

LONG-TERM FOLLOW-UP OF PATIENTS WITH NOCTURNAL ENURESIS DUE TO DETRUSOR OVERACTIVITY AND NOCTURNAL POLYURIA

Hypothesis / aims of study

Children with nocturnal enuresis are known to lack the capability of appropriate arousal to stimuli of the bladder, caused by suppression of transition to complete awakening because of long-term overstimulation by the bladder signals. People with nocturia, however, do have this capability and get up to void at night. In both nocturia and nocturnal enuresis, pathogenesis includes bladder dysfunction, such as overactive bladder syndrome or reduced bladder capacity, and nocturnal polyuria. And both conditions are also associated with an important impact on quality of life and cognitive functioning. This important overlap in pathogenesis and comorbidities between nocturia and nocturnal enuresis, triggers the question if enuretic children are prone to develop nocturia once the enuresis is under control. If so, we want to answer following questions: What is the prevalence of nocturia in former enuretics? Is there a difference in urinary symptoms between nocturics and non-nocturics? What is the related bother to the urinary symptoms?

Study design, materials and methods

In February 2012 a questionnaire was mailed to a sample of 1265 patients who were treated for nocturnal enuresis in the Ghent University Hospital between 3 and 15 years ago. Participants were asked to send back the completed questionnaire together with the informed consent. A questionnaire on past treatment for and status on nocturnal enuresis was used to evaluate the current and past situation of nocturnal enuresis. Validated questionnaires, ICIQ-OAB and ICIQ-UI, were used to evaluate nocturia, overactive bladder symptoms and urinary incontinence and the related bother rated on a scale from 0 to 10.

Results

A completed questionnaire was sent back by 364 subjects (28,8%), with a mean age of 17,23 (SD 3,203), 225 male (61,8%) and 139 female (38,2%) participants. Nocturia is reported by 130 subjects (35,7%). Differences in demographic data and urinary symptoms between the nocturic and non-nocturic patients are listed in table 1.

Table 1: demographic data and urinary symptoms according to the presence of nocturia

	Nocturics (N=130)	Non-nocturics (N=234)	P
Age	18,11 (3,713)	16,74 (2,771)	0,000*
Sex: - Male	69 (53,1%)	156 (66,7%)	0,011*
- Female	61 (46,9%)	78 (33,3%)	
Number of years since nocturnal enuresis	6,17 (3,926)	6,28 (3,088)	0,889
Nocturia frequency (mean, SD)	1,16 (0,404)	0	0,000*
Urinary incontinence frequency (N, %):	46 (35,4%) [°]	51 (21,8%) ^{°°}	0,003*
- never	- 80 (61,5%)	- 182 (77,8%)	0,001*
- leaks before getting to the toilet	- 23 (17,7%)	- 25 (10,7%)	0,041*
- leaks when coughing or sneezing	- 11 (8,5%)	- 12 (5,1%)	0,148
- leaks when asleep	- 16 (12,3%)	- 14 (6,0%)	0,029*
- leaks when physically active/exercising	- 8 (6,2%)	- 3 (1,3%)	0,012*
- leaks when finished urinating and dressed	- 9 (6,9%)	- 13 (5,6%)	0,371
- leaks for no obvious reason	- 3 (2,3%)	- 4 (1,7%)	0,481
- leaks all the time	- 1 (0,8%)	- 0 (0,0%)	0,356

SD= standard deviation; * p-value <0,05; [°] Ntotal=128; ^{°°} Ntotal=232

A statistically significant higher proportion of the nocturics has a high to abnormal voiding frequency in daytime (p<0,000), urge (p<0,000) and urge-incontinence (p<0,000). No correlation can be found between the presence of nocturia and the type of treatment received for nocturnal enuresis. Neither a significant difference in odds ratio according to treatment for enuresis can be found when adjusted for age and sex. Logistic regression analysis shows a higher odds for nocturia in male enuretics (p<0,007) and with increasing age (p<0,000).

Significant differences in bother due to urinary symptoms according to the presence of nocturia is shown in figure 1.

