Cross-Sectional and Longitudinal Associations of Sexual Function with Lower Urinary Tract Symptoms in Men with Benign Prostatic Hyperplasia

Chyng-Wen Fwu,*,†,‡ Ziya Kirkali,‡ Kevin T. McVary,§ Pamela K. Burrows,‡ Paul W. Eggers‡ and John W. Kusek‡

From Social & Scientific Systems, Inc., Silver Spring (CWF), Division of Kidney, Urologic and Hematologic Diseases, National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health, Bethesda (ZK, PWE, JWK), The George Washington University Biostatistics Center, Rockville (PKB), Maryland; and Division of Urology, Southern Illinois University School of Medicine, Springfield, Illinois (KTM)

Purpose: We examine the cross-sectional associations between baseline characteristics and sexual function and the longitudinal associations between change in lower urinary tract symptoms and change in sexual function among men with benign prostatic hyperplasia.

Materials and Methods: We studied lower urinary tract symptoms assessed by the AUA-SI and sexual function determined by the BMSFI in men enrolled in the MTOPS study. The cross-sectional cohort included 2,916 men who completed the BMSFI at baseline. The longitudinal cohort included 672 men who were randomized to placebo and had completed the BMSFI at baseline and at least once during a 4-year followup. Multiple adjusted linear modeling for each domain of the BMSFI was performed to assess associations of sexual function with lower urinary tract symptoms.

Results: After adjustment for baseline demographic and clinical characteristics, increased age, less education, obesity and severe lower urinary tract symptoms were each significantly associated with poorer sexual drive, erectile function, ejaculatory function, sexual problem assessment and overall satisfaction in the cross-sectional cohort. However, none of these baseline characteristics predicted change in sexual function in the longitudinal cohort. Decline in sexual function in all sexual function domains associated with worsening of lower urinary tract symptoms in this group was small.

Conclusions: Increased age, less education, obesity and more severe lower urinary tract symptoms were individually associated cross-sectionally, but not longitudinally, with poorer sexual function in men with lower urinary tract

Abbreviations and Acronyms

AUA-SI = American Urological Association symptom index

BMI = body mass index

BMSFI = Brief Male Sexual Function Inventory

BPH = benign prostatic hyperplasia

LUTS = lower urinary tract symptoms

MTOPS = Medical Therapy of Prostatic Symptoms

PDE5 = phosphodiesterase type 5

PSA = prostate specific antigen

PVR = post-void residual

Qmax = maximal urinary flow rate

Accepted for publication August 11, 2014.

The MTOPS (Medical Therapy of Prostatic Symptoms) was conducted by MTOPS investigators and supported by the NIDDK (National Institute of Diabetes and Digestive and Kidney Diseases). The data from the MTOPS reported here were supplied by the NIDDK Central Repositories. This manuscript was not prepared in collaboration with investigators of the MTOPS study and does not necessarily reflect the opinions or views of the MTOPS study, the NIDDK Central Repositories or the NIDDK.

* Correspondence: Social & Scientific Systems, Inc., 8757 Georgia Ave., 12th floor, Silver Spring, Maryland 20910 (telephone: 301-628-0342; FAX: 301-628-0301; e-mail: cfwu@s-3.com).

† Supported by a contract from the National Institute of Diabetes and Digestive and Kidney Diseases (HHSN 276201200161U).

‡ Nothing to disclose.

§ Financial interest and/or other relationship with Allergan, NxThera, Watson Pharmaceuticals, Neotract, NIDDK, GSK and Lilly/ICOS.

Editor's Note: This article is the fifth of 5 published in this issue for which category 1 CME credits can be earned. Instructions for obtaining credits are given with the questions on pages 378 and 379.

0022-5347/15/1931-0231/0
THE JOURNAL OF UROLOGY®

http://dx.doi.org/10.1016/j.juro.2014.08.086
Vol. 193, 231-238, January 2015
Printed in U.S.A.

symptoms/benign prostatic hyperplasia. The decline in sexual function associated with worsening of lower urinary tract symptoms in men assigned to placebo was small.

