

Management of urinary disorders in myelitis and spinal cord compression

Abstract

Summary: Urinary disorders are frequent in spinal cord injury and complications make prognosis restricted and alter the quality of life. Early and adaptative management improve quality of life. But in developing country, so many difficulties make this management late, and often limited. The aim of our study was to evaluate our management in urinary disorders associated of spinal cord injury.

Patients and methods: A prospective study was done at the departments of Physical medicine and Neurology in the teaching hospital, Fann, Dakar Senegal. Were included, all patients with urinary disorders concomitant of a spinal cord injury. Patients with other diseases which can explain the urinary symptoms, were excluded. After determine the Urinary symptoms (Urinary symptoms profile scale) and quality of life (qualiveen short form), patients meet the specialist of rehabilitation who establish type of management of urinary disorders. Secondly patients were received in a variable time, for appreciation evolution.

Results: 39 patients were included. Mean of age was 42,7 years and sex ratio (H/F) 1.6. Dysuria associated of overactive bladder (38,46%) and overactive bladder (28,20%) dominate the symptoms. Urinary infections (15,4%) were the common complications. Risk factors of alteration of quality of life were overactive bladder and leaks during physical effort. The average decline was 2.7 years. Quality of life was improved by Alfuzosine in all patients with score dysuria under 0,63 and by Oxybutinine in 64.3%. 5 patients benefited of perineal rehabilitation. Permanent catheterization noted in 17.9% of cases.

Discussion and conclusion: Our results are similar of the literature according for symptoms and risk factor of alteration of quality of life. Drugs treatment can improve the quality of life. Intermittent catheterization is difficult in our practice.

Keywords: urinary disorders, myelitis, spinal cord compression

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Introduction

Bladder sphincter disorders are frequently associated with spinal cord diseases. They are more studied in the spinal cord injured patients where they can be responsible for renal impairment according to the duration of evolution and the urodynamic characteristics. The severity of weakness and disabilities frequently associated make it an indication of rehabilitation for health actors despite a lack of knowledge of Physical Medicine and Functional Rehabilitation, in a developing country like Senegal. Other impairments (urinary, sexual, gastric, and cardiovascular) are unknown and not treated most of part. Thus the aim of our study was to determine, results of management in urinary disorders associated of spinal cord injury, in the department of Physical Medicine and Functional Rehabilitation, at teaching hospital Fann, Dakar, Senegal.

Methodology

This is a prospective study with a descriptive and analytical focus done at the Physical Medicine and Functional Rehabilitation and Neurology departments of teaching hospital, Fann, Dakar, Senegal. It was conducted from April 2017 to June 2018. Patients followed for urinary disorders associated with a spinal cord injury, who have any treatment of urinary disorders or already benefiting from a treatment of bladder sphincter disorders without improvement. Patients, with another pathology that may explain urinary disorders, not feeling the urge to urinate or unable to respond to the summons for whatever reason, were excluded.

Course of the study

The study focused on a first group of patients, followed in Physical Medicine and Functional Rehabilitation department. Those patients included were summoned secondarily and a questionnaire was administered to them. A second group involved patients hospitalized in Neurology department during the study period. These patients responded directly to the questionnaire during their hospitalization. The questionnaire collected sociodemographic data, duration of disease, localization of the lesions, urinary disorders and its severity, renal complications, quality of life and treatment. This first stage of the study was conducted by a medical student.

Evaluation

The voiding disorder was identified through the Urinary Symptoms Profile (USP) questionnaire. The questionnaire has 13 items corresponding to 3 dimensions: urinary stress incontinence (maximum score of 9 for the 3 questions), overactive bladder (maximum score of 21 for 7 questions) and obstructive symptoms or dysuria (maximum score of 9 for 3 questions). The higher score, greater the symptoms experienced by the patient are important, frequent or disabling.

The quality of life has been assessed by the Short Form Qualiveen. Qualiveen is a quality of life scale specific to urinary disorders in the neurological patients. It's questions patients in four main domains: bother with limitations, Feeling, frequency of limitations, fears. Each of these domains contains 2 items. The score of each item, the score of each domain as well as the total score of Qualiveen goes from 0 to 4.

We considered an alteration of the quality of life minimal for a score between 0-1.5; moderate between 1.5-2.5 and severe between 2.5-4.

Patients were secondarily received by a rehabilitation specialist to identify, determine relevance of urinary disorders management, to perform a checkup for renal complications. Relevance of urinary disorders management and checkup for renal complications were based on the deterioration of quality of life and the importance of the risk of complication. The risk of occurrence of renal complications was considered high in crede voiding and an urgency score greater than 7/21. A mictional calendar for one-day was performed in all patients with fever, urinary burning within the last 30 days, well-managed treatment failure, urination with abdominal pressure and/or percussion. At the end of this second phase, the treatment is initiated and/or adapted. The effectiveness of the treatment on the quality of life of the patient is appreciated at least after 2 months. We defined the improvement of the quality of life by a decrease in the reported score of at least 0.5 points and/or a null score in any patient with an initial score of less than 0.5 points.

