

Natural Course of Lower Urinary Tract Symptoms in Men Not Requiring Treatment — A 5-Year Longitudinal Population-based Study

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OBJECTIVE	To evaluate the natural course of lower urinary tract symptoms (LUTS) by quantifying their longitudinal changes.
METHODS	A population-based study of men aged 55, 65, or 75 years in Pirkanmaa region, Finland was conducted with a 5-year follow-up (1999-2004). Mailed self-administered questionnaire with the Danish Prostatic Symptom Score instrument was used to evaluate LUTS. Men with any treatment for LUTS or a history of prostate cancer were excluded.
RESULTS	A total of 1331 men were included in the study. All 12 symptoms exhibited considerable fluctuation over time. Incidence of specific symptoms varied by a factor of 10 and remission by a factor of 4. Overall, common symptoms varied most strongly in terms of incidence and remission, whereas the less common ones such as incontinence behaved in a more stable fashion. Remission was more frequent than incidence for all individual LUTS components. The highest incidence was found for post-micturition symptoms and urgency. Remission was most common in weak stream and least frequent in urgency and urgency incontinence.
CONCLUSION	LUTS are dynamic conditions with strong spontaneous fluctuation over time. Remission was more common than incidence. The strong propensity for spontaneous resolution should also be borne in mind in treatment decisions including prescription practices. UROLOGY 83: 411–415, 2014. © 2014 Elsevier Inc.

Lower urinary tract symptoms (LUTS) are highly prevalent conditions in all populations, and the number of affected individuals is projected to increase with aging populations.¹ Numerous studies have reported widely varying estimates of the prevalence of LUTS.²⁻⁵ The wide variations might be partly attributable to differences in study protocols and characteristics of study populations. Furthermore, some variation in symptom prevalence might be because of temporary recovery of underlying pathologic processes such as prostatitis/pelvic pain syndrome spontaneously or because of changes in lifestyle or environmental factors.

Symptoms in benign prostate hyperplasia (BPH) probably vary also, especially in the early phase.⁶ Such spontaneous recuperation in symptom intensity is reflected in fluctuation of prevalence of LUTS in longitudinal studies.⁷

For better understanding of the etiology and pathogenesis of LUTS, natural history of symptoms in the absence of treatment should be characterized. This requires longitudinal studies with data on symptom incidence, as it cannot be evaluated in cross-sectional studies. Few representative follow-up studies with low attrition have been conducted, which is an impediment to comprehension of the natural history of LUTS.⁸⁻¹³

In clinical practice, medical treatment for LUTS is widely used. Men complaining of symptomatic uncomplicated BPH or bladder overactivity are usually treated with oral medication. Long-term medical treatment for LUTS is a therapeutic mainstay. Understanding the natural course of the symptoms is needed to assess treatment response and define appropriate indications for LUTS medication, to avoid over- and under-treatment.

The aim of the study was to provide quantitative estimates of the natural course of LUTS in terms

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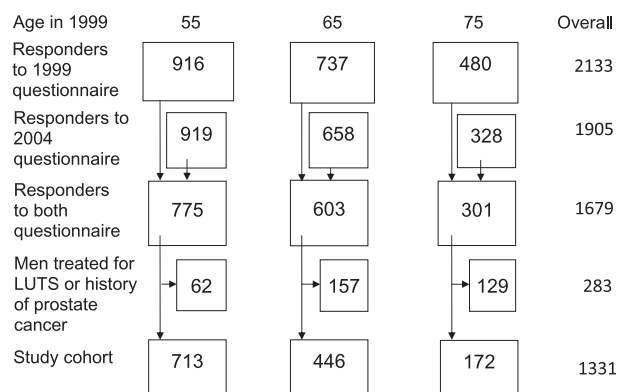


Figure 1. Flow chart illustrating formation of the study cohort.

of incidence (*de novo* occurrence) and recovery over a 5-year period in Tampere Ageing Male Urologic Study (TAMUS) cohort with men aged 55, 65, and 75 years at baseline.

MATERIALS AND METHODS

This analysis was conducted within the population-based TAMUS cohort study. In 1999 and 2004, the questionnaire was sent to the men, who were born during selected years (1924, 1934, and 1944) and residing in Tampere or 11 surrounding rural municipalities in Pirkanmaa region at the beginning of 1994 (when first TAMUS questionnaire was sent). Men were identified through the Population Register Centre in January 1999 and 2004.

