Sexual Dysfunction in Relapsing–Remitting Multiple Sclerosis: Magnetic Resonance Imaging, Clinical, and Psychological Correlates

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The purpose of this study was to examine the sexual complaints and severity of sexual dysfunction in relapsing–remitting multiple sclerosis patients and to correlate them with psychological, neurological, and radiological variables. Frequency and characteristics of sexual disturbances were reported by 41 multiple sclerosis patients (32 females, 9 males; mean age 35.4 ± 10.2 y). Clinical neurologic variables tested were disease duration, exacerbation rate, and disability; psychological variables tested were anxiety and depression. All patients underwent a brain magnetic resonance imaging (MRI) scan at the time of this study. The sexual dysfunction questionnaire included items based on the 3 phases of human sexual response: loss of libido, excitement (arousal difficulties, impotence, premature ejaculation), and anorgasmia. Five males (55.5%) and 16 females (50.0%) reported at least 1 sexual disturbance. The most frequent dysfunctions were loss of libido (26.8%) and arousal difficulties (19.5%). Females rated their difficulties as more severe. Sexual dysfunctions correlated with depression, ($r = 0.68$, $P = 0.001$). No correlation between MRI score and depression was found. Anorgasmia correlated with brain stem and pyramidal abnormalities ($r = 0.56$, $P = 0.011$; $r = 0.56$, $P = 0.012$, respectively). The total area of lesions (plaques) on the brain MRI scan also correlated with anorgasmia ($r = 0.41$, $P = 0.02$). Sexual dysfunctions in multiple sclerosis patients are frequent, are mild to moderate in severity, correlate with depression and in some cases central nervous system (CNS) demyelinating process, and thus may be related either to the psychological impact of this disease or to specific organic lesions in the brain.

Key Words: sexual dysfunctions, multiple sclerosis, MRI, depression, demyelination

INTRODUCTION

Interactions between neural structures are essential to all phases of human sexual response and functioning (Habib and Kalil 1986). Hypothalamic and limbic structures function in concert with lumbar and sacral spinal centers. Of no less importance in sexuality, however, are psychosocial mechanisms (Seidler 1985) and the psychological variables of patients and their partners (Szasz, Paty, Lawtone-Speert, and others 1984).

The occurrence of sexual dysfunctions in multiple sclerosis (MS) has been investigated with focus on prevalence (Valleroy and Kraft 1984), etiology (Lundberg 1981), specific phase dysfunctions (Schover and others 1988), and pharmacological interventions (Kirkeby and others 1988).

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Many possible mechanisms have been proposed, singly or in combination, as contributing etiologically to the occurrence of sexual dysfunctions in MS patients. The frequency of the various disturbances in this disease is reported to be as high as 77% in males (Schover and others 1988) and 56% in females (Valleroy and Kraft 1984). This represents a major psychosexual disability that calls for further research.

The present study was designed as cross-sectional in order to evaluate the frequency and character of sexual dysfunctions in an early stage of relapsing–remitting (RR) multiple sclerosis and to correlate sexual disturbances with various disease parameters. Understanding the nature of sexual disturbances in MS may facilitate better treatment and positively affect quality of life in patients suffering from this debilitating disorder.

METHODS

Patients

Forty-one RR-MS patients followed at the neurology departments of Belinson's Medical Center, Wolfson Medical Center, and Tel-Hashomer Medical Center were included in the study. All patients fulfilled the criteria for clinical definite MS in the relapsing–remitting form (Poser and others 1983). There were 32 females and 9 males in the group, with a mean age of 35.4 ± 10.2 y. All patients were "drug-free" for 4 weeks before assessment, and all were ambulating.

Sexual dysfunctions

The occurrence and severity of sexual dysfunctions were assessed by a self-report questionnaire. Two items pertaining to each of the following 5 parameters were included: loss of libido, arousal difficulties, impotence, premature ejaculation, and anorgasmia. Each item in the questionnaire consisted of a descriptive sentence (for example, for impotence: "I am unable to achieve erection with any kind of genital stimulation"), which the patient was asked to rate. A parameter for which both items were endorsed was counted as positive. Severity of sexual dysfunction was rated by the number of positive items: 0 = none, 1 = mild, 2 = moderate, 3 = severe, and 4 = extreme. All participants received the same questionnaire; because some questions were gender-specific, a maximum score of 4 on the 5 parameters could be obtained. It should be noted that anorgasmia was defined as the total absence of orgasms. Vaginal lubrication in women was not assessed, since it is problematic to evaluate accurately without direct gynecological examination (Bezkor and Candeo 1987).

Neuropsychiatric evaluation

All patients underwent neurological examination, and disease disability was scored according to the Krutzke Expanded Disability Status Scale (EDSS) (Krutzke 1983). Loss of genital sensation or genital parasthesias, if present, was scored in the sensory functional score of the EDSS. Psychiatric evaluation included the Beck Depression Inventory (BDI) (Beck 1961), as only 1 item in the BDI is related to sexuality. Anxiety was rated using the Hamilton Anxiety Scale (HAS) (Hamilton 1959). A semistructured psychiatric interview based on the DSM-III-R criteria was performed by a specialist in psychiatry (YB) in order to exclude overt psychiatric morbidity.

Neuroradiologic evaluation

Brain MRI scans were performed with a commercial 0.5 tesla superconductive magnet (Elscint). Scans were obtained in the sagittal plane with a repetition time (TR) of 600 msec, an echo time (TE) of 20 msec, and a 5-mm slice thickness.

A score from 0 to 10 grading total brain lesion area was given to each patient's scan. The score was based on 2 parameters: diameter and number of demyelinating plaques. The parameters were subdivided into 3 categories, and a simple mathematical model (Achiron and others 1995) was used to calculate the total area of white matter lesions in each patient.

