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Simply the Best: Anthropometric Indices for Predicting Cardiovascular Disease

Jie-Eun Lee

Division of Endocrinology and Metabolism, Department of Internal Medicine, Hallym University Chuncheon Sacred Heart Hospital, Hallym University College of Medicine, Chuncheon, Korea

As the prevalence of obesity increases, so does the burden of its associated comorbidities, such as myocardial infarction (MI) and ischemic stroke (IS). According to the Fact Sheet from the Korean Society for the Study of Obesity, medical expenses increase proportionally with body mass index (BMI) and waist circumference (WC) in both men and women [1]. Therefore, it is important to identify people at highrisk of obesity and its related comorbidities.

BMI is one of the most frequently used surrogate indicators ofobesity that reflects total body fat. However, both total body fat and fat distribution pattern are important when predicting the risk of cardiovascular diseases (CVD). The fat distribution pattern is determined by anthropometric measures, such as the WC, waist-to-hip ratio (WHR), waist-to-height ratio (WHtR), and sagittal abdominal diameter [2,3]. These anthropometric indices areassociated with, and may be predictors of, CVD [4-6], but these associations remain controversial.

At any given WC, Asian people have greater visceral fat compared with Europeans, and a tighter threshold of WC might be needed to determine the risk [7-9]. However, combining various ethnic groups under asingle "Asian" category might obscure important differences in groups. One study of about 15,000 Korean patients found no significant difference between WC and BMI in predicting the incidence of CVD [10], but a later study of 5,500 Koreans in 2009 found that WC and WHtR were superior to BMI [11].

The results of a recent study have important clinical significance for the Korean population. Using the data of more than 20 million Koreans from the National Health Insurance Service (NHIS), Cho et al. [12] confirmed that WC is a better marker for predicting the incidence of MI or IS than BMI. They also reported the appropriate WC cutoffs for predicting the risk of CVD; the optimal cutoffs were 84/85 cm for men (MI/IS, respectively) and 78 cm for women (both), which are lower than the current recommended cutoffs. In addition, the WC cutoff in the study by Cho et al. [12] is 10 cm lower than the global standard set by the World Health Organization for men [13]. These new values suggest that closer attention should be given to earlier identification and management of overweight/obesity for better CVD prevention. The study by Cho et al. [12] found smaller differences in the optimal cutoffs from the current recommendation in women. However, the authors noted that the incidence rates of MI or IS increases more steeply as WC increases [12]. Therefore, clinicians should be more alert to elevated abdominal circumference in both men and women.

Despite the possible differences from the actual incidence of CVD associated with the use of NHIS data and the relatively short follow-up period in the study by Cho et al. [12], this study included the largest number of Koreans to date, and its findings are of high clinical significance. Although BMI is still used as a standard to diagnose obesity, clinicians should be aware that a person with a 'high' WC, even when the BMI is in the 'healthy' range, may still have a higher risk of CVD.

WC is a non-invasive, easily measurable anthropometric index, but it is prone to technical error of measurement from in-

Corresponding author: Jie-Eun Lee https://orcid.org/0000-0002-1039-5769
Division of Endocrinology and Metabolism, Department of Internal Medicine, Hallym University Chuncheon Sacred Heart Hospital, Hallym University College of Medicine, 77 Sakju-ro, Chuncheon 24253, Korea
E-mail: mdjelee@hallym.or.kr

ter-measurer error. Therefore, it would be clinically useful to compare WC alone with other anthropometric indices reflecting central obesity such as WHR or WHtR in predicting the incidence of CVD.

CONFLICTS OF INTEREST

No potential conflict of interest relevant to this article was reported.

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