

ASSOCIATIONS OF OBESITY WITH LOWER URINARY TRACT SYMPTOMS IN KOREAN ELDERLY MEN

Hypothesis / aims of study

It is known that abdominal obesity increases the estrogen-to-androgen ratio and may increase sympathetic nervous activity, both hypothesized to influence the development of benign prostatic hyperplasia and severity of lower urinary tract symptoms (LUTS). But the previous study showed conflicting results about the associations between anthropometric measures of obesity and LUTS as well as prostate enlargement. So, we examined cross-sectionally the associations between obesity, especially central obesity, and the moderate to severe LUTS, including the subcategories of obstructive and irritative symptoms in Korean elderly men.

Study design, materials and methods

Between March 2006 and December 2006, men aged 50-89 years who participated in the screening for prostate cancer including serum PSA and digital rectal examination in Chuncheon, Korea were included in this analysis. After the exclusion of men with prostate cancer or prior prostate surgery and men who were taking α -blockers for urinary tract symptoms, a total of 659 men were investigated about the American Urological Association (AUA) Symptom Index and we also measured the height, weight, waist circumference of these subjects. Body mass index (BMI) was categorized as normal ($<23.0\text{kg/m}^2$), overweight ($23.0\text{-}27.5\text{ kg/m}^2$), and obese ($\geq 27.5\text{ kg/m}^2$) by the WHO BMI cut-offs in Asian. And, we also divided waist circumferences into two categories: normal ($< 90\text{cm}$), and central obesity ($\geq 90\text{cm}$), using cut-off points of waist circumference for central obesity by the Korean Society of the Study of Obesity. Using standard cutpoints for symptom severity, men with total scores of more than 8 out of 35 were classified as having moderate to severe LUTS, men with obstructive symptom scores of more than 5 out of 20 as having moderate to severe obstructive symptoms, and men with irritative symptom scores of more than 4 out of 15 as having moderate to severe irritative symptoms.

Results

Overall, 64.9 percent of men reported having moderate to severe LUTS, with the prevalence increasing with age ($p<0.05$). The proportions of men with moderate to severe obstructive and irritative symptoms also increased with age ($p<0.05$). Odds ratios adjusted for age were estimated by logistic regression. BMI was not associated with moderate to severe LUTS, irritative, and obstructive symptoms. But, waist circumference was positively associated with moderate to severe LUTS (odds ratio =1.33, 95% confidence interval (CI): 0.88, 2.00), irritative (odds ratio =1.33, 95% CI: 0.90, 1.97), and obstructive symptoms (odds ratio =1.31, 95% CI: 0.87, 1.96), although these results were not statistically significant. Neither BMI nor waist circumference was associated with the prostate size measured by rectal examination.

Interpretation of results

We used BMI as a measure of total adiposity, and waist circumference to estimate central obesity. In our cross-sectional analysis of obesity and LUTS, we observed that central obesity rather than total adiposity is possibly associated with moderate to severe LUTS, as well as irritative and obstructive symptoms. Rohrmann et al. also reported the positive association between LUTS and current larger waist circumference rather than current BMI in the Third National Health and Nutrition Examination Survey in USA. But they surveyed only yes or no about the four symptoms (nocturia, incomplete emptying, hesitancy, and weak stream) of components of the AUA Symptom Index, and considered LUTS cases if subjects reported three or four of the symptoms. In our study, all of the subjects were evaluated according to the AUA Symptom Index, and each symptom is scored on a scale of 0-5, and individual symptom scores are summed. Although the prostate size measured by rectal examination is exactly reflect the actual prostate volume, there was no association between BMI or central obesity and prostate size, and our result is consistent with the result of the Health Professionals Follow-up Study about the relationship between obesity and benign prostatic hyperplasia. From our results, we can presume that central obesity influences the symptomatic component rather than the anatomic component of benign prostatic hyperplasia.

Concluding message

Our results suggest that central obesity rather than total adiposity is more important contributing factor to moderate to severe LUTS, as well as irritative and obstructive symptoms. However, our study has the limitation that we did not observe the previous BMI and waist circumference of all of the subjects. So, an additional large-scale longitudinal study is needed to investigate the association of obesity with LUTS morbidity in Korean elderly men.

References

1. Am J Epidemiol 2004;159:390-7
2. Am J Epidemiol 1994;140:989-1002

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CLINICAL TRIAL REGISTRATION: This clinical trial has not yet been registered in a public clinical trials registry.

HUMAN SUBJECTS: This study was approved by the Kangwon National University Hospital Institutional Review Board and followed the Declaration of Helsinki Informed consent was obtained from the patients.

