

## NOCTURNAL POLYURIA AS A CAUSE OF NOCTURIA IN PATIENTS OVERACTIVE BLADDER

WITH

### Hypothesis / aims of study

The International Continence Society (ICS) defines *nocturia* as “the complaint that the individual has to wake at night one or more times to void.” and *nocturnal urine volume* as “the total volume of urine passed between the time the individual goes to bed with the intention of sleeping and the time of waking with the intention of rising.”

The pathophysiologic process of nocturia comprises 4 main conditions: (1) polyuria, (2) nocturnal polyuria (NP) or nocturnal urine overproduction, (3) diminished nocturnal bladder capacity (NBC) for bladder storage problems, including overactive bladder (OAB), and (4) Mixed ( a combination of NP and diminished NBC).

The most important diagnostic tool for use in the assessment of nocturia is the voiding bladder diary or the frequency/volume chart. Frequency/volume chart records the volumes voided and the moment of each micturition for at least 48 hours. According to the collected data, patients conditions are classified in polyuria, nocturnal polyuria, bladder storage disorders or mixed problems.

The aim of the present study was to assess the frequency of NP in individuals with OAB and nocturia.

### Study design, materials and methods

This is a prospective study. We identified OAB patients from our outpatient clinic. All patients had at least 1 void per night by frequency/volume chart.

The parameters extracted from the 2-day frequency/volume charts were nocturnal frequency (nocturia episodes), daytime frequency, 24-h total voided volume, mean voided volume and nocturnal urine volume (includes first morning void). All definitions conform to ICS Standardization Committee recommendations. Mean functional bladder capacity and mean nocturnal bladder capacity were calculated. Nocturnal polyuria was calculated by the Nocturnal Polyuria Index (NPi = ratio of nocturnal urinary volume to maximum voided volume). We consider Nocturnal Polyuria present when NPi is greater than 20% in young adults and 33% in patient with at least 65 or more years.

### Results

56 consecutive patients who met the study criteria were enrolled between March and August 2009, All patients completed the 2 day frequency/volume chart. There were 34 (60.7%) women and 22 (39.3%) men with a mean age of 59.7 ± 11.3 years old (range 27 to 77 years). Relevant data from charts are listed in Table I.

35 patients (62.5%) had OAB concomitant with Nocturnal Polyuria and 47 patients (83.9%) had a diminished NBC.

27 patients (48%) had a combination of NP and diminished NBC.

Table I

#### VOIDING DIARIES PARAMETERS RESULTS

	Mean	D.S.	Min.	Max.
24 hour volume (ml.)	1586	650	775	3850
Total diurnal # voids	8.7	2	4	15
Day volume (ml.)	1121	528	375	3250
Night volume (ml.)	465	266	10	1335
Night # voids (Nocturia episodes)	2.8	1.2	1	7
Functional bladder capacity (ml.)	163	70	52	350
Nocturnal Bladder Capacity (ml.)	184	113	10	494
NPi (%)	29.9	13.5	0.9	63

### Interpretation of results

The aim of the our study was to assess the frequency of NP in individuals with OAB and nocturia. Distinction between Nocturnal polyuria and diminishid nocturnal bladder capacity is made by a simple arithmetic analysis of the frequency/volume charts. Overactive bladder is worse at night or the patient voids for other reasons like nocturnal polyuria ?

### Concluding message

Nocturia is a serious condition because its potential damage to quality of life. Demographics and ethnics data are important to considerate in its management. To our knowledge this is the first study to evaluate the relevance of nocturnal polyuria as a cause of nocturia in patients with overactive bladder in South American patients. Our data validates the need to further studies.

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<b><i>Is this a clinical trial?</i></b>	<b>No</b>
<b><i>What were the subjects in the study?</i></b>	<b>HUMAN</b>
<b><i>Was this study approved by an ethics committee?</i></b>	<b>No</b>
<b><i>This study did not require ethics committee approval because</i></b>	<b>Is not a clinical trial</b>
<b><i>Was the Declaration of Helsinki followed?</i></b>	<b>Yes</b>
<b><i>Was informed consent obtained from the patients?</i></b>	<b>No</b>