A questionnaire with a covering letter and a prepaid returning envelope was mailed to all the men in the study population in both questionnaire rounds.¹⁴⁻¹⁷ Nonresponders were reminded with a second mailing after 3 months. For this longitudinal analysis, we included only those men who completed both surveys (Fig. 1). LUTS were evaluated by the means of Danish Prostatic Symptom Score (DAN-PSS-1).¹⁸ Information was also collected on sociodemographic factors and medical and surgical history, including medications. Medications were reported with commercial names but converted into anatomical therapeutic chemical classification codes. All the men reporting a history of prostatic cancer or surgical or medical treatment for BPH or LUTS in either questionnaire were excluded from the study. The 4-week period preceding the completion of the questionnaire was used as the time frame for evaluating symptoms. The 4 response options of the DAN-PSS-1 questionnaire for each symptom were recoded into a binary variable: no symptom (no or mild symptom) or clinically relevant symptom (moderate or severe symptom). Changes in each man's individual responses between the 1999 and 2004 surveys were compared. Men who responded no symptom (score 0) and mild symptom (score 1) were included to no clinical symptom group, and moderate (score 2) and severe symptom (score 3) were included to clinically significant symptom group. New symptom was found if score 0 or 1 was changed to 2 or 3. Remission vice versa, as high scores 2 or 3 was changed to 0 or 1. Persistent symptoms meant that symptom score was 2 or 3 in both questionnaires.

Changes in LUTS during the 5-year follow-up were coded into 4 categories: remained asymptomatic, new (incident) symptom,

remission of previous symptom, and persistent symptom. Incidence and remission rates of the symptoms during the follow-up were calculated as the ratio of the frequencies of events (transitions during the follow-up from symptomatic to asymptomatic state and vice versa) to number of men, that is, incidence as the number of initially asymptomatic men who became symptomatic relative to all asymptomatic men at baseline, and recovery as the proportion of symptomatic men at entry who became asymptomatic.

Exact 95% confidence intervals for incidence and recovery probability were estimated assuming that the numbers of events followed a binomial distribution using JavaStat.

The study protocol was reviewed by the Tampere University Hospital Committee of Research Ethics (tracking number 99050).

RESULTS

Altogether, 2133 men responded to the 1999 survey and 1905 men to the 2004 survey corresponding to participations of 68% and 76%, respectively. There were no major differences in sociodemographic indicators between men responding the first mailing and those returning their forms after a reminder. Only those 1679 men, who completed both questionnaires, were included in the analysis and after exclusions because of missing responses, the final sample consisted of 1331 men (Fig. 1).

The proportions of symptomatic men whose symptom resolved during the follow-up ranged 22%-89% for various LUTS, and of the initially asymptomatic men, 1%-13% reported a new-onset symptom for a specific type of LUTS after 5 years (Table 1). Resolution of existing symptoms was more common than occurrence of new symptoms for all LUTS. The lowest incidence (1-2 new cases per 100 men) was found for all types of incontinence and dysuria and weak stream. Incidence was highest (10-13 cases per 100 men) for post-micturition symptoms and urgency. When symptoms were examined between different age groups, incidence and recovery were rather similar, as men got older also incidence rose, but also recovery was more common (Table 2). One exception seemed to be nocturia, as in the oldest age group incidence was high, but recovery was low.

Of the men with voiding symptoms at baseline, roughly half recovered during the 5-year follow-up, that is, remission was as frequent as persistence (with the exception of very high remission in weak stream based on only 9 symptomatic men at baseline). Of the voiding symptoms, hesitancy and straining exhibited a similar pattern with remission approximately 50 per 100 men and incidence approximately 5 per 100 men.

Of the storage symptoms, urgency had the highest incidence 10 per 100 men. Increased daytime frequency and nocturia had similar incidence (5 per 100 men) and comparable remission (20-30 per 100), whereas urge incontinence and other incontinence showed both low incidence and low remission (although the latter were based on small number of affected men).

At the beginning of follow-up, 1.2%, 4.8%, and 9.2% of the men had medication for LUTS, further 0.3%,

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