Letter to the Editor

A Proposal for the Cutoff Point of Waist Circumference for the Diagnosis of Metabolic Syndrome in the Japanese Population

To the Editor:

The International Diabetes Federation criteria for the metabolic syndrome are based on the concept of central obesity, which is defined by waist circumference (WC) with ethnically specific cutoff points. The cutoff points for the Japanese (85 and 90 cm in men and women, respectively) are unique because the cutoff point for men is higher than that for women of any other ethnicity. These cutoff points are supported by a study (n=1,193) reported by the Japan Society for the Study of Obesity,¹ in which the average number of obesity-related disorders (hyperglycemia, hypertension, and dyslipidemia) increased in relation to body mass index (BMI) and visceral fat area (VFA) and became more than 1.0 at a BMI of 25 kg/m² and a VFA of 100 cm². The study suggested that these values be used as the Japanese cutoff points for obesity and visceral fat obesity, respectively. The WCs corresponding to a VFA of 100 cm² were determined for each gender by linear regression analysis and defined as the cutoff points. However, these cutoff points are controversial^{2–4} and we have re-evaluated them with reference to the Society's study.

We recruited 57 subjects (M/F: 33/24, average age (years): 57.1±5.9, range: 41–65) from among the residents of rural towns in Japan, and their VFAs were measured 3 times at intervals of 12 weeks (n=171). Linear regression analysis showed that the WCs corresponding to a VFA of 100 cm² were 86.3 in men and 85.0 in women. The receiver-operator characteristic (ROC) curve for the WC to predict a VFA ≥100 cm² showed 87.2 cm in men (sensitivity and specificity: 0.72 and 0.73, respectively) and 85.3 cm in women (0.78 and 0.88) as those yielding the maximal sensitivity plus specificity.

We then evaluated the WCs corresponding to a BMI of 25 kg/m², which is the standard for obesity in the Japanese population, by linear regression analysis using the 1995–1997 cohort population of the Funagata Study⁵ (M/F: 925/1,221, age 59±13 (range: 35–93) years) and found the values to be 85.0 cm in men and 78.7 cm in women. The ROC curve for the WC to predict a BMI ≥25 showed 84.8 cm in men (0.87 and 0.86) and 78.3 cm in women (0.77 and 0.80) as the optimal cutoff points.

The VFA is not a value adjusted for any anthropometrical parameter, and thus may need to be used in consideration of anthropometrical and/or gender differences. However, in the previous study, gender differences were not considered in the determination of the cutoff point of VFA,¹ which might have led to an overestimation of the cutoff point for WC in women. The BMI, instead, is an anthropometrically adjusted value, and thus the cutoff point of BMI, although also determined without consideration of gender differences, seems to be more appropriate for the analyses mentioned above. We here propose WC ~85 cm in men and ~80 cm in women as the appropriate cutoff points for the Japanese.

References

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