ORIGINAL RESEARCH—MEN'S SEXUAL HEALTH

Snoring as a Risk Factor for Sexual Dysfunction in Community Men

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ABSTRACT

Introduction. Severe obstructive sleep apnea has been associated with sexual dysfunction; however, it is unclear whether milder forms of sleep disturbances might also be associated with sexual problems.

Aim. To evaluate the association between snoring and five measures of sexual dysfunction in a population-based sample of men.

Methods. A stratified random sample of men residing in Olmsted County, Minnesota completed a questionnaire containing questions from the Brief Male Sexual Function Inventory (BMSFI) and a sleep questionnaire.

Main Outcome Measures. Levels of sexual drive (libido), erectile function, ejaculatory function, sexual problem assessment, and sexual satisfaction as assessed by the BMSFI.

Results. Of 827 men with a regular sexual partner, subjects were divided into categories of heavy (N = 95), moderate (N = 573), and none/mild (N = 159) snoring. Their median age was 64 years (range 51–90). The sexual satisfaction domain score was significantly lower in the heavy snoring group (*P* value = 0.01). The odds of low sexual satisfaction was 2.3 (95% CI 1.2, 4.1) among the heavy snorers compared with the none/mild snoring group. This association remained statistically significant after adjustment for smoking, medical comorbidities, and mental health status. However, there was no significant difference in ejaculatory function, erectile function, sexual drive, and sexual problem assessment across snoring categories.

Conclusions. These data provide evidence of an association between snoring severity and reduced sexual satisfaction in a population of elderly community males. Snoring was not associated with biologic measures of sexual dysfunction.

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Key Words. Snoring; Obstructive Sleep Apnea; Sexual Dysfunction; Sexual Satisfaction

Introduction

Sexual dysfunction is a common health problem in middle-aged and elderly males. The prevalence of dysfunction increases steadily with age, and this condition may affect up to 10% of men in their 40s and up to 80% of men aged 70 and over [1]. Sexual dysfunction can have a strong negative impact on the quality of life [2–5]. Thus, it represents a significant health problem, and identification of potentially modifiable risk factors may be important for disease prevention and treatment.

Obstructive sleep apnea (OSA) is also a very common disease, affecting 5–20% of the adult population [6], and could potentially represent a risk factor for sexual dysfunction in aging men. Hormonal changes, hypoxia-induced nerve

impairment, vascular changes, and reduced nitric oxide production associated with OSA have been proposed as potential biologic mechanisms that may lead to sexual dysfunction [7,8]. Sleep disordered breathing therefore represents a potentially modifiable risk factor for sexual dysfunction and elimination of OSA could contribute to treatment of this common health problem.

The association between sleep-disordered breathing and sexual dysfunction was initially described by Guilleminault et al., who reported a high prevalence (48%) of erectile dysfunction (ED) among patients with severe OSA [9]. Although the evidence is not completely consistent [10,11], OSA has also been associated with ED in several subsequent studies in patients evaluated in urology and sleep disorders clinics [7,12–17]. These studies, however, have often been limited to small samples of patients recruited from specialty clinic referral populations. Additionally, the epidemiologic studies have tended to focus on only one aspect (ED) of sexual function. The accumulation of more severely affected patients in specialty disorder clinics may represent a referral bias that could limit the generalizability of such findings. Additionally, it is not clear whether more mild forms of disordered sleep (such as mild or moderate snoring) might also be associated with sexual dysfunction. The question of whether there is an association between snoring severity and multiple sexual dysfunction domains has not been addressed previously in a larger population-based study. To this end, we examined the question of whether snoring was associated with sexual dysfunction in a randomly selected, community-based population of middle-aged and elderly males.

Methods

Study Population

The Olmsted County Study of Urinary Symptoms and Health Status among Men is an ongoing cohort study of urologic conditions in community-dwelling men. Details related to the study population have been previously published [18]. Briefly, a cohort of Caucasian men aged 40 to 79 years was randomly selected from the 1990 Olmsted County, Minnesota population. Men who had a history of prostate or bladder surgery, urethral surgery or stricture, or medical or other neurological conditions that could affect normal urinary function were excluded. After excluding men with these conditions, 3,874 men were asked to join the study, and 2,115 (55%) agreed to participate. A comparison of medical records of participants and nonparticipants indicated no differences except for a history of urologic diagnosis, with responders having a slightly greater prevalence of diagnosis of kidney stones, urinary tract infections or benign prostatic hyperplasia (BPH) [19]. A 25% random subsample of the study cohort, 475 out of 537 men (88%), was chosen to complete a detailed clinical urologic examination, including anthropometric measurements. The cohort was actively followed on a biennial basis for 14 years. All study procedures were approved by the Mayo Foundation Institutional Review Board.

Sexual Function Questionnaire

The Brief Male Sexual Function Inventory (BMSFI) was incorporated into the follow-up questionnaire in the sixth year of follow-up and biennially thereafter (Appendix 1) [20]. This previously validated questionnaire consists of 11 items related to five sexual function domains: sexual drive (two questions), erectile function (three questions), ejaculatory function (two questions), sexual problem assessment (three questions), and overall sexual satisfaction (one question). All questions were scored on a scale from 0 to 4 with domain scores equaling the sum of the individual questions comprising the domain. The domain scores range from 0–12 for erectile function and sexual problem assessment, 0–8 for sexual drive and ejaculatory function, and 0–4 for sexual satisfaction. For categorical analysis, the following cut-points were used: low libido if the sexual drive domain ≤ 2, ED if the erectile function domain ≤ 3, ejaculatory dysfunction if the ejaculatory domain ≤ 2, sexual problems if the problem assessment domain ≤ 3, and low sexual satisfaction if the sexual satisfaction domain ≤ 1 [21,22].

Sleep Questionnaire

A sleep questionnaire was added to the biennial questionnaire during the 14th year of follow-up. The questionnaire consists of four questions about snoring (presence, severity, frequency, and whether snoring bothered others) and two questions on breathing pauses (presence and frequency). Additionally, two questions on fatigue and sleepiness (lack of energy and falling asleep after dinner) were included from the Androgen Deficiency in Aging Males questionnaire. The subjects were divided into three groups of snoring severity: heavy snoring (high probability of OSA), moderate snoring (indeterminate probability of OSA), and none/mild snoring (low probability of OSA). The