Fat mass index and visceral fat area are better predictors of body adiposity and obesity diagnosis

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Background and Aim: Many bioelectrical impedance analysis-based parameters need clinical evaluation. This study was done to evaluate the relationships between BIA-based parameters and anthropometric parameters for obesity diagnosis.

Methodology: A total of 358 male subjects aged from 19-63 were enrolled in a cross sectional study. Anthropometric measures included weight, height, body mass index (BMI), waist circumference, hip circumference and waist hip ratio. InBody 720 was used to calculate fat mass, fat mass index (FMI), percent body fat, visceral fat area (VFA) etc.

Results: Fat mass index had stronger positive correlation with BMI than percent body fat (r=0.9161 vs. r=0.7516, P<0.00001), also VFA was correlated positively with waist circumference (r=0.692, P<0.00001). Kappa analysis showed that BMI is highly related with FMI especially when using BMI by Asian cutoff values (27.5 kg/m²) (k=0.671 vs. k=0.560, P<0.00001).ROC curve indicated that FMI was accurate in diagnosis of obesity (AUC= 0.970). The FMI cutoff value of the best sensitivity and specificity (89% and 95 % respectively) was 9.20 kg/m². VFA cut point of the best sensitivity and specificity (81% and 91% respectively) was 129.45 cm².

Conclusion: FMI is better predictor of obesity than percent body fat and its cut off point was 9.20 kg/m². Furthermore, VFA is a good predictor of central obesity and its cut point was 129.45 cm².

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