**578**

Batista J E[1], Molinuevo Alonso B[2], Pardo Y[2], Gomez-Lanza E[3], Granda M[3]
***1.*** *CM Teknon, Barcelona, Spain,* ***2.*** *Department of Psychiatry and forensic Medicine. Autonomous University of Barcelona. Spain.,* ***3.*** *Urodynamics Unit. CM Teknon. Barcelona. Spain.*

# OBJECTIVE ANALYSIS OF NOCTURIA BY NOCTURNAL UROFLOWMETRY. INITIAL RESULTS AND QUALITY OF LIFE EVALUATION

Aims of study

1)To quantify the urodynamic pattern of males with nocturia using a voiding diary and serial uroflowmetry during an overnight stay in a designated center. 2) To correlate the urodynamic pattern with LUTS and health-related quality of life (QoL) assessment.

Study design, materials and methods

This observational study included 16 males aged ≥ 40 who had reported at least 2 nocturnal voids on urologic visit. Exclusion criteria were previous or concomitant urologic tumors or neurological diseases affecting the lower urinary tract. Prior to admission, a day time voiding diary was filled by the patient as well as questionnaires on urinary symptoms (IPSS) and quality of life, both general (Functional Assessment Chronic Therapy, FACT-G) and specific (Nocturia Quality of Life Questionnaire, N-QoL). Patients were admitted for one night to monitor each nocturnal voiding by means of continuous uroflowmetry in a specially adapted ambulatory urodynamics device flowmeter (LUNA MMS). Sleep pattern (first/second half of night), and hours of uninterrupted sleep (HUS, defined as time between going to sleep and the first night void) were investigated, and also whether the night was representative of a common night at the patient's home. Time, volume and Qmax of each micturition were recorded and analyzed.

Results

Recordings for 2 patients were incomplete due to technical reasons. Complete data sets were obtained for 14 patients. All had previously undergone a complete urodynamics (UDS) and were classified as normal (2), hyperactive detrusor (3), hypocontractile detrusor (2) and obstructed (7). Mean age was 57 (range 40-72). Twelve patients (87%) considered both sleep and voiding patterns to reflect those experienced at home. A total of 38 nocturnal voids were recorded, with a mean objective voids per patient of 2.7 (Table 1). Half of the patients correctly estimated the number of night voids, whereas half overestimated them. Table 1 shows descriptive statistics of urodynamic variables HUS, Nocturnal Urine Volume (NUV (1)) and objective/subjective voids. All but one patient (92%) woke up to void in the 1st half of the night. Sixty percent of patients in the abnormal UDS group had nocturnal polyuria, a finding more common in obstructed patients.

Two clear patterns emerged from the analysis: One composed by 2 patients with no urodynamic abnormality and multiple small-volume voids (Fig 1a); we considered these patients "functional", since they had a normal UDS. Patients with abnormal UDS, showed larger volumes (Fig 1b). Functional patients showed statistically significant lower volumes during the night (Figure 2) ($p < 0.01$) and were free from nocturnal polyuria.

Table 1. Descriptive statistics: IPSS, sleep and urodynamic variables.

| | IPSS | HUS (minutes) | Nocturnal Urine Volume | Objective voids | Subjective voids |
|---|---|---|---|---|---|
| Mean (DE) | 12.8 (5.2) | 144.4 (127.2) | 843.8 (594) | 2.71 (1.14) | 4.38 (3.28) |
| Range | 7-23 | 22-534 | 273-2179 | 1-4 | 1-14 |

Figure 1 : Nocturnal readings, indicating volume (blue upper trace) and Qmax (pink lower trace). Purple square indicates sleep period. 1a patient in the functional group; 1b obstructed patient, showing larger volumes.