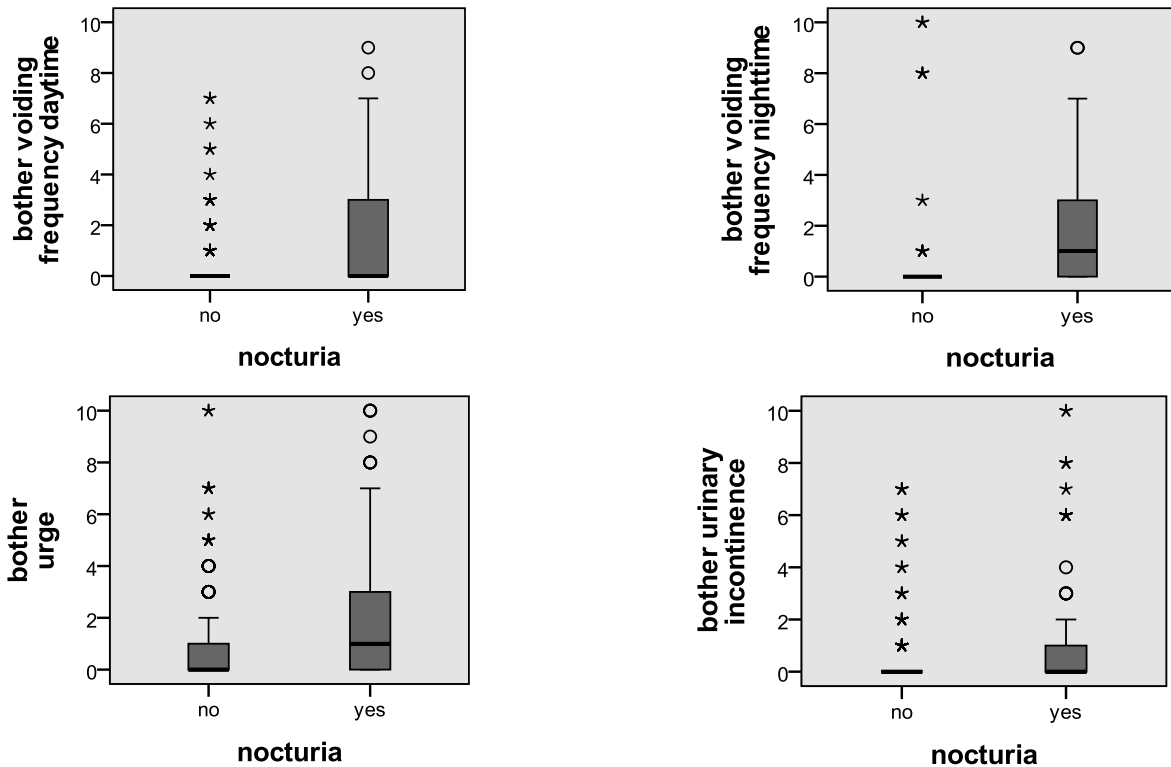


Figure 1: bother caused by voiding frequency in daytime and nighttime, urge and urinary incontinence according to the presence of nocturia

Interpretation of results

A significant proportion of former enuretic patients develops nocturia after resolution of nocturnal enuresis. Increasing age and male sex are associated with a higher odds for nocturia. However, more boys suffer from nocturnal enuresis, which could explain these results.

The evolution from nocturnal enuresis to nocturia could be due to the underlying condition, such as overactive bladder syndrome (OAB), since more patients in the nocturic group seem to suffer from urinary symptoms suggestive for OAB. But the specific treatment options for nocturnal enuresis, and thus the associated underlying condition, are no predictive factor for the development of nocturia.

Although the frequency of urinary symptoms, such as urge and urinary incontinence, is significantly lower in the non-nocturic group, bother due to these symptoms is also scored systematically lower in this group compared to the nocturic group.

Concluding message

Approximately 1 out of 3 former enuretic patients develops nocturia, which is often accompanied by other urinary symptoms and with significant bother. Thus, resolution of nocturnal enuresis does not necessarily equals resolution of urologic pathology and some of the nocturic patients might benefit from continuous treatment for the underlying urologic condition, such as overactive bladder syndrome or nocturnal polyuria.

Disclosures

Funding: unrestricted grant Ferring **Clinical Trial:** Yes **Public Registry:** No **RCT:** No **Subjects:** HUMAN **Ethics Committee:** Ethics Committee University Hospital Ghent **Helsinki:** Yes **Informed Consent:** Yes