

Urinary Sphincter Disorders of Neurological Origin: Prognostic Aspects in the Neurology Department of the Ignace Deen National Hospital

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Abstract

Introduction: Complications of Urinary sphincter disorders of neurological origin can be life threatening. The objective of this study was to describe the prognosis of urinary sphincter disorders during neurological conditions. **Methods:** This was a six-month analytical study conducted at the neurological unit of the Hôpital national Ignace Deen. Including patients with urinary sphincter disorders following a neurological condition; Chi-square, Fischer, and Student's t-tests were used for variables with a p value less than 0.10 and then included in a logistic model with a significance level set at 0.05 and a 95% confidence interval. **Results:** We collected 1081 patients among whom, 324 presented, that is to say a frequency of 30%, which concerned subjects aged 57.3 ± 16.4 years with a slight female predominance 50.3%. Urinary incontinence (80.6%) was associated with complications such as urinary tract infection with a high proportion of cerebral damage (92.3%). HIV infection ($P = 0.015$), bedsores ($P = 0.049$), and inhalation pneumonia ($P = 0.001$) were the main poor prognostic factors. **Conclusion:** Urinary sphincter disorders are elements of poor prognosis, both vital and functional, concerning elderly subjects with a predominance of urinary incontinence. HIV infection, bedsores, pneumopathy are poor prognostic factors.

Keywords

Urinary Sphincter Disorders, Incontinence, Retention, Neurology

1. Introduction

Neurological urinary sphincter disorders are defined as deficiencies in the vo-

luntary and/or involuntary motor control systems of the vesico-sphincter apparatus, either by a lack of activation and/or inhibition of the medullary, pontine and cortical centers [1].

The severity of Neurological urinary sphincter disorders is related to the risk of renal and bladder complications. These complications can be life threatening [2]. They are one of the deficiencies usually observed in spinal cord injury. Their complications have been for a long time a cause engaging the vital prognosis of the spinal man in the short term [3].

They represent elements of poor prognosis vital than functional, This is because these disorders are markers of severity of stroke [4].

The death rate in the initial phase of SUD is significantly higher in the incontinent patient, 52% [5].

Approximately 55.5% of cerebral palsy patients present at least one symptom of the lower urinary tract, of which urinary incontinence is the most frequent [6].

Neurogenic bladders are secondary to neurological diseases (spinal cord injury, myelitis etc...) [2].

It can be manifested by dysuria, detrusor hypocontractility and/or vesico-sphincter dyssynergy, accompanied by incomplete micturition with post-void residue, leading to irritative and infectious symptoms [7].

A urodynamic examination usually allows neuro-urology to specify the risk of deterioration of the upper urinary tract by detecting certain abnormalities at risk (bladder compliance disorder, bladder-sphincter dyssynergy), thus the management of these disorders requires an adapted framework, a multidisciplinary evaluation (urologist, neurologist, physical medicine and rehabilitation physician...) and specialized tools [2].

To date, despite the effectiveness of the treatment of these disorders, their evolution remains poorly known over time, so a longitudinal follow-up is essential for the implementation of therapeutic strategies [8].

The objective of this study was to evaluate the prognosis of bladder-sphincter disorders during neurological conditions.

2. Methods

We conducted an analytical, prospective study for a period of six (6) months from January 6 to June 6, 2020 in the neurology department of the Ignace Deen National Hospital in Conakry. In which we included, patients with urinary sphincter disorders following a neurological condition.

2.1. Clinical Data

The interrogation and clinical examination allowed us, to divide the patients into (02) two groups according to the type of Neurological urinary sphincter disorders presented.

Incontinence: it is an involuntary leakage of urine. This incontinence could

be:

- Stress urinary incontinence: involuntary leakage of urine during physical exertion, coughing and sneezing.
- Urgenturia: involuntary leakage of urine preceded by a sudden, compelling and irrepressible desire to urinate.

Retention: this is the inability to empty the bladder completely or partially.

2.2. Paraclinical Data

Biology workup: retroviral serology (VRS).

All our patients underwent at least one imaging procedure, either computed tomography (TDM) or magnetic resonance imaging (IRM), depending on the suspected etiology of Neurological urinary sphincter disorders, and radiography to look for signs of inhalation lung disease.

2.3. Etiological Diagnosis

Our etiologies were divided into three (3) groups according to the topography of the involvement, this allowed us to determine the predominance according to whether they are:

- 1) Cerebral;
- 2) Medullary;
- 3) Peripheral.