Statistic analysis

The data was collected on a pre-established form. They have been entered with Sphinx software version 5.1.0.2. The analysis of the data was carried out with the SPSS software (Statistical Package for Social Sciences) version 18. The descriptive study was carried out with the calculation of the frequencies and proportions for the qualitative variables and the calculation of means, standard deviation for the variables quantitative. The analytical study was done with the crossed tables. To compare the frequencies, we used the Pearson's chi-squared test or Fisher's exact two-sided test depending on the applicability conditions. The comparison of means was made with the analysis of variance test with a threshold of significance $p < 0.05$.

Results

Cohort of the Department of Physical Medicine and Functional Rehabilitation included 78 patients and that of the Department of Neurology 4 patients. Our study population consisted of 39 patients, 3 of whom already had specific management of bladder sphincter disorders. The sex ratio (H/F) was 1.6. The mean age was 42.7 years with a standard deviation of 20.21 (Figure 1). Spinal cord injury was found in cervical (41%), thoracic (25.6%) and thoracolumbar (33.3%). Myelitis in 46.15%, spinal cord compression (43.59%) and traumatic compression (10.26%) was etiology (Table 1). Urinary manifestations were widely dominated by overactive bladder (89.7%). She was associated at dysuria (38.46%), urinary stress incontinence (12.82%). In 10.25% of cases, overactive bladder was associated with stress urinary incontinence and dysuria. It was isolated in 28.2% of cases. Mean bladder hyperactivity score was 9.17 with a standard deviation of 6.1 and 80% of patients had a score of at least 7. Physical urinary incontinence was found in 25.6% of patients and was isolated in 2.56% of cases. The mean physical incontinence score was 1.97 with a standard deviation of 3.58 and 17.9% of the patients had a maximum score of 9. The other physical urinary incontinence scores (3, 4, 7) were found in 2.6% of patients each. As for dysuria, it was present in 56.4% of patients and isolated in 7, 69% of cases. The mean score was 1.44 with a standard deviation of 1.56. The urinary disorders had an average duration of evolution of 2.7 years with a standard deviation of 2.3. Evolution time was between 1-4 years in 84.6% and maximum was 11 years. Bladder sphincter disorders were associated with constipation (66.7%), anal incontinence (10.25%), decreased sexual desire (48.7%) and erectile dysfunction (28.20%). Bladder sphincter

disorders were responsible for an impairment of quality of life in 87.2% of cases. The alteration was slight in 38.5% of cases; moderate in 25.4% and severe in 23.1%. The average quality of life score was 1.1 with a standard deviation of 1.17. This deterioration of the quality of life concerned the "fears" domain in 84.6%, the feelings (76.9%), the bother with limitations (66.7%) and the frequency of limitations (59%) (Table 2). Quality of life items 1, 3, 5, 7 were more frequently impaired with respectively 64.1%; 79.5%; 73.3% and 56.4%. Urinary disorders were associated with urinary tract infection in 15.4% of cases, pyelocaliceal ectasia and micro-lithiasis in 1 case. The bladder hyperactivity score (correlation coefficient 0.743, $p < 0.0001$) and the physical urinary incontinence score (correlation coefficient 0.688, $p < 0.0001$) were associated with impaired quality of life. The correlation coefficient between dysuria and quality of life was -0.323 with $p = 0.045$. Oxybutinin was administered in 51.3% of patients, 70% of whom were on monotherapy. Alfuzosin was administered in 23.1% of cases and 88.88 % of them were on monotherapy. The latter had a slight alteration of the quality of life at inclusion with an average score of 0.23 and a maximal Qualiveen score of 0.63. 10.2% of patients are treated with alfuzosin and oxybutynine and quality of life improved in 66%. Perineal reeducation was performed in 12.8% of patients. Other treatments consisted of urine collector (10.2%), trimmings (20.5%) and the indwelling catheter (17.9%). The control evaluation was performed in 71.79% of the patients between the 2nd and the 4th month. An improvement in the quality of life was noted in 75% of cases. It remained impaired in 32.1% of cases and severely in 3 patients, moderate (4 patients) and slight (2 patients). The evolution was stable in 25% of the cases. The average quality of life score was 0.7. No aggravation was noted. This improvement covered all domains of quality of life (Table 3). Significant improvement was found in items 1 of bother with limitations ($p = 0.006$), 3 of fears ($p = 0.001$), 6 of feelings ($p = 0.003$), 7 of frequency of limitations ($p = 0.014$). In monotherapy, oxybutinin improved the quality of life in 64.3% of cases and the control quality score was significantly correlated with baseline ($p = 0.001$ and $\rho = 0.78$). Alfuzosin alone improved the quality of life in 100% of cases. The improvement under perineal reeducation was obtained in 1 case.

