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Sexual dysfunction and lower urinary tract symptoms in men with multiple sclerosis

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Abstract

Background; Multiple sclerosis (MS) is a chronic neuroinflammatory disease of the central nervous system that includes numerous neurological regions. In addition to lower urinary tract symptoms (LUTS), sexual dysfunction (SD), and psychopathological consequences, MS occasionally substantially impacts the quality of life (QoL) (QoL), Aim and goals; to analyse the incidence of lower urinary tract symptoms and sexual dysfunction in patients with multiple sclerosis and to study the association between the degree of neurological impairment in multiple sclerosis and lower urinary tract symptoms and sexual dysfunction, Subjects and methodologies; This is A cross-sectional research, was done at the Neurology outpatient clinic of Benha University Hospital, Result: There was strong statistically significant link between sexual dysfunction and both ICSmSF and quality of life and statistically significant relation between sexual dysfunction and both ICSV and ICSI, Conclusion; LUTS and SD are significantly frequent in males with MS, and both have a detrimental influence on QOL. The degree of neurological impairment corresponds with the severity of LUTS and SD. Given the significant incidence of LUTS and SD in men with MS, a more attentive emphasis on these areas is needed to assist patients achieve better management of LUTS and enhance their sexual health with consequent improvements to their QOL.

Keywords; Erectile Dysfunction, Lower Urinary Tract Symptoms, Multiple Sclerosis, Sexual Symptoms.

1. Introduction

A demyelinating illness of the central nervous system (CNS), multiple sclerosis (MS) is an immune-mediated, demyelinating disease that causes significant physical impairment. Two million people worldwide have MS, according to the National Multiple Sclerosis Society, and more than 400,000 people in the United States are now impacted. MS affects twice as many women as males, according to recent studies [1].

Non-traumatic disability in young people is most often caused by MS. Multiple Sclerosis (MS) is becoming more common in both industrialised and developing nations, yet the source of this phenomenon remains a mystery. Numerous environmental and genetic variables contribute to the risk of developing MS, including exposure to ultraviolet B radiation (UVB), infection with the Epstein–Barr virus (EBV), obesity, and smoking [2].

T-cell-mediated autoimmune illness has traditionally been used to describe MS. T-cell autoimmune dogma, on the other hand, is challenged by the efficacy of B-cell targeted treatments. Traditional thinking holds that the relapsing–remitting nature of MS is caused by early inflammation, whereas non-relapsing progression is caused by delayed neurodegeneration, i.e. secondary and primary progressive MS [3].

Biotherapeutic advances and an active strategy to treating MS, in particular targeting NEDA, are transforming the long-term result for persons with MS (pwMS). A limited percentage of people with multiple sclerosis (pwMS) may be able to achieve long-term remission using more severe immune reconstitution therapy. People with advanced multiple sclerosis (MS) may look forward to reducing the course of the illness while preserving some of their ability to do daily tasks.

MS patients, on the other hand, often have symptoms of the lower urinary tract (LUTS). Nearly two-thirds (65%) of more than 9700 MS patients who participated in the North American Research Committee on Multiple Sclerosis Registry had moderate to severe urine symptoms.

MS plaques may be discovered throughout the central nervous system, including the spinal cord, despite the fact that the actual cause is unknown. Identifying where they are located will provide insight into the distinctive characteristics of urethral dysfunction (LUTD). Up to 90% of MS patients have intracranial lesions, which may affect the white matter almost everywhere. Detrusor overactivity (DO) is hypothesised to be caused by lesions in cortical areas associated with urinary tract control (medial prefrontal cortex, insula, and pons) [6].

Sex dysfunction (SD) is an unpleasant, yet still underreported and underdiagnosed, side effect of multiple sclerosis (MS). Multiple sclerosis (MS) and other long-term medical conditions are frequently linked to SD. MS has a negative effect on both men and women's sexuality. More than half of men with multiple sclerosis (MS) suffer from erectile dysfunction (ED; 50%–75%), ejaculatory dysfunction and/or orgasmic dysfunction (50%) and reduced libido (39%) [7].

SD in multiple sclerosis (MS) has a complex pathophysiology that is difficult to pin down. SD may develop as a result of immunological reactions damaging the spinal cord, according to widely accepted theory. MS may not only be caused by lesions affecting neural pathways involved in physiologic function, but also by psychological

factors, medication side effects, physical symptoms such as muscle weakness, changes in menstrual cycles and pain and concerns about bladder and bowel incontinence. Multiple anatomical, physiological, biologic, medicinal, and psychological elements combine to create this constellation of symptoms [8].

