

Nocturnal Urinary Disorders in Multiple Sclerosis: Clinical and Urodynamic Study of 309 Patients

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Purpose: The aim of this study was to describe nocturia with or without leakage in a population of patients with multiple sclerosis.

Materials and Methods: This is a retrospective, single center study of 309 patients with multiple sclerosis who were followed at an experienced neuro-urology center between 2011 and 2013. All patients had daytime urinary symptoms associated with this disorder. Among the patients with nocturia 2 groups were defined, including those with isolated nocturia but without nocturnal urinary incontinence and patients with nocturia associated with nocturnal urinary incontinence. The control group comprised patients without nocturia. The clinical variables and urodynamic data studied were gender, age, EDSS (Expanded Disability Status Scale), the USP (Urinary Symptoms Profile) questionnaire overactive bladder score, bladder capacity, detrusor activity and volume at the first detrusor contraction.

Results: Of our patients 53.3% had nocturia, including 35.7% with nocturnal urinary incontinence. The average \pm SD USP overactive bladder score was statistically greater in patients with nocturia than in controls (9.14 ± 4.3 vs 5.1 ± 3.5 , $p = 8.21E-17$). Mean maximum cystometric capacity was statistically higher in the control group than in patients with nocturia (380.17 ± 113.79 vs 313 ± 128.4 ml, $p = 5.60E-6$). A similar outcome was found for the first contraction (mean 232.58 ± 146.05 vs 181.14 ± 100.11 ml, $p = 0.041$).

Conclusion: Isolated nocturia or nocturnal urinary incontinence is a frequent problem encountered in multiple sclerosis. Our results suggest that an overactive detrusor is the main mechanism. Further studies are needed to verify the complications arising from nocturia.

Key Words: urinary bladder, overactive; multiple sclerosis; nocturia; cholinergic antagonists; sleep

NOCTURIA was defined by ICS as a complaint causing an individual to wake at least once per night to void.¹ The frequency of nocturia is difficult to assess since it is often included in OAB. It can be isolated or associated with leakage secondary to urge incontinence, with reduced warning

time or secondary to enuresis with leakage during sleep.

Nocturia causes sleep disorders with numerous complications, including tiredness, drowsiness, muscle stiffness and mood alterations.² Thus, it affect patient quality of life.³ In addition, it can potentially

Abbreviations and Acronyms

ICS = International Continence Society
MS = multiple sclerosis
NUD = nocturnal urinary disorder
NUI = nocturnal urinary incontinence
OAB = overactive bladder
SUI = stress urinary incontinence

Accepted for publication August 4, 2016.

No direct or indirect commercial incentive associated with publishing this article.

The corresponding author certifies that, when applicable, a statement(s) has been included in the manuscript documenting institutional review board, ethics committee or ethical review board study approval; principles of Helsinki Declaration were followed in lieu of formal ethics committee approval; institutional animal care and use committee approval; all human subjects provided written informed consent with guarantees of confidentiality; IRB approved protocol number; animal approved project number.

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lead to the risk of falls, especially in this population with a high rate of motor disabilities.

Bladder disorders are a frequent problem for patients with MS.⁴ Although many studies have been performed in an attempt to accurately evaluate the pathophysiology of the symptoms as well as various therapeutic options for such disorders,^{5,6} most of them have focused on daytime urinary disorders. Conversely, although data concerning the influence of nocturia on sleep quality in patients with MS is available, no specific study has focused on the description and consequences of isolated nocturia and nocturia with NUI in MS.⁷

To evaluate the effects of NUD in patients with MS we distinguished between patients with nocturia and NUI, and patients with nocturia but without leakage (also called isolated nocturia) to gain a better understanding of the role of the factors potentially contributing to each of these disorders. These 2 groups were compared with a control group of patients with MS who had no nocturnal urinary symptoms.

The aim of our study was first to measure the prevalence of nocturia in patients with MS and then to determine the clinical and urodynamic conditions observed in 2 groups, that is patients with isolated nocturia and patients with NUI.

METHODS

The study was designed to be retrospective and single center. It included patients selected from a database of 44,087 patients who were followed at an experienced

neurourology center between 2011 and 2013. Study inclusion criteria were age greater than 18 years, USP total score⁸ higher than 6 and MS defined according to the criteria of McDonald et al.⁹ Exclusion criteria were associated urological disorders, including benign prostatic hypertrophy in male patients with a prostate volume greater than 30 cc on prostatic ultrasonography, greater than stage 2 prolapse in women and primitive enuresis (without toilet training since childhood).

USP is a self-questionnaire recommended by ICS.¹⁰ It consists in 13 items covering all types of urinary disorders, including urinary incontinence, obstructive symptoms and OAB (fig. 1). A higher score corresponds to more severe symptoms. USP is composed of 3 components, including a SUI score, a OAB score and an obstruction symptoms score. For the OAB USP score 7 questions are devoted to defining the qualitative and quantitative conditions of OAB with questions 3 and 4 describing the more specific criteria of this syndrome as defined by ICS.¹

The Kurtzke EDSS is a quantifying disability method to assess MS.⁸ A EDSS score between 1.0 and 4.5 refers to people with MS who are fully ambulatory. A EDSS score between 5.0 and 9.5 defines MS with varying degrees of impaired ambulation. In the context of our study it was important to distinguish between patients with a EDSS score of 6, who are able to walk with a cane, and those with a EDSS score of 7, who use a wheelchair.

The clinical factors studied were the age distribution and gender ratio in each group, the presence of OAB syndrome, the presence of obstruction symptoms (due to the questions designed to characterize each of them) and EDSS.

The main urodynamic factors studied were patient bladder capacity and volume at the first uninhibited

Over the past 4 weeks and under everyday conditions of social, professional or family life:

2. How many times a week have you had to rush to the toilet to urinate because you urgently needed to go?

0 Never 1 Less than once a week 2 Several times a week 3 Several times a day

3. When you have had an urgent need to urinate, for how many minutes on average have you been able to hold on?

0 More than 15 minutes 1 From 6 to 15 minutes 2 From 1 to 5 minutes 3 Less than 1 minute

4. How many times a week have you experienced a urine leak preceded by an urgent need to urinate that you were unable to control?

0 Never 1 Less than once a week 2 Several times a week 3 Several times a day

4 a. In the above case, what kind of leaks did you have?

0 No leaks in this case 1 A few drops 2 Light leaks 3 Heavy leaks

Over the past 4 weeks and under everyday conditions of social, professional or family life:

5. During the day, in general, how long elapsed between urinating?

0 2 hours or more 1 Between 1 and 2 hours 2 Between 30 minutes and 1 hour 3 Less than 30 minutes

6. How many times on average have you been woken up during the night by a need to urinate?

0 Never or Once 1 Twice 2 3 or 4 times 3 More than 4 times

7. How many times a week have you had a urine leak while asleep or have you woken up wet?

0 Never 1 Less than once a week 2 Several times a week 3 Several times a day

For the doctor only: note the sum of items 2 + 3 + 4 + 4a + 5 + 6 + 7 on the scale below

"OVERACTIVE BLADDER" SCORE

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

Figure 1. OAB score from USP questionnaire

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