

OBSERVATIONS

BMI May Be Better Than Waist Circumference for Defining Metabolic Syndrome in Japanese Women

We previously addressed sex differences in the associations between anthropometric indexes of obesity and blood pressure and showed that blood pressure was more strongly related to BMI than to waist circumference in Japanese women (1). As hypertension is a major component of metabolic syndrome in Japanese patients, a similar sex difference may exist in the association between anthropometric indexes and the metabolic components of metabolic syndrome. We investigated the possible sex differences of these associations.

Study subjects consisted of 2,935 men and 1,622 women between 35 and 59 years of age; 13% of the women were postmenopausal. Detailed information regarding this study population has been provided elsewhere (1). Metabolic abnormalities were determined using the Japanese criteria of metabolic syndrome (2). In a multiple linear regression analysis (supplemental Table 1A, available in an online appendix at <http://dx.doi.org/10.2337/dc07-0309>), both BMI and waist circumference were related independently to serum triglyceride and HDL

cholesterol level. The relationship of anthropometric indexes to fasting plasma glucose (FPG) level was weaker than that to blood pressure (1) and to serum lipid levels. In multiple logistic regression analyses (supplemental Table 1B), waist circumference was more strongly associated with dyslipidemia (defined as having high triglycerides or low HDL cholesterol) and high FPG in men, whereas BMI was more strongly associated with dyslipidemia in women. Although high FPG was more strongly associated with waist circumference in women, the association was weaker than the relationship between BMI and hypertension (1) or dyslipidemia. The presence of two or more of three metabolic abnormalities (hypertension, dyslipidemia, and high FPG) was observed in 22.6% of men and 9.1% of women. The risk ratio of having accumulations of two or more metabolic abnormalities was higher for waist circumference than for BMI in men, whereas it was higher for BMI in women. When BMI and waist circumference were included simultaneously in a model, waist circumference showed a stronger association than BMI with the accumulation of metabolic abnormalities in men, and only BMI showed an independent association in women. The results were similar using the International Diabetes Federation definition (3) to determine the metabolic abnormalities.

In lean Asian women, for whom subcutaneous fat has a stronger influence on waist circumference (4), BMI may be a more appropriate index for total and abdominal fat. Thus, we should pay more

attention to BMI in defining metabolic syndrome in Asian women.

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Additional information for this article can be found in an online appendix at <http://dx.doi.org/10.2337/dc07-0309>.

DOI: 10.2337/dc07-0309

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