Patients with multiple sclerosis who have lower urinary tract symptoms and sexual dysfunction are the primary focus of this study, while the secondary objective is to investigate the relationship between multiple sclerosis's severity of neurological impairment and lower urinary tract symptoms and sexual dysfunction.

2. Patients and methods

The present study is a cross-sectional study that had been carried out on 36 patients with multiple sclerosis from June 2021 to December 2021

- A written informed consent was obtained from all subjects and approval of the Ethics committee.
- The patients had been recruited from Neurology outpatient clinic in Benha University Hospital.

The study included sexually active, adult, male patients with a definitive diagnosis of MS according to the McDonald diagnostic criteria[9].

Inclusion criteria

- Adult, sexually active, male patients.
- Patients with a definitive diagnosis of MS according to the McDonald diagnostic criteria[9].
- Subjects in remission for at least six months.

Exclusion criteria

- Prostate volume >30g
- History of pelvic or prostate surgery
- History of pelvic radiotherapy or bladder stones
- History of urethral stricture
- Pharmacological treatment with 5-alpha reductase inhibitor or phosphodiesterase type 5 inhibitors
- History of chronic diseases
- History of antidepressant, anticonvulsant and anxiolytic drug use
- Chronic alcohol abuse
- History of major psychiatric disorders
- History of inflammatory diseases such as ankylosing spondylitis and rheumatoid arthritis
- Hand, knee and hip joint limitations
- Those at the time of attack and the history of attacks within the last six months
- Urinary catheter use.

All patients were subjected to full history taking and complete clinical examination. Clinical neurological assessment including the age at onset, duration of MS, therapeutic modalities, and response to treatment

The severity of neurological impairment that was assessed with the Expanded Disability Status Scale (EDSS, ranging from 0 to 10). EDSS scores are based on measures of impairment in eight functional systems: visual, pyramidal, sensory, cerebellar, bowel and bladder, cerebral, brainstem and ambulation. EDSS steps 5.0 to 9.5 are characterized by impaired walking. An EDSS score >8 refers to a bedridden patient, which indicates severe cognitive and/or neuromuscular impairment; therefore, this value will be used as a cutoff to participate in the study. The duration of MS was defined as the time since the first onset of neurological symptoms.

LUTS Assessment: The LUTS was assessed using the abbreviated questionnaire of the International Continence Society for males (ICSmSF). This is a standardized instrument that collects information on hesitancy, straining to void, slow stream, intermittency, incomplete emptying, terminal dribble, urgency, urge incontinence, stress incontinence, unpredictable urinary incontinence, nocturnal enuresis, frequency and nocturia. It provides not only a total ICSmSF score but also scores for specific LUTS categories: voiding (ICSV), incontinence/storage (ICSI), and LUTS-related QOL subscores. The answers are displayed as a five-point Likert scale including “never” (0), “occasionally” [1], “sometimes” [2], “most of the time” [3] and “all of the time” [4]. Each LUTS will be considered present whenever “sometimes”, “most of the time” or “always” was indicated. Increased urinary frequency will be defined as intervals ≤2 hours [10].

Sexual Assessment: Sexual function was evaluated using the International Index of Erectile Function (IIEF-15), which contains 15 questions evaluating five domains of sexual function: erectile function (EF), orgasmic function, sexual desire, satisfaction with sexual intercourse and overall satisfaction, with total scores ranging from 5 to 75. Dysfunctions in each domain will be classified according to specific scoring as no dysfunction, mild, mild to moderate, moderate, and severe dysfunction. Severe impairment is associated with the lowest scores. Patients with total IIEF scores ≤45 were considered as having SD [11].

Urodynamic methods: (Laborie, Delphis KT, version 12 with ilist reporting system, Canada 2010) was done for all patients initially at baseline including filling cystoflowmetry, pressure flow study, and EMG of external sphincter, and the assessment was recorded by a computer-based device that consists of similar input sensors and amplification with the cystoflowmetry in the standing position or sitting in a urodynamic chair using 6- or 7-Fr dual-lumen urethral catheter along with either a rectal or vaginal catheter to assess extravesical pressure fluctuations. Urodynamic changes including the bladder volume at the first desire to void (ml), maximum bladder volume (ml), PdetQmax (cmH2O), postvoiding residual (PVR) (ml), electromyographic, Qmax (ml/s), and bladder compliance were measured. Detrusor overactivity, detrusor-sphincter dyssynergia, detrusor hypocontractility, and areflexia were defined according to the standardized definitions of lower urinary tract function by the international continence society (ICS).

Study protocol had been submitted for approval by ethical committee of Faculty of medicine Benha

University. Patients only had been chosen from vulnerable population. All should give informed written consent had been obtained from each participant sharing in this study.

