Association of Body Composition with Type 2 Diabetes: A Retrospective Chart Review Study

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Abstract

Purpose: The aim of this study was to analyze the body composition of subjects with Type 2 Diabetes (T2DM).

Design and Methods: We applied the retrospective chart review study design, data were collected from a community clinical diabetes center in North Taiwan. During routine revisits, the patients' body composition was measured with a Multi-Frequency Bioelectrical Impedance analysis (MF-BIA; In Body 770, Cerritos, CA, USA). Participants with diabetes who were aged ≥18 years completed body composition, the parameters including body mass index (BMI), body fat mass (BFM), fat free mass (FFM), visceral fat area (VFA), percent body fat (PBF), appendicular skeletal muscle mass (ASM) and skeletal muscle index (SMI). One-way ANOVA and independent t test were used to calculate the differences in body composition distribution between people of different ages and sex.

Findings: A total of 2,404 subjects were recruited, retrospective data chart review showed that the prevalence of overall low muscle mass and sarcopenic obesity were 28.0%, 18.7%, respectively and increased with age. Subjects with normal BMI the prevalence of low muscle mass (55.6%) and sarcopenic obesity (34.8%) were higher than those of other BMI groups. The overall obesity prevalence when PBF was used, was 71.5%, which was higher than that when BMI was applied (32.4%). For both men and women, the body weight, BFM, FFM, and ASM all decreased with age, PBF increased with age for people aged over 65 years, and visceral fat level did not exhibit any particular trends.

Conclusions: This study revealed that the patients' overall PBF was too high. Furthermore, the prevalence of low muscle mass and sarcopenic obesity was high in older adults and people with normal BMI. Using BMI to assess obesity and insufficient muscle mass underestimates obesity prevalence and neglects the problems of sarcopenia and high body fat in people with normal BMI.

Keywords

Body fat mass, body composition, skeletal muscle mass, type 2 diabetes.