An Evaluation of the Relationship between the Anthropometric Measurements and Blood Lipid Profiles in Adolescents

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Abstract : Childhood obesity is a significant health issue that is currently on the rise all over the world. In recent years, the relationship between childhood obesity and cardiovascular disease risk has been pointed out. The purpose of this study is to evaluate the relationship between some of the anthropometric indicators and blood lipid levels in adolescents. The present study has been conducted on a total of 252 adolescents -200 girls and 52 boys- within an age group of 12 to 18 years. Blood was drawn from each participant in the morning -after having fasted for 10 hours from the day before- to analyze their total cholesterol, HDL, LDL and triglyceride levels. Their body weight, height, waist circumference, subscapular skinfold thicknesses and triceps skinfold thicknesses measurements were taken and their individual waist/height ratios, BMI and body fat ratios were calculated. The blood lipid levels of the participants were categorized as acceptable, borderline and high in accordance with the 2011 Expert Panel Integrated Guidelines. The body fat ratios, total blood cholesterol and HDL levels of the girls were significantly higher than the boys whereas their waist circumference values were lower. The triglyceride levels, total cholesterol/HDL, LDL/HDL, triglyceride/HDL ratios of the group with the BMI ≥ 95 percentile ratio (the obese group) were higher than the groups that were considered to be overweight and normal weight as per their respective BMI values, while the HDL level of the obese group was lower; a fact that was found to be statistically significant. No significant relationship could be established, however, between the total blood cholesterol and LDL levels with their anthropometric measurements. The BMI, waist circumference, waist/height ratio, body fat ratio and triglyceride level of the group with the higher triglyceride level (≥ 130mg/dl) were found to be significantly higher compared to borderline (90-129 mg/dl) and the normal group (< 90 mg/dl). The BMI, waist circumference, waist/height ratio values of the group with the lower HDL level (< 40 mg/dl) were significantly higher than the normal (> 45 mg/dl) and borderline (40-45 mg/dl) groups. All of the anthropometric measurements of the group with the higher triglyceride/HDL ratio (≥ 3) were found to be significantly higher than that of the group with the lower ratio (< 3). Having a high BMI, waist/height ratio and waist circumference is related to low HDL and high blood triglyceride and triglyceride/HDL ratio. A high body fat ratio, on the other hand, is associated with a low HDL and high triglyceride/HDL ratio. Tackling childhood and adolescent obesity are important in terms of preventing cardiovascular diseases.
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