

Serum adiponectin, resistin levels, insulin resistance and cardiac changes in obese and overweight children

Karakurt C. (1), Gürbüz S. (2), Akıncı A. (2), Koçak G. (1), Elkıran Ö. (1), Nalbantođlu Ö. (2), Yolođlu S. (3)

1) Inonu University, Faculty of Medicine, Department of Pediatric Cardiology, Malatya, Turkey

2) Inonu University, Faculty of Medicine, Department of Pediatric Endocrinology, Malatya, Turkey

3) Inonu University, Faculty of Medicine, Department of Biostatistics, Malatya, Turkey

Aim: The aim of study is to evaluate the cardiac changes in children with obesity, asses serum adiponectin and resistin levels, and insulin resistance in childhood obesity.

Material and methods: Seventy one obese children whom body mass index > 97 percentile (44 boys, 27 girls), 24 overweight children whom body mass index between the 85-97 percentile (6 boys, 18 girls) and 40 age and sex matched control children were selected to study. Systolic, diastolic functions of left ventricle, left ventricular diameters, wall thickness and left ventricular mass, Tei index, aortic stifness index were measured by using conventional 2D, colour coded echocardiography and tissue doppler echocardiography in obese children, overweight children and control group. After echocardiographic examination blood samples were taken and serum adiponectin and resistin levels were measured with ELISA. Fasting insulin levels measured with Immunoassay. After Shapiro-Wilk normality test results were assesed with chi-square test, unpaired t test, Mann–Whitney U test, ANOVA test and lineer regression test by using SPSS for version 13,0. All p value <0.05 were considered statistically significant.

Results: In echocardiographic evaluation, obese and overweight children have higher left ventricular mass values compare to control group ($p < 0.01$). In conventional echocardiography and tissue doppler echocardiography were showed diastolic abnormalities such as relaxation abnormality in obese and overweight children. Hypertension was determined in 18 patients in obese group and 8 patient in overweight group. Serum adiponectin and resistin levels were significantly lower in obese and overveight group ($p < 0.05$). There was statistically signifiant corelation between the serum resistin levels, fasting insulin and left ventricular mass in obese group. There was not statistically significant corelation between the adiponectin levels and cardiac parameters. Serum resistin levels and systolic blood pressure found to be positive affecting factors to left ventricular mass in lineer regresion analysis.

Conclusion

This study demonstrated that obese and overweight children have increased left ventricular dimensions, left ventricular mass and showed diastolic changes in obese and overweight children. Obese and overweight children have significantly lower serum adiponectin and resistin levels than control group. Systolic blood pressure and resistin levels are important factors influence the cardiac remodelling in childhood obesity.