The Impact of Nocturia in Patients with LUTS/BPH: Need for New Recommendations

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Article info

Abstract

Although nocturia has been recognised as one of the most bothersome symptoms in men suffering from lower urinary tract symptoms suggestive of benign prostatic hyperplasia (LUTS/BPH), its impact on quality of life (QoL) is often underestimated. Recent studies have shown a substantial negative effect of nocturia on quality of sleep, energy/vitality and social functioning. In addition, it has been shown that quality of sleep is significantly affected by the hours of undisturbed sleep (HUS), defined as the time between going asleep and the first awakening (to void). These considerations formed the basis to investigate current opinion on the appropriate evaluation of nocturia amongst both practising urologists and urological experts. For that purpose, firstly a discussion forum was organised at the 6th International Consultation on Prostate Cancer and Prostate Diseases (Paris, June 24, 2005), followed by a meeting of an expert consensus panel (Sheffield, September 24, 2005). Based on the results of both meetings, seven position statements were formulated regarding the measurement of nocturia and its impact on QoL in future research.

Participants of both the discussion forum and the expert consensus meeting confirmed the importance of the appropriate evaluation of nocturia in patients with LUTS/BPH, focusing on an accurate analysis of its causes, and also on its impact on quality of sleep and QoL. The concept of HUS was broadly acknowledged as a potentially important parameter in assessing sleep disturbance due to nocturnal voids. The expert panel recommended that the relation between nocturia, quality of sleep and QoL should be incorporated into new studies on the efficacy of treatments for LUTS/BPH.

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1. Introduction

Many epidemiological and clinical studies have shown that nocturia, defined as “the complaint that the individual has to wake at night one or more times to void” [1] is one of the most bothersome symptoms in patients with lower urinary tract symptoms suggestive of benign prostatic hyperplasia (LUTS/BPH) [2–8]. The bother caused by nocturia stems from the frequent awakenings at night, in most cases severely affecting the quality of sleep. Recent studies have shown a significant negative impact of sleep disturbance due to nocturia on daily activities and quality of life (QoL) [9,10]. As a result of these observations, the appropriate evaluation and treatment of nocturia need specific attention. Many studies have shown a beneficial effect of both medical and surgical treatments for LUTS/BPH on the frequency of nocturnal voids [11–13]. However, the impact of these improvements on QoL is less well studied. In addition, it has been suggested that the current assessment of nocturia (number of nocturnal voids) needs to be extended with the development of the concept of hours of undisturbed sleep. Studies have shown that wakening in the first hours of sleep has the strongest negative impact because the restorative part of sleep occurs during the first part of the night [14,15].

Obviously, there is a need for consensus development on the appropriate assessment of nocturia and its impact on QoL in both clinical research and practice. As a starting point, current opinion amongst practising urologists and urological experts on these issues were investigated during a discussion forum at the 6th International Consultation on Prostate Cancer and Prostate Diseases (Paris, June 24, 2005), and an expert consensus panel meeting on nocturia in patients with LUTS/BPH (Sheffield, September 24, 2005).

2. Discussion forum

During the 6th International Consultation on New Developments in Prostate Cancer and Prostate Diseases, approximately 300 delegates participated in a forum discussion about the need for reassessment of the impact of nocturia in patients with LUTS/BPH. After an introduction by Prof. Philip Van Kerrebroeck (chairman), Prof. Emmanuel Chartier-Kastler presented an overview of current insights into the measurement of nocturia and its impact on QoL [16]. Using an interactive voting system, the audience was subsequently asked to give their opinions on a number of issues related to the evaluation and treatment of nocturia in clinical research and daily clinical practice. After each issue, the results were displayed and discussed with the participants. For practical reasons, voting was closed after the first one hundred respondents had given their opinion.

2.1. Nocturia and quality of life

More than half of the respondents considered the impact on QoL to be the most important element in evaluating symptoms in men with LUTS/BPH (Fig. 1). Although the impact on sleep showed a much lower score, a large majority (83%) agreed that sleep disturbance due to nocturia is the dominant factor affecting QoL (Fig. 2). Obviously, QoL is considered as the most important end-point in the management of LUTS/BPH, while sleep disturbance is an important determinant in this respect.
Do you agree that sleep disturbance caused by nocturia is the major driver of decreased quality of life in your LUTS/BPH patients?