Fig. 1a

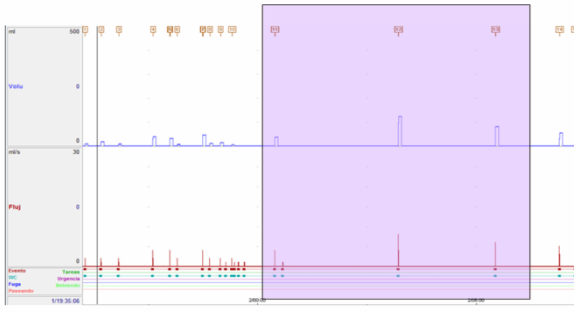
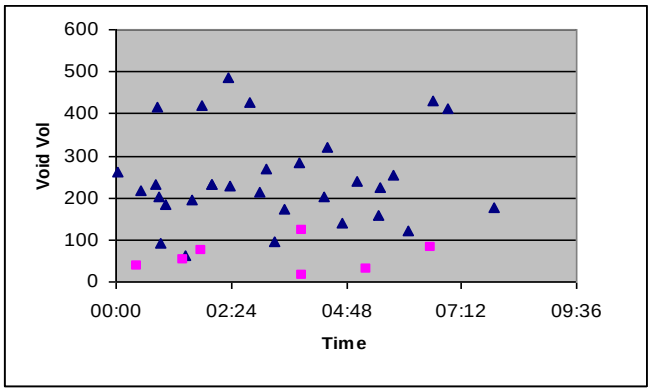


Fig. 1b

Purple square indicates sleep period. 1a patient in the functional group; 1b obstructed patient, showing larger volumes.

Figure 2: Volume/time distribution of nocturnal voids, each dot representing a void. Pink squares, Functional group; Blue triangle: pts with UD diagnosis. Most voidings take place in the 1st half of night




Spearman correlation between urodynamic variables and QoL are presented in Table 2. Only statistical significant negative relation was observed between Sleep/Energy NQoL and total NQoL score with number of subjective voids. In the FACT-G some scales showed a tendency to correlate positively with HUS, ICS-NUV, and number of objective voids.

Table 2. Spearman correlation between urodynamic variables and FACT-G and N-QoL

| | HUS (minutes) | ICS-NUV | Subjective voids | Objective voids |
|---|---|---|---|---|
| FACT/ Physical | 0.43 | 0.22 | -0.47 | -0.12 |
| FACT/ Functional | 0.41 | 0.15 | -0.45 | 0.11 |
| FACT/ Social | 0.14 | 0.16 | -0.07 | 0.20 |
| FACT/ Emotional | -0.02 | 0.30 | -0.10 | 0.46 |
| Total (FACT-G) | 0.28 | 0.28 | -0.41 | 0.17 |
| **N-QoL** | | | | |
| Sleep/Energy | 0.17 | 0.11 | -0.70** | -0.19 |
| Bother/Concern | 0.20 | 0.05 | -0.43 | 0.14 |
| Total score | 0.20 | 0.04 | -0.67* | -0.06 |

* p< 0.05 ** p< 0.01

Interpretation of results

The majority of patients with nocturia wake up in the first part of the night, making this condition discomforting, as observed in QoL measures.

Nocturnal polyuria frequently co-existis with urodynamic abnormalities, and should be considered simultaneously in diagnosis and treatment.

Waking in the first part of the night to void shoes a trend towards affecting nocturia related QoL.

Concluding message

Nocturnal uroflowmetry seems a reliable tool to enhace the diagnosis of nocturia. Initial results show considerable overlap between different syndromes and ongoing studies will enable further details. So far, a “functional nocturia” pattern has been detected.

References

1. BJU internat 2002; 90( Sup 3): 11
2. J Urol 2000; 163: 5

| | |
|---|---|
| ***Specify source of funding or grant*** | **Astellas Europe provided an un-restricted research grant through Fundacion Teknon** |
| ***Is this a clinical trial?*** | **No** |
| ***What were the subjects in the study?*** | **HUMAN** |
| ***Was this study approved by an ethics committee?*** | **Yes** |
| ***Specify Name of Ethics Committee*** | **Comité Etico de Investigación Clinica. Centro Médico Teknon, Barcelona, Spain.** |
| ***Was the Declaration of Helsinki followed?*** | **Yes** |
| ***Was informed consent obtained from the patients?*** | **Yes** |