New Concepts in Epidemiology of Lower Urinary Tract Symptoms in Men

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Abstract

Context: Recent insights into the pathophysiology of lower urinary tract symptoms (LUTS) have led to the introduction of new concepts, such as postmicturition LUTS as a third category alongside voiding and storage LUTS; the consideration of the lower urinary tract as a functional unit, in view of the importance of the role of the bladder in LUTS; and the realization that the prevalence of LUTS is similar in the two genders.

Objective: Verify whether epidemiologic information supports these concepts.

Evidence acquisition: Four important epidemiologic studies—the International Continence Society “Benign Prostatic Hyperplasia” (ICS-BPH) study [1], the EPIC survey [2], the Boston Area Community Health (BACH) survey [3,4], and the Epidemiology of LUTS (EpiLUTS) survey [5,6]—were identified and reviewed.

Evidence synthesis: The epidemiologic findings not only support these concepts but also have provided additional information that should be borne in mind for the management of LUTS. Findings include the facts that voiding symptoms are more common in men and storage symptoms are more common in women, that the prevalence of LUTS does not differ by race, and that treatment seeking by patients with LUTS is very low. In addition, LUTS have been found to be associated with chronic diseases. This observation may lead to insights into the pathophysiology of LUTS.

Conclusion: Epidemiologic studies support the new concepts.

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1. Introduction

Recent insights into the pathophysiology of lower urinary tract symptoms (LUTS) have led to the introduction of new concepts, such as postmicturition LUTS as a third category alongside voiding and storage LUTS; the consideration of the lower urinary tract as a functional unit, in view of the importance of the role of the bladder in LUTS; and the realization that the prevalence of LUTS is similar in the two genders.
3. Evidence synthesis

3.1. The ICS-BPH study

The International Continence Society (ICS) assessed the bothersomeness of LUTS in men by administering a questionnaire to 1271 male patients presenting at urology clinics in 12 countries [1]. This study established for the first time that voiding symptoms, such as reduced stream, intermittency, and hesitancy, are more common (90–94%) than storage symptoms, such as urgency, nocturia, and frequency (66–71%), but that the latter are the most bothersome. Thus, the study introduced a new concept: When making therapeutic decisions, urologists should consider not only occurrence but also bothersomeness. It also established that a postmicturition symptom, terminal dribble, is the most common symptom of all (prevalence: 96%).

3.2. The EPIC survey

The EPIC survey was a population-based, cross-sectional, computer-assisted telephone survey conducted in five countries (Canada, Germany, Italy, Sweden, and the United Kingdom) using the 2002 ICS definitions of LUTS [2]. A total of 19,165 men and women >18 yr old of the 58,139 sample selected to be representative of the general population in the five countries agreed to participate (33%). Data were stratified by country, age cohort, and gender.

This study was the first to establish that the prevalence of LUTS is similar in the two genders: 62.5% of men and 66.6% of women reported at least one symptom. Storage symptoms were slightly less common in men than in women (51.3% vs 59.2%), whereas the opposite was true for voiding symptoms (25.7% in men vs 19.5% in women). The prevalence of postmicturition symptoms was similar (16.9% in men and 14.2% in women).

Nocturia was the common storage symptom, independent of definition: 48.6% of men and 54.5% of women reported one episode per night, and 20.9% of men and 24% of women reported two episodes per night. Terminal dribble, classified as a voiding symptom, was reported by 14.2% of men and 9.9% of women. The prevalence of overactive bladder was 10.8% in men and 12.8% in women. The prevalence of the various symptoms was similar among countries, with a few exceptions, such as more common terminal dribble in both men and women in Italy (Fig. 1a–c).

3.3. The BACH survey

Similar prevalence of LUTS in men and women also was reported in the BACH survey [3], which added important information on quality of life (QoL) and use of medications.

The BACH survey was a population-based, random-sample survey that assessed the prevalence of LUTS, defined as an American Urological Association symptom index (AUA-SI) ≥8 in adults of both genders aged 30–79 yr, by age decade, gender, and race/ethnicity (black, Hispanic, Caucasian). A total of 5506 subjects of the randomly selected 8700 subjects agreed to participate (63.3%).

The study established that the prevalence of LUTS, defined conservatively according to AUA-SI ≥8, is 18.7% in the general adult population and is practically the same in men and women (18.7% in men and 18.6% in women). The prevalence steadily increased with age from 10.5% in the
fourth decade up to 26.5% in the seventh decade and then plateaued (25.5% in the eighth decade). The course of the increase differed in the two genders; there was a notable increase in the seventh decade in men that was not seen in women. Thereafter, the prevalence in men diminished and became similar in the two genders once more (Fig. 2). There was no significant difference among race/ethnicity (19.3% in women. Thereafter, the prevalence in men diminished and increase in the seventh decade in men that was not seen in women than in men (44.9 ± 0.8 in men vs 42.4 ± 0.9 in women; p = 0.02), whereas there was no significant difference in the mean SF-12 mental component score (p = 0.57). The mean bother score plus or minus SE also differed significantly among races/ethnicities, with symptoms being most bothersome in blacks (7.1 ± 0.6 vs 6.0 ± 0.5 in Caucasians and 5.1 ± 0.5 in Hispanics; p = 0.03): There were no significant differences in SF-12 scores among races/ethnicities.

The survey also provided the rate of subjects on pharmacologic treatment, which was very low: 3.5% of men and 2.0% of women overall and 9.8% of men and 7.2% of women with LUTS (AUA-SI score ≥ 8). The type of medication differed according to gender. Most men were taking an α-blocker and/or a 5α-reductase inhibitor, whereas most women were taking an anticholinergic agent.

