients presenting with acute coronary syndrome than in non-diabetic individuals; this burden was comparable to that of diabetic patients.

Aim:

To assess the left ventricular function among prediabetics compared to matched healthy control group using 2D echocardiography, speckled tracking echocardiography and tissue doppler imaging.

Patients and methods:

We conducted a prospective case control study enrolled 90 subjects, the included subjects were divided into two groups, group 1: prediabetic patients, group 2 matched health control. This study was conducted in Kasr Al-Ainy hospitals from September 2020 to March 2022.

Results:

Participants had a mean age 34.0 ±10.5 years, BMI 32.3 ±3.7 kg/m2, our results showed Systolic dysfunction in pre-diabetic patients which is evident by significant lower fraction shortening (1) p 0.006. significant lower Ejection fraction (2) 0.021, by standard echocardiography and significant lower lateral S wave p 0.0001. by Tissue doppler imaging (TDI), significant lower Global longitudinal strain (GLS) 0.0001. prediabetics had significantly higher E /e ratio p 0.0001, and lower medial E/A ratio when compared to control group p 0.024.

Conclusion:

Global longitudinal strain (GLS) is significantly impaired among prediabetics. Left ventricle diastolic dysfunction was more prevalent among prediabetics, So the condition of pre-diabetes is associated with impairment of both Systolic and diastolic functions of the left ventricle.

Key words: prediabetes, left ventricle strain, diastolic dysfunction, GLS.