2.4. Therapeutic Data

Perineal rehabilitation:

Perineal rehabilitation or sphincter tone strengthening sessions were performed in all our patients.

- Patients are asked to close the sphincter muscles on two fingers of the examiner introduced into the perineum for one to two minutes.
- Is done by introducing a ball into the perineum that the patient must hold for one to two minutes.

2.5. Evolutionary Data

- Favourable: These are patients who have presented SUDs and who have improved without urinary catheter.
- Unfavorable: These are patients with persistent clinical signs of Neurological urinary sphincter disorders after rehabilitation with the occurrence of complications.

2.6. Duration of Hospitalization

This is the period between the patient's hospitalization and discharge from the hospital. We expressed it in days and calculated the average length of hospitalization and expressed the extremes.

Our collected data were entered using EPI data 3.1, Excel 2013 and analyzed

using SPSS software. We performed a descriptive statistics of the data set, qualitative variables were broken down into proportions expressed as a percentage and quantitative variables were expressed as mean plus or minus standard deviation and then recoded into two slices.

Chi-square, Fischer, and Student's t tests were used for variables with a p value less than 0.10 and then included in a multivariate logistic model with significance at 0.05. In this study, the following variables (pressure sores, HIV infection, and lung disease) were significant with $p < 0.05$ and a 95% confidence interval, allowing us to identify these predictors of poor prognosis.

3. Results

We collected 1081 patients, 324 of whom had Neurological urinary sphincter disorders, a frequency of 30% (**Table 1**).

Table 1. Distribution of patients by sociodemographic characteristics.

Socio-demographic characteristics	Workforce (N = 324)	Proportions (%)
Age (year)		
<15	6	1.8
>74	41	12.7
15-29	17	5.2
30-44	45	13.9
45 - 59	85	26.2
60 - 74	130	40.1
Medium	57.3 ± 16.4 ans	
Sex		
Male	161	49.7
Female	163	50.3
Sex-ratio		0.98
Provenance		
Urban	249	76.9
Semi-urban	61	18.8
Rural	14	4.3
Marital status		
Married	296	91.4
Single	11	3.4
Widowed	16	4.9
Divorced	1	0.3
Total	324	100.0

Urinary incontinence was predominant at 80.6% versus 19.4% for urinary retention (**Figure 1**).

Cerebral damage was the most common cause of death, accounting for 92.3% of all cases, with strokes being the most common (**Figure 2**).

HIV infection ($P = 0.015$), pressure ulcer ($P = 0.049$), and inhalation lung disease ($P = 0.001$) were the main poor prognostic factors (**Table 2**).

The average length of hospitalization was 11 days with extremes of 5 days and 17 (**Table 3**).

4. Discussion

Three hundred and twenty-four (324) patients had Neurological urinary sphincter disorders or (30%) thirty percent of cases.

This high frequency in our series could be explained by a high rate of patients

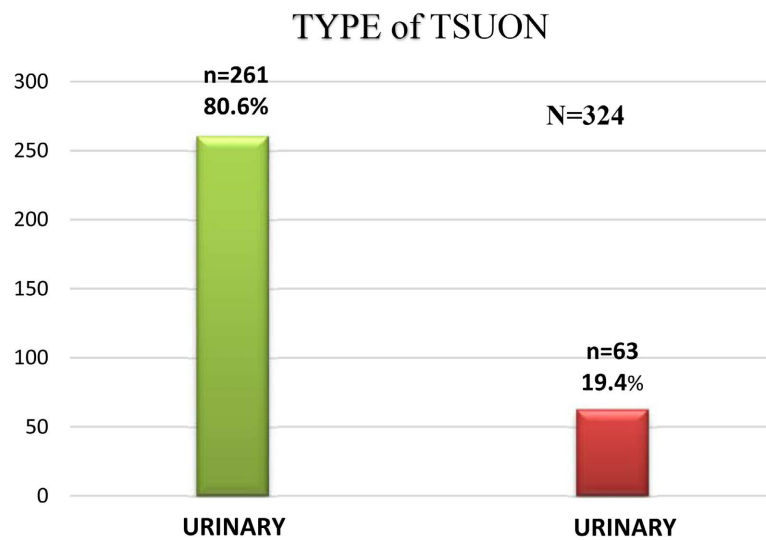


Figure 1. Distribution of patients according to clinical signs.

