ORIGINAL RESEARCH—ERECTILE DYSFUNCTION

Effects of Components of Metabolic Syndrome on Sexual Function in Korean BPH/LUTS Patients

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ABSTRACT

Introduction. There are limited data concerning the association between components of metabolic syndrome and sexual function in men aged 40 years and older in Korean benign prostatic hyperplasia (BPH) patients.
Aim. To examine the effects of metabolic markers on sexual function in Korean BPH patients and to evaluate obesity as a causal factor for the development of BPH and sexual dysfunction in a large population of Korean men.
Methods. This is a multicenter, cross-sectional, prospective study conducted at four centers in Korea. A total 602 men with LUTS secondary to BPH were included. BPH/LUTS cases were men with international prostate symptom scores (IPSS) ≥8 points and prostate volume ≥20 cc by transrectal ultrasound of the prostate. Height, weight, and waist circumference were measured. Trained interviewers using the structured Male Sexual Health Questionnaire (MSHQ) and International Index of Erectile Function (IIEF-15) collected information on sexual function.
Main Outcome Measures. Sexual function using IIEF-15 and MSHQ was assessed according to presence of diabetes mellitus (DM) or hypertension, waist circumference and BMI.
Results. BPH patients with DM or hypertension had significantly lower sexual function, and satisfaction scores on the MSHQ were significantly lower in BPH patients with hypertension. In the central obesity group, prostate volume was significantly greater compared to the normal waist group ($P = 0.01$). Moreover, in Korean BPH/LUTS patients, central obesity was significantly related to sexual function. BPH/LUTS represented by IPSS was significantly correlated with prostate volume and MSHQ and IIEF-15 scores. In addition, severe LUTS was significantly related to all domains of the MSHQ.
Conclusions. This study provides evidence that in the Korean population, sexual function is more closely associated to central obesity than general obesity. The relationship of comorbidities such as diabetes, hypertension, and sexual dysfunction determined by the MSHQ correlated with that determined by the IIEF-15. **Lee SH, Kim JC, Lee J-Y, Kim JH, Oh CY, Lee SW, Yoo SJ, and Chung BH. Effects of components of metabolic syndrome on sexual function in Korean BPH/LUTS patients. J Sex Med 2009;6:2292–2298.**

Key Words. Central Obesity; Benign Prostatic Hyperplasia; Sexual Function; Prostate; Lower Urinary Tract Symptom

Introduction

In 1988, Reaven proposed that insulin resistance is central to the etiology of type-2 diabetes mellitus (DM), hypertension, and coronary artery disease. The concept of insulin resistance and associated metabolic abnormalities leading to increased risk of cardiovascular disease became known by a variety of names, including metabolic syndrome, dysmetabolic syndrome, syndrome X, cardiometabolic syndrome, and insulin resistance syndrome [1].

Despite its frequency and impact on quality of life, the pathophysiology of benign prostatic hyperplasia (BPH) is unclear and there is controversy about the risk factors that contribute to its development and aggravation. Recent studies concerning the pathophysiology of the disease have suggested that in addition to conventional risk factors such as age, family history, and androgen activity, newly identified risk factors including smoking, diet, and obesity may play a major role in the development of BPH.

Among the newly emergent BPH risk factors, obesity and related conditions such as DM and hypertension have emerged as major components of medical problems in Asian populations as are seen in Western populations also.

The Korean National Health and Nutrition Surveys reported an increase in prevalence of obesity in South Korea from 1995 to 2001, and an age-related increase in prevalence of obesity in Korean adults in 2001 [2].

LUTS, often the result of BPH, are common among older men and have a negative impact on quality of life. Positive associations between anthropometric measures of obesity and LUTS were observed in one cohort study but not in another [3,4]. In addition, based on the observation in a clinic-based study of 158 patients that an enlarged prostate is more often diagnosed in men who have components of a metabolic syndrome such as insulin-dependent DM, hypertension requiring treatment, low HDL cholesterol levels, high fasting insulin levels, and obesity. Hammartsen et al. suggested that the development of an enlarged prostate might be the result of perturbations in insulin control and other aspects of the metabolic syndrome [5].

Even though both LUTS and sexual dysfunction are common in older men it is unclear whether sexual dysfunction in older men is causally related to BPH or merely a consequence of aging. However, recent community-based studies have reported a statistically significant association between LUTS and sexual function [6–17]. In South Korea, the prevalence of the metabolic syndrome is about 14.2% of men and 17.7% of women and BPH is from 10.6% to 31% in men over 50 years of age, with an age related increase [18,19]. However, there is insufficient research on effects of metabolic markers on sexual function in BPH/LUTS men. In this cross-sectional study, we examined the association between components of metabolic syndrome and sexual function in men aged 40 years and older. In addition, we evaluated obesity as a related factor for the development of BPH and sexual dysfunction in a large population of Korean men.

Methods

Study Design

This was a multicenter, prospective, cross-sectional study conducted at four urology centers in Korea from July 2007 to May 2008 via a questionnaire and laboratory findings at the first visit. Before initiating this study, approval was granted from the local institutional review board and patients gave informed consent.

There were no preinclusion or washout periods. Only one visit was planned. In addition to the routine evaluation of BPH using transrectal ultrasound of the prostate, uroflowmetry, IPSS, and prostatic specific antigen (PSA) determinations, subjects were asked to fill out the MSHQ and IIEF-15 questionnaire to evaluate erectile function. Height, weight, and waist circumference were measured in all enrolled patients. Body mass index (BMI) of each patient was calculated as the body weight in kilograms divided by the square of the height in meters. Information on personal history of selected diseases, including DM and history of hypertension, was self-reported.

Patients

Patients eligible to enroll in the study were men who met the following criteria at the initial visit: ≥40 years of age, IPSS ≥8 points, and prostate volume ≥20 cc by transrectal ultrasound of the prostate. A total of 602 BPH patients with LUTS aged ≥40 years were included in this prospective study. Exclusion criteria were the use of medications affecting prostate growth and erectile function such as antiandrogens and 5-alpha reductase inhibitors. Subjects were also excluded from this trial if they had neurogenic bladder dysfunction, confirmed prostate cancer, acute or chronic urinary retention status, acute or chronic prostatitis within the previous 3 months, serum prostate-specific antigen (PSA) levels in excess of 10 ng/mL, a history of recurrent UTI or bladder stones, and previous TURP or other surgical interventions related to BPH. Subjects were divided into three groups according to BMI: normal (<22.9 kg/m^2), overweight (23 to 24.9 kg/m^2), and obese (≥25 kg/m^2). They were also categorized into two subgroups by waist circumference: normal waist (≤90 cm) and central obesity (>90 cm).