

Predicting Plasma Leptin With Anthropometric & Bioelectrical Impedance Analysis Measures Of Adiposity In A Multiethnic Young Adult Population In Malaysia

ABSTRACT

Background: Obesity bears multivariate causes and manifestations. Simple anthropometric and non-invasive physical markers are being proposed for easy and early detection of obesity-induced disrupted energy homeostasis and metabolic disorders. Adipose-tissue-derived hormone, leptin is largely known for its role in energy homeostasis and paradoxically, higher serum leptin corresponds to higher degree of obesity. Thus, this study aims to investigate the association of plasma leptin with common physical measures of adiposity in a multiethnic, young adult Malaysian population. Methodology: Based on BMI, 185 volunteering participants were grouped as underweight, normal weight, overweight and obese. Standardized anthropometric and bioelectrical impedance assessment (BIA) measure of adiposity was done using Karada Scanner while plasma leptin was measured using a sandwich ELISA assay technique. Results: A total of 61, 45, 56 and 23 Malaysian Malays, Chinese, Indian and other minor groups, respectively were included in this study. Out of this, 28 were underweight, 100 were normal weight, 29 were overweight and 27 were obese (n=27). One-way ANOVA revealed a significant difference among all variables except height and waist-hip ratio. The multiple regression analysis predicted plasma leptin value based on age, weight, height, body age, resting metabolic rate, visceral fat, total body fat, and body mass index in both male ($R^2 = 0.54$) and females ($R^2 = 0.23$). The results show that weight, resting metabolic rate, visceral fat and body were reliable predictors for plasma leptin between all the groups. Conclusion: Anthropometric indices can be used as predictors of serum leptin in adults irrespective of their body weight. This observation thus emphasizes the clinical significance of simple non-invasive physical markers for detection of obesity-induced metabolic disorders.