Title: CARDIAC REMODELING AND ITS BIOMARKERS IN OVERWEIGHT ADOLESCENTS

Category: Prevention

Abstract

BACKGROUND: Cardiac remodeling (CR) is complex process involving cardiac myocyte growth and death. Impaired subclinical ventricular function may contribute to the risk of cardiovascular disease (CVD) in obesity. The longitudinal left ventricle (LV) strain and strain rate (SR) are accurate methods to study the early effects of overweight in the preclinical findings than traditional LV ejection fraction. The aims were to study the effects of overweight on LV longitudinal strain, SR and the CR biomarkers.

METHOD(S): Using the International Obesity Task Force (IOTF) interpretation of Body Mass Index (BMI), 105 children; at 7th and 11th grades were consented and divided as 53 normal (5th to 85th centiles). LV longitudinal strain and SR performed by 2D speckle tracking echocardiography (STE). Blood samples for CR biomarkers were done.

RESULT(S): The significant differences of LV longitudinal strain and SR between both groups were; 19.46±0.53 vz 20.6±0.52, $p<0.05$, and 1.14±0.02 vz 1.2±0.04, $p<0.05$ respectively. Pearson correlation between NT-pro-ANP and LV longitudinal peak strain basal inferior septum, $r = 0.34$ and $p <0.05$. Similarly; the correlation between NT-pro-BNP and LV longitudinal peak strain basal anterior septum is; $r = 0.35$ and $p < 0.05$. Also, C-Neuropeptide is correlated with longitudinal peak strain medial basal and anterior septum; $r = 0.44$, $p = 0.007$ and with longitudinal peak strain basal inferior septum $r = 0.345$ and $p < 0.05$. There is correlation between longitudinal peak strain apical lateral and endothelin-1, $r = -0.364$, $p = 0.029$, similarly; for the Adiponectin, $r = -0.517$, $p = 0.001$ and Adiponectin with LV longitudinal peak strain apical anterior, $r = - 0.35$, $p=0.039$.

CONCLUSION(S): The overweight problem is associated with preclinical longitudinal LV myocardial dysfunction and correlated with biomarkers of CR, which can provide subclinical markers for the emergence of future obesity related cardiac diseases.