![Fig. 2 – Nocturia and quality of life.](image)

Do you agree that new instruments are needed to fully monitor the impact of nocturia on quality of sleep and quality of life?

![Fig. 4 – Need for new instruments to evaluate nocturia.](image)

2.2. Need for assessing the impact of nocturia

The discussion forum displayed considerable agreement (86%) on the need of (new) treatments to be evaluated on their effects on quality of sleep and QoL (Fig. 3). However, the majority of respondents (77%) shared also the opinion that an appropriate evaluation of the impact of nocturia would require the development of new instruments (Fig. 4). The “hours of undisturbed sleep” (HUS), defined as the time between falling asleep and the first awakening to void, was considered as an important new parameter. Approximately two-thirds of the respondents (63%) agreed that this parameter should be included in the evaluation of the effects of (new) treatments for LUTS/BPH on quality of sleep (Fig. 5).

![Fig. 3 – Evaluation of the impact of nocturia.](image)

3. Expert consensus meeting

In order to discuss the state of the art and the need for new recommendations on the assessment of the impact on nocturia in clinical research and practice, a panel of European experts (see Appendix A) convened on September 24, 2005 in Sheffield (UK). Previous to this meeting, panellists received a review and reference list (see Appendix B) of studies into nocturia in patients with LUTS/BPH as well as of studies on the impact of sleep disturbance on QoL. In addition, they were asked to comment on a list of draft position statements on:

- The importance of evaluating the impact of nocturia.
• The instruments to measure nocturia and its impact on quality of sleep and QoL.
• The consequences for clinical research and practice.

The panelists’ comments formed the basis for a structured debate leading to a number of statements and recommendations. The meeting was chaired by Mr. Christopher Chapple and Dr. Herman Stoevelaar.

3.1. Importance of evaluating the impact of nocturia

The panel agreed that the impact of nocturia on quality of sleep and QoL is often underestimated, and that more attention should be paid to its appropriate evaluation in clinical research and practice. It was acknowledged that nocturia is the most common cause of sleep disturbance, and that quality of sleep impacted by nocturia has a direct negative impact on the QoL. The following position statement was unanimously accepted:

Statement 1

Nocturia is the most bothersome symptom in patients with LUTS/BPH, having a significant impact on quality of sleep and QoL. Appropriate assessment of nocturia is therefore necessary in both clinical research and daily clinical practice.

However, it was emphasised that nocturia may be caused or co-determined by several other conditions, necessitating a careful analysis. These include nocturnal polyuria, polyuria due to e.g. congestive heart failure or diabetes mellitus, decreased bladder capacity secondary to detrusor overactivity and post-void residual urine, behavioural factors such as the intake of caffeine, alcohol or large amounts of fluids shortly before bedtime, and the use of particular medications (e.g. diuretics). It was therefore decided to add the following statement:

Statement 2

Because the aetiology of nocturia is multifactorial, careful attention should be paid to the identification of concurrent or co-determining conditions, such as nocturnal polyuria, medication use and drinking habits.

3.2. Measurement of nocturia and its impact on quality of sleep and quality of life

After discussing the current evidence on quality of sleep and its determinants, panellists expressed the opinion that the current assessment of nocturia (number of nocturnal voids) may be too limited in relation to its consequences for quality of sleep and QoL. The quality of sleep may not only be dependent on the frequency of nocturnal voids but also, or even more, by the HUS. Regarding this issue, the following statement was formulated:

Statement 3

Waking in the first hours of sleep has the strongest impact on quality of sleep because the most restorative part of sleep occurs during the first half of the night. In addition to the commonly measured frequency of nocturnal voids, the measurement of hours of undisturbed sleep (HUS: time between falling asleep and the first awakening to void) may therefore be of great importance.

In addition to the measurement of the different dimensions of nocturia, the panel discussed how the impact of nocturia on QoL should be measured. There was consensus that commonly used instruments for measuring QoL in patients with LUTS/BPH, such as the nocturia question of the Symptom Problem Index (SPI), the International Prostate Symptom Score (I-PSS) quality-of-life question, and also generic questionnaires such as the Short Form 36 (SF-36), are likely to be not sensitive enough to measure the impact of nocturia on quality of sleep and QoL. The panel felt that the recently developed questionnaire by Abraham et al. [17], the Nocturia Specific Quality of Life questionnaire (N-QOL) may offer better possibilities for measuring the impact of nocturia, as this instrument has been shown to correlate with relevant domains such as quality of sleep, energy/vitality and social functioning. A recent survey in ambulatory patients, using a different scale (FACT: Functional Assessment Chronic Therapy), also suggests that nocturia has a significant impact on QoL [Batista JE, Personal communication].

