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Epidemiological, Clinical and Etiological Aspects of Urinary Sphincter Disorders of Neurological Origin at Conakry University Hospital

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ABSTRACT

Introduction: Most neurological disorders in our context have a high frequency of urinary sphincter disorders, which makes it necessary to investigate the etiologies and analyze the epidemio-clinical features.

Methods: This is a prospective descriptive study lasting one year, from October 01, 2022 to September 31, 2023, at the Conakry University Hospital. Including patients who presented with urinary sphincter disorders following a neurological condition, in which we described our sample according to our objectives and socio-demographic characteristics.

Results: We identified 1371 patients, 557 of whom had neurological urinary sphincter disorders (TSUON), representing a frequency of 40.6%, with an average age of 61.92 ± 17.17 and a male predominance of 50.2%. 59% of our patients consulted us within 1-6 days. Stroke was the most common reason for hospitalization (70.1%), followed by urinary incontinence (54.2%). The average hospital stay was 12.96 ± 6.71 hours, during which 81.7% of patients had a favourable outcome.

Conclusion: The deterioration in quality of life of elderly subjects suffering from urinary incontinence in the course of neurological disorders calls for multidisciplinary management.

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Introduction

Neurologically-induced urinary sphincter disorders (NUSD) describe a neurogenic bladder with lower urinary tract dysfunction caused by spinal cord injury or neurological disease [1]. Prevalence ranges from 32% to 79%, with higher rates in injured patients [2]. These disorders are caused by neurological conditions such as spinal cord injury, stroke, myelitis etc. [3,4]. These disorders are present in 40% to 60% of brain-injured patients, and 80% of stroke survivors are four times more likely to be institutionalized [5-7].

Although residual lower urinary tract symptoms are attributable to 20% of myelitis cases [8]. In multiple sclerosis, urinary disorders appear on average between 6 and 10 years after onset [9]. In spinal cord injury, 59% of patients suffer from urinary disorders [10,11]. Retention due to loss of urinary sphincter tone and/or incontinence are frequent signs of ponytail syndrome [12].

Incontinence due to bladder hyperactivity and dysuria due to hypo-contractility remain the frequent clinical pictures of these disorders [13]. Etiologies are classified according to whether the primary lesion is sacral, supra sacral, supra pontic or infra sacral [14]. It is recognized that the use of urodynamic testing can reduce mortality rates [15]. A multidisciplinary assessment (urologist, neurologist, physical medicine and rehabilitation physician) is essential for the management of these disorders [16].

Rehabilitation is considered the most effective first-line treatment, with low cost and no morbidity [17-19]. The evolution of patients is specific due to the multifocal nature of the lesions and their history [20]. We evaluated the epidemiological, clinical and etiological features of urinary sphincter disorders of neurological origin.

Methods

We conducted a prospective descriptive study lasting one year, from October 01, 2022 to September 31, 2023, at the Conakry University Hospital. Including patients who have developed urinary sphincter disorders as a result of neurological disease.

Sociodemographic Data
Socio-demographic data were obtained from the interview, which provided us with two groups of variables: age and gender.

We divided patients into 6 age groups with a range of 15 years (<15, 15-29, 30-44, 45-53, 60-74, >7).

The study included both sexes and sought to identify a predominance. The sex ratio was calculated by dividing the number of males by the number of females.

Clinical Data
Our patients were divided into 2 groups according to the type of urinary sphincter disorders presented on questioning and clinical examination.

1. Urinary Incontinence: involuntary leakage of urine, divided into three categories: stress, urgency and combined [21].
2. Retention: the inability to empty the bladder completely or partially.
3. Consultation Time: considered as the time between the first signs and consultation in our department.

Paraclinical Data
Biological data were collected by laboratory analysis of biological fluids (blood, urine).

All our patients underwent a series of complementary tests: CBC, CRP, ESR, blood glucose, blood culture, TPHA, VDRL, ECBU were performed to check for infections and hyperglycemia.

All our patients underwent at least one imaging procedure, either CT or MRI, depending on the suspected cause of neurological bladders.

Etiological Data
Following clinical and paraclinical examinations, we obtained the following etiologies:

1. Ischemic Stroke: A focal deficit with hypodensity on cerebral CT.
2. Hemorrhagic Stroke: A focal deficit with hyper density on cerebral CT.
3. Spinal Cord Compression: A patient with a lesional or sub-lesional or spinal cord syndrome with a compressive process on MRI.
4. Transverse Myelitis: Inflammation of the white or gray matter of one or more adjacent spinal cord segments, with spinal cord swelling on MRI and the presence of monocytes in the CSF and a slightly increased proteinorachy.

Progression Data

1. Unfavorable: These are patients who presented with SUD and were discharged without the need for a urinary catheter.
2. Unfavorable: Patients with persistent clinical signs of SUD after rehabilitation, with complications.

Length of Hospital Stay
The time (days) between the onset of signs and the patient's consultation in our department, this enabled us to calculate the average length of hospitalization.

Our data were collected on survey forms and analyzed using Epi-info software version 7.1.4.
We described our sample according to our objectives and socio-demographic characteristics. Qualitative variables were represented by proportions, and quantitative variables by means and standard deviations.

Results
We counted 1371 patients among whom, 557 presented urinary sphincter disorders of neurological origin, e.i. a frequency of 41%.

