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Echocardiographic evaluation of left ventricular function in normotensive obese children: A comparative analysis according to body mass index

Kibar A.E.(1), Pac F.A (1), Ece I.(1), Ballı S. (1)

Turkiye Yuksek Ihtisas Education And Research Hospital, Department Of Pediatric Cardiology, Ankara, Turkey (1)

Objective: The purpose of our study was to identify the impact of the body mass index (BMI) overweight and obesity in normotensive children on structural and functional changes on the left ventricular function (LV).

Metaryal-Methods: Normotensive 30 children with overweight (group 2) (mean age: 13.2±2.1 years, BMI: 25-30 kg/m²), and 30 children obesity (group 3) (mean age: 13.3±2.0 years, BMI ≥30kg/m²), and 30 healthy controls (BMI: 18-24.9 kg/m²) were included in this study. Continuous ambulatory pressure monitoring in obese groups, standard and pulse wave (PW) Doppler echocardiographic examination have been evaluated in all study groups.

Results: In overweight and obese children left atrial volume (ml), left atrial/aortic root diameter ratio, LV interventricular septum and posterior wall thickness (mm), LV end-diastolic diameter (mm) and volume (ml), LV mass (g) were significantly higher compared to the control group (p<0.01).

Transmitral E/A and pulmonary vein (PV) systolic/diastolic velocities (S/D) ratio were decreased, but E-wave deceleration time (msec) and by the end-diastolic distance from the mitral annulus to the LV apex (cm) were increased in both obese groups (p<0.05). BMI was a significant correlated with duration of obesity and LV mass(g) (r=0.527, r=0.506, p<0.01, respectively). Significantly negative correlation was found between BMI and Mitral E/A, PV S/D ratio (r=-0.230, r=-0.577, p<0.01, respectively). PVA velocities are increased in obese groups.

Conclusion: In our study subclinical left ventricular myocardial dysfunction was noted in obese groups which correlates with BMI. Determination of diastolic dysfunction by PV PW Doppler can be usefull an pre-obese period.