Key Words: prostatic hyperplasia; lower urinary tract symptoms; sexual dysfunction, physiological

LOWER urinary tract symptoms associated with benign prostatic hyperplasia and sexual dysfunction are common in older men and frequently present together,[1,2] and each negatively impacts quality of life.[3,4] However, little is known about the long-term relationship between LUTS and sexual function in men with clinically diagnosed LUTS/BPH. Whether LUTS/BPH is a risk factor for sexual dysfunction or vice versa (or neither) remains uncertain. Numerous prior studies have shown a relationship between LUTS and sexual dysfunction. However, causality cannot be inferred because most have been cross-sectional in design.[5–12] The few prospective studies of LUTS and sexual dysfunction, which included men recruited from the community, have shown that LUTS predicted sexual dysfunction.[13–15] Alternatively, erectile dysfunction predicted the occurrence of LUTS in 1 study.[16]

We examined the cross-sectional associations between baseline demographic and clinical characteristics, including LUTS, with sexual function, among all men enrolled in the full scale phase of the randomized clinical trial, the MTOPS study. We also studied the relationships between change in LUTS and change in sexual function in men assigned to placebo, and whether baseline clinical and demographic factors predicted change in sexual function.

MATERIALS AND METHODS

Study Design

The design and primary results of the MTOPS study have been published previously.[17–19] Men were equally randomized to placebo, 8 mg doxazosin (subsequently reduced to 4 mg if 8 mg was not tolerated), 5 mg finasteride, or both medications. The most frequently occurring event of the composite primary outcome was a confirmed increase in AUA-SI score of at least 4 points from baseline. Sexual function was a secondary outcome.

Clinical and demographic information was obtained at baseline. LUTS were assessed using the AUA-SI score at baseline and every 3 months thereafter. Sexual function was assessed by the BMSFI at baseline and annually for at least 4 years. Self-reported use of PDE5 inhibitors was recorded at each followup visit. The cross-sectional cohort included 2,916 men enrolled in the study who had completed the BMSFI at baseline. The longitudinal cohort included 672 men who were randomized to placebo, and had completed the BMSFI at baseline and at least once during followup (fig. 1).

Sexual Function Measures

The BMSFI is an 11-item, validated, self-administered questionnaire which is used to assess functional aspects of male sexuality (10 questions) and overall sexual satisfaction (1 question) within the last 30 days.[20] The range of possible scores for each question is 0 to 4, with a higher score indicating better sexual function. The 5 domains of the BMSFI are sexual drive (2 questions), erectile function (3 questions), ejaculatory function (2 questions), sexual problem assessment related to sexual drive, erection and ejaculation (3 questions), and overall sexual satisfaction (1 question).

Statistical Analysis

For the cross-sectional cohort the sexual function scores were calculated by age group (50 to 59, 60 to 69, 70 years or older), race (white, nonwhite), education completed (grades 1 to 12, 1 to 4 years of college, some post-undergraduate education), BMI (less than 25.0, 25.0 to 29.9, 30.0 kg/m^2 or greater), range of AUA-SI score reflecting moderate (score 8 to 19) and severe (score 20 or greater) symptom severity and other selected urological measures at baseline. Each urological measure was dichotomized to 2 nearly equal groups as prostate volume (less than 30, 30 ml or

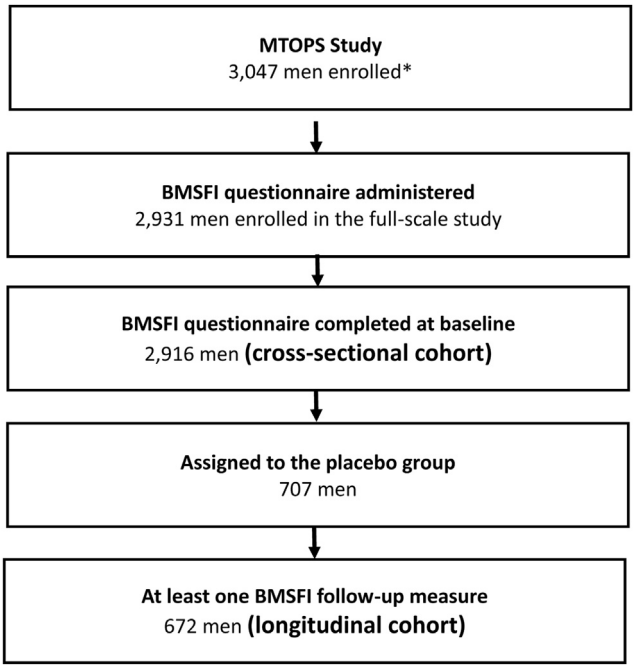

Figure 1. Selection of study population. Asterisk indicates men at least 50 years old with AUA-SI score between 8 and 30, Qmax between 4 and 15 ml per second, and PVR of at least 125 ml were eligible for study.