Table 1: Distribution of Patients by Age Group

Age range	Number of cases	Percentage
15-29	41	7,3
30-44	51	9,2
45-59	110	19 ,7
60-74	236	42,4
75-89	119	21,4
Total	557	100

Average age: 61.92 ± 17.17 Age extremes: 15-88 years

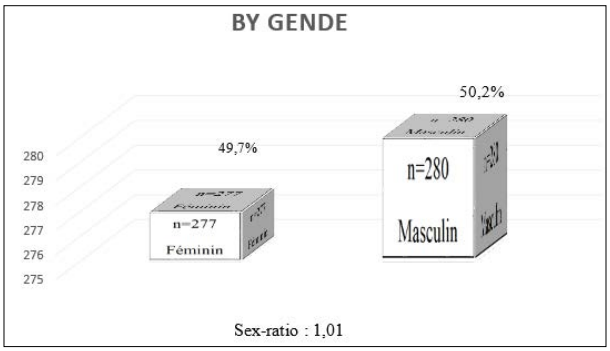

Figure 1: Distribution of Patients by Gender

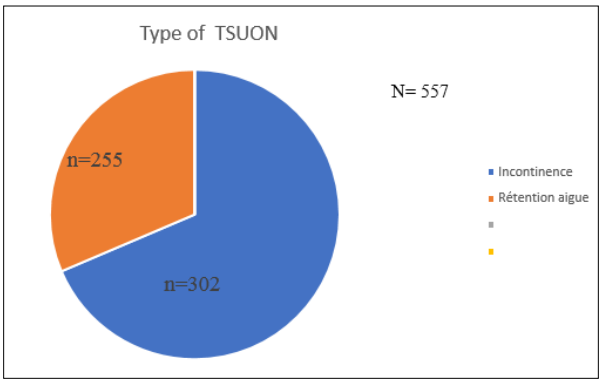

Figure 2: Distribution of Patients by Type of SUD

Table 2

Lead Times in Days	Number of Cases	Percentage
1- 6	327	58,7%
7-12	163	29,2%
> 12	67	12,1%
Total	557	100%

Average: 7.49 ± 3.3 Extreme: 1-14 days

Table 3: Distribution of Patients by Etiology

Etiologies	Retention	Incontinence	Percentage
AVCI	106	144	44,8
AVCH	65	77	25,5
Spinal Cord Compression	33	30	11,3
Transverse Myelitis	36	35	12,8
Meningioma	15	16	5,6
Total	255	302	100

Table 4: Distribution of Patients According to Outcome

Evolution	Number of Cases	Percentage
Uncomplicated	455	81,7
Complicated	96	17,2
Deaths	6	1,1
Total	557	100%

Table 5: Distribution of Patients by Length of Hospital Stay

Length of Stay	Number of Cases	Percentage
<7	55	9,9%
7-14	285	51,2%
15-21	164	29,4%
>21	53	9,5%
Total	557	100%

Average hospital stays: 12.96 ± 6.71 Extreme: 4-28 days

Discussion

Five hundred and fifty-seven (557) patients presented with TSUON, i.e. (40.6%) of cases. This frequency is lower than that found in Egypt by Aly W et al in 2020 [22]. higher than that of Seok Beom et al, [23]. Although it varies according to the context [24-28]. This can be explained by the fact that the neurology department of Conakry's university hospital is the only referral center for the treatment of neurological pathologies. Cerebrovascular accidents (AVC) are the most frequent of these.

Elderly male subjects are affected by these disorders, with no female predominance, and urinary incontinence is a recurrent reason for consultation. The same observation has been made in several studies [29-31]. Consequently, urinary incontinence has been identified as a health priority by the World Health Organization because of its impact on quality of life [32-35].

Compared with us, Sakakibara R et al, reported a predominance of bladder emptying disorders [36]. Despite the predominance of urinary incontinence in stroke, the mechanism of onset remains poorly elucidated [37-39]. The average consultation time was 7.5 days. In countries such as ours, this delay may be explained by the inadequacy of health structures, and also by the functional effects of SUD on social, family and sexual life, altering quality of life [40]. The main etiology of TSUON was stroke. This could be due to the high number of subjects received for stroke, during which there is damage to encephalic centers associated with urinary sphincter disorder especially in elderly subjects with comorbidities [41].

Perineal rehabilitation was the first-line treatment for all types of incontinence, with optimal effect [18,42]. Depending on the etiology, we used a combination of three (03) physiotherapy techniques, including :

1. Pelvic floor exercises and abdominal skill work consist of contraction and relaxation movements with manual contact by the therapist over an interval of two times four series of ten rapid contractions plus two times ten contractions held for four to eight seconds, plus two to four 30-second contractions per day, to be achieved progressively.
2. Biofeedback involves placing electrodes on the perineum and vagina, which are translated on the screen by contraction and relaxation in the form of pressure curves.
3. Global rehabilitation: strengthening muscle contraction by abduction and adduction and raising and lowering the feet.

Behavioral education concerns: lifestyle habits that can aggravate or improve urinary symptoms. Quantity and type of drinks (1.5 to 2l/day), avoidance of coffee, tea and soft drinks, nocturia by reducing water intake in the evening.

The average hospital stay was 13 days, during which 83% of patients had their bladder catheter removed, compared with 17%. This result was similar to that reported by Bangoura MA et al, in 2023 in Guinea Conakry [28].

Lack of bladder recovery can be explained by a delay in consultation and the occurrence of complications such as urinary tract infection, with a predominance of leukocytes favored by stasis and intermittent catheterization, compared with post-traumatic hematuria.

The systematic insertion of a urinary catheter without initial assessment of urinary sphincters and the unavailability of certain urodynamic tests (flowmetry, cystometry, profilometry, etc.) were our main limitations and difficulties.

Conclusion

Urinary sphincter disorders are common, with urinary incontinence as a major sign. The most frequent etiology is stroke, for which rehabilitation is the first-line treatment. Although the results obtained are very interesting, for the continuation of this work, we are considering the performance of urodynamic assessments in order to optimize patient management.

Declaration of Interest

The authors declare that they have no conflict of interest.

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