Measurement of Obesity by Anthropometry and Bioelectric Impedance Analysis: Correlation with Fasting Lipids and Insulin Resistance in an Asian Population

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Abstract

Obesity is associated with increased coronary artery disease risk. This is at least partially mediated by increased prevalence of other risk factors such as dyslipidaemia and insulin resistance. Various anthropometric indices have been used to quantify generalised and central obesity. Correlations between these measurements and risk factors are specific to the population and findings cannot be extrapolated to other ethnic groups. Bioelectric impedance analysis (BIA) is a simple means of estimating percentage body fat. We compared body mass index (BMI), waist circumference, waist-hip ratio (WHR) and percentage body fat measure by BIA as predictors of fasting lipid profiles and insulin resistance in 109 Singaporean Chinese. BMI was significantly correlated with insulin resistance and there appeared to be a threshold at 26 kg/m² above which the regression line became more steep. WHR best predicted fasting triglyceride in both men and women. In women, it was inversely correlated with high density lipoprotein cholesterol. A similar association was seen in men but this did not reach statistical significance. We conclude that measurement of BMI and WHR should be part of the assessment of cardiovascular risk in our population as they connote different aspects of risk. BIA was not found to be a useful tool for the prediction of coronary artery disease risk factors in our population.

Key words: Body mass index, Chinese, Coronary artery disease risk, Waist circumference, Waist hip ratio

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