High waist circumference associated with elevated risk of obesity-related dementia

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Waist circumference is a more accurate indicator of abdominal visceral fat level than body mass index (BMI) in the elderly, according to a report published in *Obesity*, the flagship journal of The Obesity Society. The

study is the first large-scale cohort to examine the association of late-life waist circumference with the incidence of dementia in an older population.

"For all the physicians who deal with geriatric medicine, obesity and dementia, this study emphasizes that waist circumference should be considered in the assessment of obesity-related dementia risk in the elderly," said Hye Jin Yoo, associate professor at Korea University Guro Hospital. Yoo is the corresponding author of the study.

A 2015 large-scale retrospective cohort study of nearly 2 million people from the United Kingdom Clinical Practice Research Datalink showed that the incidence of dementia continued to fall for every increasing BMI category. Two Mendelian randomization studies showed no association between obesity and dementia. BMI is not a perfect measure of adiposity because it cannot discriminate between fat and lean body mass, according to the authors.

Studies have been limited and had focused on the relationship between waist circumference and dementia in older persons. One study showed that central adiposity, represented by waist circumference, predicted an increased risk for cognitive decline during a 2-year follow-up period in older patients with diabetes. Another study reported that waist circumference was correlated with lower overall cognition and executive performance in older women with type 2 diabetes.

To help determine a healthy waist circumference, researchers compared relative risk of dementia associated with waist circumference and BMI categories using the Korea National Health Insurance Service program. The program is a mandatory social health insurance program that enrolls about 98 percent of Koreans who participate in biannual standardized health examinations.

The study population comprised 872,082 participants aged 65 years and older who participated in the Korean national health screening examination between January 1, 2009 and December 31, 2009. The study population was observed from baseline until the date of development of dementia, death, or until December 31, 2015, whichever came first.

Interviews with study participants included questions such as age, smoking status, alcohol consumption and exercise level. The study used health insurance premiums as a substitute variable for income level. A history of diabetes, hypertension and cardiovascular disease diagnosed by a physician was also identified. The health examination included the calculation of BMI as measured weight in kilograms divided by measured height in meters squared. Waist circumference was measured at the narrowest point between the lower border of the rib cage and the iliac crest during minimal respiration.

Because late-life BMI can be confounded by comorbid medical conditions and concealed baseline diseases, researchers calculated a hazard ratio of dementia after adjusting for the Charlson Comorbidity Index (CCI), a scoring system of underlying comorbidity. For the study, CCI was classified into two groups with a score of zero indicating no comorbidity and a score of one meaning at least one or more comorbidities.

The results of the study showed participants with a waist circumference of greater than or equal to 90 cm for men and 85 for women had a significantly increased risk of dementia after adjusting for other factors such as age, BMI, blood pressure, cholesterol, liver function tests and various lifestyle factors.

As for the association between BMI categories with dementia in older men and women who were underweight, they experienced a significant

increased risk of dementia compared with normal weight individuals after factoring in comorbidities and various lifestyle factors.

"This study does not let us know why there is this discrepancy but may point to the different roles of subcutaneous fat versus visceral fat in the development of dementia with subcutaneous fat being protective and visceral fat having harmful effects," said Dan Bessesen, MD, of the University of Colorado School of Medicine, who was not part of the research.

Bessesen added that alternatively BMI might be more related to lean mass in older people and the relationship with BMI and dementia may be more a result of the adverse effects of sarcopenia in the elderly. The study was done in an Asian population, so it would benefit from confirmatory studies in other populations. However, it suggests that visceral obesity may be associated with increased risk of dementia.

The study, titled "Association Between Waist Circumference and Dementia in Older Persons: A Nationwide Population-Based Study" will be published in the November 2019 print issue.

  More information: "Association Between Waist Circumference and Dementia in Older Persons: A Nationwide Population-Based Study", onlinelibrary.wiley.com/doi/10.1002/oby.22609

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