Table 1 Medullary disorders etiology

Mechanism	Causes	Staff (number)
Myelitis	Unknown	9
	Lyme disease	1
	Idiopathic transverse myelitis	2
	Biermer's disease	1
	NMO	2
	Bilharziasis	1
	MS	1
	Streptococcus	1
	Cervical arthrosis	6
Medullary compression	Herniated disc	3
	Pott's disease	3
	Meningioma	1
	Unknown	4

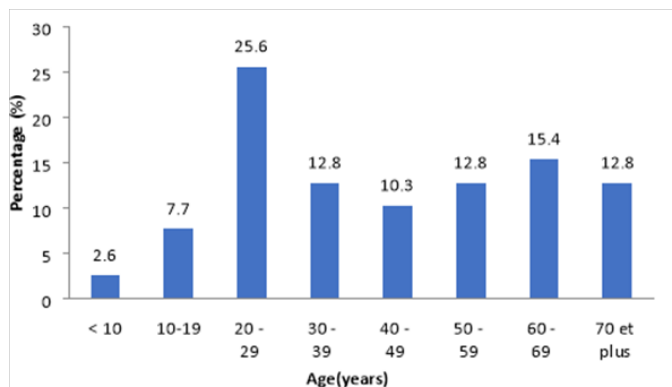


Figure 1 Patients distribution by age.

Table 2 Quality of life of patients fields

Field	Alteration Level			Average score
	Slight	Moderate	Severe	
Bother with limitations (%)	28,2	18	20,5	1,33
Fears (%)	43,6	18	23,1	1,62
Feeling (%)	43,6	13	20,5	1,48
Frequency of limitations (%)	18	7,7	33,3	1,60

Table 3 Evolution of quality fields after treatment

Qualiveen's fields	Staff (%)	
	Included	Control
Bother with limitations	60,7	32,14
Fears	78,6	28,6
Frequency of limitations	59	17,8
Feeling	76,9	28,6

Discussion

Despite a lack of knowledge of the specialty, patients with spinal cord injury are generally oriented in Physical Medicine and Functional Rehabilitation. Bobo et al.¹ had a population of 40 spinal cord injured patients followed at the Rehabilitation unit in 15 months.¹ It is a condition of young adults, with an average age around 40 years¹⁻³ and predominantly male.^{1,4-6} The etiologies of spinal cord injury are dominated in Africa by degenerative and infectious causes,¹ unlike in Europe where multiple sclerosis and traumatic spinal cord injury are much more common.⁷⁻⁹ Bladder sphincter disorders in spinal cord injury are largely dominated by overactive bladder more frequently associated with other urinary disorders than isolated.¹⁰⁻¹² Bladder sphincter disorders can lead to renal complications that depend in part on evolution time.^{9,12,13} These complications are in order, urinary tract infections, mega bladder, vesicoureteral reflux, ureterohydronephrosis and renal failure. Urinary tract infection was the main complication of our study, which would be related in part to the short duration of symptoms. Bladder sphincter disorders impair the quality of life of patients. In our study, it was more marked on fears, experience and bother with limitations and was dependent on bladder hyperactivity score and urinary leakage.¹⁴ Management of overactive bladder is primarily based on anticholinergics.¹⁵⁻¹⁷ In our

study, the efficacy of anticholinergics was found in patients with slight and moderate impairment of quality of life. In case of severe deterioration and failure of anticholinergics, the TENS allows to obtain, from the second month, an improvement of the quality of life. The use of alpha-blockers in neurological bladders is off-label and the results are contradictory.¹⁸⁻²⁰ Alpha blockers have led, as monotherapy, to improvement in all our patients. Intermittent self-sampling is the gold standard in the management of dysuria in patients with neurological bladders and significant post-voiding residual.^{1,21,22} Its applicability is difficult in our working conditions (inaccessibility of self-lubricated probes, lack of awareness of the complications of dysuria, despite explanations, lack of qualified personnel and adapted structures). Dysuria does not lead to a significant gene in the lives of our patients. Patients are more disturbed in activities of daily living by overactive bladder and urine leakage.

Conclusion

Bladder sphincter disorders in spinal cord injuries are dominated by overactive bladder often associated with other urinary, digestive and genito-sexual disorders. They alter the quality of life especially the domain of fears. This alteration is strongly correlated with bladder hyperactivity score and urine leakage. These Bladder sphincter disorders are more responsible for urinary infections during the first two years of evolution. Oxybutinin and alfuzosin provide an improvement in quality of life that depends on the initial score. The effectiveness of other therapies such as perineal reeducation and intermittent self-sampling on the quality of life of our patients requires additional studies on large cohorts.

Acknowledgments

None.

Conflicts of interest

The authors declare no conflict of interest.

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