The BACH survey was also the first study to report the association between LUTS and chronic diseases [4]. Among subjects with moderate and severe LUTS, the adjusted odds ratio (OR) for heart disease was significantly raised in both men (moderate LUTS: OR: 1.7; 95% confidence interval [CI], 1.0–3.0; severe LUTS: OR: 2.5; 95% CI, 1.0–5.8) and women (moderate LUTS: OR: 1.4; 95% CI, 0.9–2.2; severe LUTS: OR: 3.5; 95% CI, 1.6–7.7). The adjusted OR for depression also was raised (men with moderate LUTS: OR: 3.3; 95% CI, 2.1–5.1; men with severe LUTS: OR: 7.4; 95% CI, 2.5–21.6; women with moderate LUTS: OR: 1.9; 95% CI, 1.4–2.7; women with severe LUTS: OR: 4.5; 95% CI, 2.3–8.9). The same was true for type 2 diabetes mellitus in men (moderate LUTS: OR: 1.9; 95% CI, 1.1–3.5; severe LUTS: OR: 2.5; 95% CI, 0.7–8.7) and hypertension in women (moderate LUTS: OR: 1.2; 95% CI, 0.8–1.7; severe LUTS: OR: 2.8; 95% CI, 1.4–5.7). Additionally, individual symptoms were found to be associated with a higher risk of depression, the worst being severe incomplete emptying, which was associated with a 7-fold increase in the risk of developing depression (OR: 7.3; 95% CI, 3.6–14.8).

3.4. The EpilUTS study

The EpilUTS study [5] was a population-based, cross-sectional, Internet survey conducted in men and women > 40 yr of age in the United States, the United Kingdom, and Sweden. A total of 30 000 subjects took part in the survey: 20 000 in the United States (participation rate: 59.6%), 7500 in the United Kingdom (participation rate: 60.6%), and 2500 in Sweden (participation rate: 52.3%).

The main objective of the survey was to establish the prevalence of LUTS in the three countries according to ICS definitions and to explore the association of LUTS with comorbid conditions. This in-depth survey investigated other variables as well: International Prostate Symptom Score (IPSS), LUTS frequency and bother, sociodemographics, QoL (SF-12), overall bladder conditions, general
health care seeking, general risk factors, anxiety and depression, sexual health, and erectile function.

The prevalence of LUTS was defined by two symptom-frequency thresholds: “at least sometimes,” which resulted in a prevalence of 72.3% in men and of 76.3% in women, and “at least often,” which resulted in a prevalence of 47.9% in men and of 52.5% in women. Once again, storage symptoms were more common in women; for example, nocturia defined as one episode per night was reported by 75.8% women and 69.4% men, and nocturia defined as two or more episodes per night was reported by 33.7% of women and 28.5% of men. Urgency was reported by 35.7% of women and 22.4% of men.

Once again, terminal dribble was common (45.5% in men and 38.3% in women).

Postmicturition symptoms were quite common. Incomplete emptying occurred in 22.7% of men and 27.4% of women, and postmicturition incontinence occurred in 29.7% of men and 14.9% of women.

EpiLUTS showed that prevalence and degree of bother may differ, as already noted in the ICS-BPH study. Leak during sexual activity, for example, is infrequent (<5%) but very bothersome. This concept should be routinely considered when therapeutic decisions are made.

Another important concept to bear in mind is that symptoms usually do not occur in isolation but rather overlap. The overlap differs according to gender: Voiding symptoms, either alone or in combination with other symptoms, prevail in men, whereas storage symptoms prevail in women. Although the triple combination of voiding, storage, and postmicturition symptoms is the most common in both genders, there are important differences, such as the rate of storage symptoms alone (9.1% in men vs 22.4% in women) (Fig. 3).

Multiple associations with chronic comorbidities were found also in the EpiLUTS survey [6]. The triple combination of voiding, storage, and postmicturition symptoms was associated in both genders with arthritis, asthma, chronic anxiety, depression, heart disease, irritable bowel syndrome, neurologic conditions, recurrent urinary tract infection, and sleep disorders; in men, it was also associated with diabetes. The issue is whether LUTS cause chronic comorbidity or vice versa or whether there is no causal relationship between LUTS and comorbidities and the phenomenon is due to other as-yet-unidentified factors. It has been suggested that the association with heart disease, hypertension, and sexual disorders may be due to the presence of metabolic syndrome and that inflammation may be the common factor linking LUTS to diabetes, depression, arthritis, and prostatitis.

LUTS were found to be associated also with a broad range of sexual activity disorders; 71.1% of men reported that they were still sexually active. LUTS severity, expressed as IPSS, was directly proportional to the rate of erectile dysfunction and premature ejaculation.

Differences were recorded in treatment seeking according to the combination of symptoms. The subjects with the triple combination of voiding, storage, and postmicturition symptoms needed treatment most frequently (pharmacologic as well as other kinds of treatment, such as herbal, physical, and surgical).

4. Conclusions

The findings of the main epidemiologic studies show that the prevalence of LUTS does not differ by gender or race, but voiding symptoms are more common in men and storage symptoms are more common in women. Prevalence differs according to the definition used: 72.3% of men and 76.3% of women experience at least one symptom occasionally, but only 18.7% of adults have an AUA-SI score ≥8.

LUTS are associated with chronic diseases. This observation may lead to insights into the pathophysiology of LUTS. Treatment seeking by patients with LUTS is very low.
Conflicts of interest

In recent years the author has received research support, consultancy, and/or lecturer honoraria in the field of α1-adrenoceptors from Recordati.

References