According to the panel, the appropriate evaluation of nocturia should include an accurate assessment of the frequency of nocturnal voids and voided volumes, using a sleep diary/log, and an assessment of the HUS. As regards the latter aspect, this may also be recorded using a sleep diary, but the outcomes may be subject to recall bias. The gold standard in this respect is polysomnography (PSG), but this instrument was considered too elaborate and expensive for common use. Currently, less complex instruments are tested, such as actigraphy, a method that records body movements by means of a wrist-worn activity meter [18]. The panel considered actigraphy as a promising instrument to be
used in patients with LUTS/BPH, but decided that more data are needed to advocate its application other than in clinical research.

The considerations about the appropriate measurement of nocturia lead to the formulation of the following statements:

**Statement 4**

Most commonly used instruments for measuring nocturia lack the sensitivity to measure the impact of nocturia on quality of sleep and QoL.

**Statement 5**

Potential (new) instruments for the adequate evaluation of nocturia and its impact on quality of sleep and QoL include the following:

- Sleep diary/log to measure the number of times of waking up to void.
- Time from falling asleep to the first awakening to void known as “hours of undisturbed sleep” (HUS).
- Nocturia Specific Quality of Life questionnaire (N-QOL) to measure the impact on QoL.

### 3.3. Recommendations for clinical research and clinical practice

Panellists agreed that new insights into the measurement of nocturia and its impact on quality of sleep and QoL need to be incorporated in clinical studies on LUTS/BPH treatments. Due to the high prevalence of nocturia in the aging population [19], further research is needed to assess the number of voids per night that represent a problem for the individual, as well as the risk/benefit ratio of various treatments.

The preliminary results of a study on the efficacy of the new α1-adrenoceptor antagonist tamsulosin oral controlled absorption system (OCAS®), in which the concept of HUS was investigated, supported the existence of a relationship between frequency of nocturnal voids, HUS and LUTS/BPH related QoL [20]. The conceptual framework for new clinical studies of the impact of LUTS/BPH treatments on nocturia and associated quality of sleep and QoL is depicted in Fig. 6. After sound clinical studies have reinforced these results, the next step would be to develop valid and simple instruments to be used in clinical practice. The panel recommendations for clinical research and practice were translated into the following final statements:

**Statement 6**

The evaluation of (new) treatments for LUTS/BPH should include an appropriate assessment of nocturia and its impact on quality of sleep and QoL. This evaluation should include an adequate measurement of the number of times to wake up for voiding, time from falling asleep to the first awakening to void (HUS), and their consequences for different aspects of QoL.

**Statement 7**

Based on the results of clinical research, simple and valid instruments should be developed for use in daily clinical practice.

### 4. Conclusions

The results of both the discussion forum and the expert consensus meeting emphasised the impor-
tance of the appropriate evaluation of nocturia in patients with LUTS/BPH. On the one hand, this applies to an accurate analysis of the potential causes or co-determinants of nocturia such as nocturnal polyuria, decreased bladder capacity due to detrusor overactivity and post-void residual urine, behavioural factors and medication use. On the other hand, more attention should be paid to the consequences of nocturia on quality of sleep and QoL. Both the discussion forum and the expert panel agreed that HUS may be an important new parameter in assessing sleep disturbance due to nocturia. In addition, there was a broad consensus that the relation between nocturia, quality of sleep and QoL should be incorporated into new studies on the efficacy of treatments for LUTS/BPH. Sleep logs/diaries, the measurement of HUS (by either sleep logs or recently developed instruments such as the actigraph) and the N-QOL were suggested as important tools to measure nocturia and its impact in future clinical and epidemiological studies.

Appendix A. List of experts

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Appendix B. Background information reference list

15. Kobelt G, Borgstrom F, Mattiasson A. Productivity, vitality and utility in a group of healthy
professionally active individuals with nocturia. BJU Int 2003;91:190–5.


References