Statistical Analysis:

Data entry, processing and statistical analysis was carried out using Statistical package for social sciences (IBM-SPSS), version 24 (May 2016); IBM- Chicago, USA will be used for statistical data analysis. Tests of significance (Kruskal-Wallis, Wilcoxon's, Chi square, logistic regression analysis, and Spearman's correlation) were used. Data were presented and suitable analysis was done according to the type of data (parametric and non-parametric) obtained for each variable. P-values less than 0.05 (5%) was considered to be statistically significant.

3. Results

The mean age of studied group was 41.33 (±10.34 SD) with range (25-57) years, among the studied group there were 21 (58.3%) rural residents and 15 (41.7%) urban residents, there were 4 (11.1%) not working and 32 (88.9%) working and there were 27 (75%) married, 6 (16.7%) divorced and 3 (8.3%) single. table (1)

Table (1) Distribution of studied cases according to demographic data.

Demographic data	Cases	
Age (years)		
Range.	25.0 – 57.0	
Mean ± SD.	41.33 ± 10.34	
Residence		
Rural	21	58.3
Urban	15	41.7
Occupation		
Not working	4	11.1
Working	32	88.9
Marital status		
Married	27	75.0
Divorced	6	16.7
Single	3	8.3

There was statistically significant relation between sexual dysfunction and EDSS. table (2)

Table (2) Relation between sexual dysfunction and multiple sclerosis data.

	Sexual dysfunction		Test	p
	No	**Yes**		
MS duration				
Range.	5 – 16	3 – 19	U=85.0	0.852
Mean ± SD.	10 (5.5 – 13.75)	8.5 (6 – 13)		
EDSS				
Range.	1 – 5	1 – 8	U=36.50	0.020*
Mean ± SD.	1.5 (1 – 3.5)	4 (3 – 6)		

U: **Mann-Whitney test**

p: p value for comparing between the studied groups

*: Statistically significant at $p \leq 0.05$

There was statistically significant relation between sexual dysfunction and urodynamic studies. table (3)

Table (3) Relation between sexual dysfunction and CSF IgG index and Urodynamic studies.

	Sexual dysfunction				Test	p
	No		No			
CSF IgG index						
Range.	0.34 – 0.72		0.33 – 0.73		t=	0.645
Mean ± SD.	0.52 ± 0.16		0.55 ± 0.13			
Urodynamic studies						
Normal	5	83.3	2	6.7		
Overactive bladder	0	0.0	10	33.3		
DI	0	0.0	4	13.3	χ^2=	0.001*
Overactive bladder + DSD	0	0.0	9	30.0	20.914	
Atonic bladder	1	16.7	2	6.7		
DSD	0	0.0	3	10.1		

There was high statistically significant relation between sexual dysfunction and both ICSmSF and quality of life and statistically significant relation between sexual dysfunction and both ICSV and ICSI. table (4)

Table (4) Relation between sexual dysfunction and multiple sclerosis data.

	Sexual dysfunction				**Test**	**p**
	No		Yes			
ICSmSF						
Range.	2 – 10		1 – 38		U=7.50	<0.001*
Mean ± SD.	6 (3.5 – 7.75)		24 (17.5 – 28)			
incontinence (ICSI)						
Range.	4 – 6		4 – 7		t=2.714	0.010*
Mean ± SD.	5.17 ± 0.75		6.07 ± 0.74			
voiding (ICSV)						
Range.	6 – 7		6 – 7		t=2.457	0.019*
Mean ± SD.	6.33 ± 0.52		6.8 ± 0.41			
Quality of life						
Not bothered	5	83.3	2	6.7	χ^2=19.114	<0.001*
Mildly bothered	1	16.7	11	36.7		
Moderately bothered	0	0.0	6	20.0		
Severely bothered	0	0.0	11	36.7		

U: **Mann-Whitney test** **t: Student-t test** **χ^2: Chi-square test**
p: p value for comparing between the studied groups
*: Statistically significant at $p \leq 0.05$

There was negative correlation between IIEF-15 and EDSS (p=0.009) and strong negative correlation between IIEF-15 and ICSmSF (p<0.001). figure (1&2)