Statistical methods

The baseline characteristics of the study group were computed as mean ± SD. Frequencies were calculated for each variable. The Pearson's and Spearman's rank correlation coefficients were used to analyze the significance of different variables.

RESULTS

The following data was obtained in terms of patients' characteristics: mean age, 35.4 ± 10.2 y; male to female ratio, 9:32; disease duration, 4.1 ± 2.7 y; mean disability score, 2.7 ± 1.9 (EDSS); and MRI score (minimum 0; maximum 10), 3.3 ± 3.1.

Abnormalities in sexual functioning are presented in Table 1; 50.5% of the females and 55.5% of the males endorsed at least 1 sexual dysfunction. The most frequent complaint in both sexes was loss of libido. In 31.7% of MS patients, at least 2 dysfunctions were reported.

Patients generally reported the severity of dysfunction as "mild" (1) to "moderate" (2), with females rating their sexual dysfunctions as more severe (females, 1.53 ± 0.71;

Table 1

Sexual dysfunctions in RR–MS patients (% [n])

	Libido	Excitement			Orgasm	
	Loss of libido	Arousal difficulties	Premature ejaculation	Impotence	Anorgasmia	Multiple dysfunctions
Males (N = 9)	22.2 (2)	22.2 (2)	–	11.1 (1)	–	44.4 (4)
Females (N = 32)	28.1 (9)	18.8 (6)	–	–	12.5 (4)	28.1 (9)
Total (N = 41)	26.8 (11)	19.5 (8)	–	–	9.8 (4)	31.7 (13)

"–" means zero.

males, 1.2 ± 0.50). Anxiety was scored using the HAS. Mean score for females was 9.6 ± 6.1 and for males, 11.0 ± 6.2. Depression was rated according to the BDI. Mean score for females was 8.2 ± 8.0 and for males, 10.0 ± 6.8.

Using the Pearson's and Spearman's rank correlation coefficients, we compiled the following results: a) nonsignificant results for disease duration, EDSS score, anxiety, or age with sexual dysfunction; b) nonsignificant correlation between the BDI and MRI score; c) significant correlation between presence of sexual dysfunction and depression score ($r = 0.68$, $P = 0.001$); and d) significant correlation between anorgasmia and depression ($r = 0.38$, $P = 0.014$), brain stem abnormalities ($r = 0.56$, $P = 0.011$), and pyramidal abnormalities ($r = 0.56$, $P = 0.012$). Disease severity reflected in total area of lesions (plaques) on brain MRI scan also correlated with anorgasmia ($r = 0.41$, $P = 0.02$).

DISCUSSION

The crippling effects of multiple sclerosis often involve sexual functioning, an issue that can be difficult for patients, their partners, and treating physicians to discuss (Kaufman 1983). The mechanisms involved in the causality of the sexual difficulties in MS patients are not clearly delineated, and their clarification may be a step towards treatment.

The scope of sexual dysfunction attributed to MS is staggering. In a standard textbook on the physiological and medical aspects of sexual disorders (Kaplan 1983), MS is quoted as a possible cause in impaired male ejaculation and impotence and impaired female excitement phase or orgasm and vaginal pain (Weiss 1992). Nevertheless, the authors refer to the cautionary remarks of Vas (1969) and Lilius (1976), who said that "the careful separation of psychogenic versus organic origin is not available."

Our findings concerning frequency of occurrence support those of Valleroy and Kraft (1984), and the specific sexual phase dysfunction we found accords with the findings of Schover and others (1988) and Kirkeby and others (1988). Szasz, Paty, and Maurice (1984) found that, in minimally disabled MS patients, 45% reported changes in sexual activity since developing MS. In their study, increased sexual dysfunction positively correlated with disease duration, chronic-progressive course, and neurological disability. Similar to our findings, 18% of their minimally affected patients were sexually inactive, indicating that sexual dysfunction can occur at an early disease stage. Moreover, significant sexual dysfunction appears even in patients without significant motor, bladder, or bowel dysfunction (Bourdette 1994). Two notable, novel findings in our series are the significant correlation of sexual dysfunctions with depression score and the specific psychological, neurological, and radiological correlations with anorgasmia. There was no correlation between depression and MRI score, emphasizing the reactive component of depression in MS patients (Mc Ivor and others 1984) and suggesting that lesions affecting the corticospinal tracts and brain stem connections are associated with inability to achieve orgasm. Further, the correlation between anorgasmia and MRI score implies that widespread lesions (plaques) contribute to sexual dysfunction. The lack of spinal cord MRI, however, precludes definite conclusions in regard to the location of involved lesions.

Loss of libido, arousal problems, and impotence are prominent and early manifestations of depressive illness, but not of anxiety states (Hamilton 1986). The population of the present study is relatively young and ambulatory, and suffers from a relapsing–remitting course. These 3 factors (possibly in combination) may contribute to the occurrence of sexual dysfunctions in relation to depressive ratings. Our study raises the possibility, however, that the organic contribution of the demyelinating lesions may be a significant cause of sexual dysfunction in MS patients.

In conclusion, sexual dysfunctions are frequently encountered in RR-MS patients. The role of depression may be a prominent variable contributing to the sexual difficulties in MS patients, but the demyelinating process is also a major cause. Thus some sexual dysfunctions in MS are probably a primary part of the clinical symptomatology and disease process, complicated by the secondary depressive reaction to this chronic illness. Other limitations imposed by the disease,

such as low self-esteem and isolation, probably contribute to dysfunction and should not be neglected in future studies.

Further investigations into the sexual function of chronic progressive MS patients with a long disease duration and a more pronounced neurological disability, as well as the use of spinal cord MRI and larger study samples, may help in clarifying the specific mechanisms involved.

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