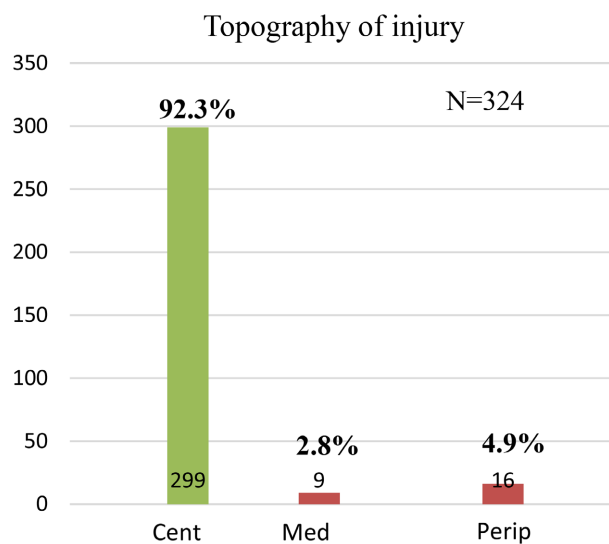


Figure 2. Distribution of patients according to the topography of the attack.

Table 2. Summary Chi-square test and the multivariate logistic regression model.

Unfavourable evolution	B	P-value	Odd-ratio	IC 95%
Recidivism				
No	-1.023	0.148	0.359	0.090 - 1.440
Yes	-	-	-	-
HIV infection				
No	-2.099	0.015	0.123	0.022 - 0.669
Yes	-	-	-	-
Respiratory disease				
No	-1.966	<0.001	0.140	0.050 - 0.394
Yes	-	-	-	-
Pressure sores				
No	-1.398	0.049	0.247	0.062 - 0.991
Yes	-	-	-	-

Table 3. Distribution of patients by length of hospitalization.

Length of hospitalization	Workforce (n = 324)	Proportions (%)
<10	139	42.9
10 - 20	154	47.5
>20	31	9.6
Medium	11.48 ± 6.76 days	

received for stroke. It confirms that found by Diagne N *et al.* [9] in Senegal in 2013, however contrasts with that of Phe V *et al.* [10] in France in 2013. These disorders affect elderly female subjects without significant predominance over the male sex. This result is lower than that found in France by Daviet J *et al.* [8] in 2004, who reported a higher age.

This disproportion could be explained by the coexistence of risk factors such as trauma in young subjects. However, it appears from our study that urinary incontinence was the most frequently encountered reason for consultation.

This is consistent with the literature in which urinary incontinence is predominant, especially during cerebral damage, although the mechanism of occurrence is poorly understood [11] [12]. This is in contrast to the study by Sakakibara R *et al.* [13], who reported a predominance of bladder emptying disorders. However, this urinary incontinence may frequently be present in the initial phase, but it is a medical priority only in rare cases, such as urinary incontinence by overflow during acute retention [11].

This result can be explained by an insufficiency of health structures in countries like ours and by the frequency of cerebral damage during Neurological urinary sphincter disorders.

Perineal rehabilitation and etiological treatment were performed in all our patients. For female urinary incontinence, perineal rehabilitation is the first-line treatment regardless of the type of incontinence [4].

The average length of hospitalization was 11 days with extremes of 5 days and 17 days; during this time, 82% of patients had their bladder catheter removed compared to 28% who had it removed.

This lack of bladder recovery could be explained by the occurrence of complications such as urinary tract infection, which were favored by the stasis favoring a predominant leukocyturia compared to post-traumatic hematuria, but also by the presence of urinary incontinence in the majority of cases [5].

However, the association of the variables (pressure ulcer, HIV infection, pneumonia) with Neurological urinary sphincter disorders was significantly unfavorable with p values < 0.05 (0.049; 0.015; 0.001) and a confidence interval of 95%, which allowed us to identify these predictive factors of poor prognosis.

La pose systématique d'une sonde urinaire sans l'évaluation initiale des fonctions vésico-sphinctériennes et la non-disponibilité de certains examens urodynamiques: flowmeter (allows to study the lower urinary tract in order to evaluate the quantity of urine excreted from the bladder and the time required for the emptying phase), cystometry (allows to record the bladder pressure at rest during the filling and then during the miction). These were our main limitations and difficulties.

5. Conclusion

The complications of Neurological urinary sphincter disorders can engage the vital prognosis. They concern elderly subjects with a slight female predominance, associated with urinary incontinence whose observed etiology was cerebral damage. The poor prognostic factors were HIV infection (P = 0.015), pressure ulcer (P = 0.049), and inhalation lung disease (P = 0.001).

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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