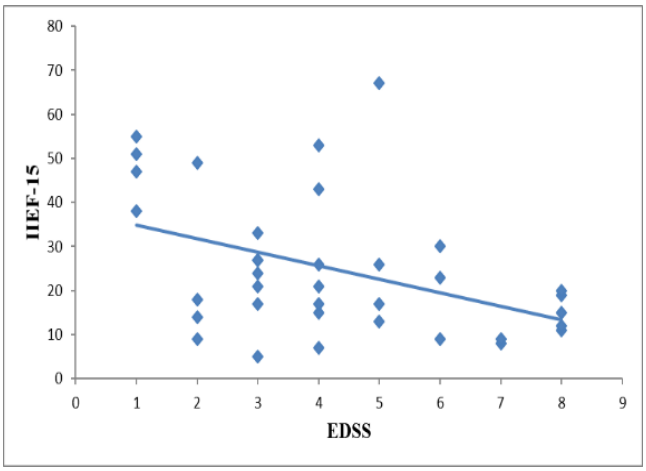

Fig. (1) Correlation between IIEF-15 with EDSS

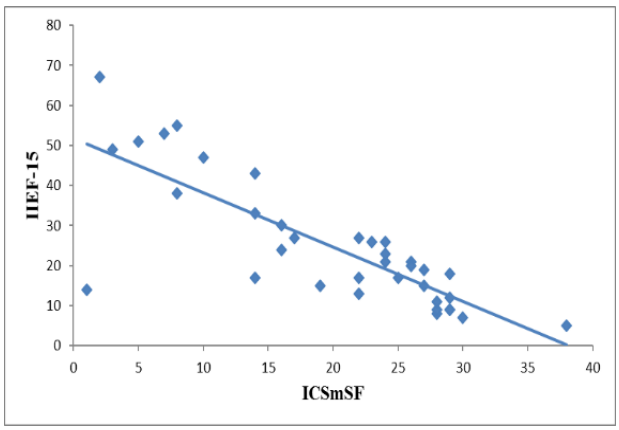

Fig. (2) Correlation between IIEF-15 with ICSmSF

4. Discussion

A statistically significant link was found between EDSS and sexual dysfunction in this investigation.

This study by Tomé and colleagues (12) discovered a strong association between the EDSS and IIEF-15 scores (p=0.008), showing that greater levels of neurological deficiency are related with an increased incidence of SD. Tomé and colleagues observed a r=-0.41 [-0.65 to -0.11].

In a study of 403 men and women with MS, Zecca et al. [13] discovered a substantial link between urine incontinence and EDSS scores in both sexes.

When EDSS and urodynamic abnormalities go hand in hand, the risk of upper urinary tract injury increases.

There was a statistically significant link between sexual dysfunction and urodynamic investigations, according to this research

An association between the severity of LUTS and the existence of SD (r=-0.31 [-0.56 to -0.01]; p=0.04) has been found, indicating that lower sexual function is linked to more severe symptoms.

Depression and urinary symptoms defined by the International Prostate Symptom Score (IPSS) were the only independent predictors of ED in a study of 101 Italian male patients, according to Balsamo et al.

A statistically significant link was found between sexual dysfunction and both ICSmSF and quality of life, as was seen between sexual dysfunction and ICSV and ICSI in this research.

Sexual dysfunction (SD) is a common symptom in men with multiple sclerosis, according to Prévinaire et al [16]. Symptoms of SD are frequently overlooked because patients and doctors are unwilling to openly address their issues. Erectile dysfunction, ejaculatory dysfunction, orgasmic dysfunction, and decreased libido are all common symptoms, with a prevalence ranging from 50 to 90 percent. It is possible to develop SD at any stage of the illness, even if the patient is not very ill. In addition to erectile dysfunction, tiredness, stiffness, bladder and bowel problems and pain all play a role in the development of SD.

The IIEF-15 and EDSS had a negative connection (p=0.009), as did the IIEF-15 and ICSmSF, which had a high negative correlation (p0.001).

Patients with more severe neurological impairment (EDSS X4.5) exhibited poorer storage symptoms, as measured by the ICSI score, according to Tomé et al. [12], although the overall ICSmSF score did not vary substantially.

LUTS and SD were assessed in males using well-established, validated diagnostic methods with LUTS-specific symptom criteria based on the ICS. As a result, surveys were completed in the context of a medical examination rather than relying only on self-reported replies or telephone interviews, which may not always provide reliable results. Despite the limited sample size, it is important to emphasise that we only included males in the research. Another drawback of the research was that we did not take into account the probable effects of MS medicines on LUTS or SD. Our sample would be too small to discern the impact of the many drugs the patients were taking since they were from various pharmacological classes.

5. Conclusion

Men with MS are more likely to suffer from LUTS and SD, both of which have a severe influence on their quality of life. neurological impairment is related to LUTS and SD severity. Men with MS are more likely than women to have LUTS and SD, thus a greater emphasis on these issues is necessary if they are to enhance their sexual health and, in turn, their overall quality of life (QOL).

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