

Is multiple sclerosis only a neurological problem? Evaluation of sexual dysfunctions in a group of multiple sclerosis patients

Czy stwardnienie rozsiane to jedynie problem neurologiczny? Ocena zaburzeń seksualnych u pacjentów ze stwardnieniem rozsianym

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Słowa kluczowe: stwardnienie rozsiane, zaburzenia seksualne, relacje partnerskie.

Abstract

Introduction: Multiple sclerosis (MS) is the most common chronic disease of the central nervous system. Multiple sclerosis is usually diagnosed in the second and third decades of life. Sexual health is a basic human right and an integral part of the personality of every human being. The most common sexual problems manifest themselves when interacting with another person.

Aim of the research: Evaluation of sexual dysfunctions in people with a diagnosis of MS in Poland.

Material and methods: The study involved 197 women and men between 18 and 45 years old. The research tool consisted of standardised questionnaires: the International Index of Erectile Function (IIEF), the Female Sexual Function Index (FSFI), and the Index of Marital Satisfaction (IMS).

Results: All questionnaires values in the study group (SG) indicated a greater severity of dysfunction compared with the control group (CG). Also, after using cut-off points, sexual and partnership dysfunctions were found more often in the SG with all three questionnaires. Logistic regression analysis, adjusted for age, indicated that sexual dysfunctions in women were associated with a diagnosis of MS, and erectile dysfunction in men was associated with a diagnosis of MS.

Conclusions: Both women and men with a diagnosis of MS have a greater risk of sexual dysfunction than the healthy population in Poland. This fact should be considered in a holistic diagnosis and therapeutic process.

Streszczenie

Wprowadzenie: Stwardnienie rozsiane (SM) jest najczęstszą przewlekłą chorobą ośrodkowego układu nerwowego. Choroba jest zwykle diagnozowana w drugiej i trzeciej dekadzie życia. Zdrowie seksualne stanowi podstawowe prawo człowieka i integralną część osobowości każdego człowieka. Najczęstsze problemy seksualne pojawiają się podczas interakcji z inną osobą.

Cel pracy: Ocena zaburzeń seksualnych u pacjentów z SM w Polsce.

Materiał i metody: W badaniu wzięło udział 197 kobiet i mężczyzn w wieku 18–45 lat. Narzędzie badawcze zawierało standaryzowane kwestionariusze: Międzynarodowy indeks funkcji erekcyjnej (IIEF), Wskaźnik kobiecych funkcji seksualnych (FSFI) oraz Indeks satysfakcji małżeńskiej (IMS).

Wyniki: Wszystkie wartości kwestionariuszy w badanej grupie (SG) wskazywały na większy stopień nasilenia zaburzeń w porównaniu z grupą kontrolną (CG). Również po zastosowaniu punktów odcięcia dysfunkcje seksualne i partnerskie częściej występowały w grupie badanej. Analiza regresji logistycznej skorygowana o wiek wskazała, że zaburzenia seksualne u kobiet i zaburzenia erekcji u mężczyzn były związane z rozpoznaniem SM.

Wnioski: Zarówno kobiety, jak i mężczyźni z SM mają większe ryzyko wystąpienia zaburzeń seksualnych niż zdrowa populacja w Polsce. Fakt ten należy uwzględnić w holistycznej diagnozie i procesie terapeutycznym.

Introduction

Multiple sclerosis (MS) is the most common chronic disease of the central nervous system. It is an inflammatory disease in which the fatty myelin sheaths surrounding the axons of the brain and spinal cord are damaged, leading to demyelination and scarring as well as a broad spectrum of symptoms [1]. Multiple sclerosis is characterised by loss of sensitivity, muscle weakness, clonus, muscle spasms, difficulties with coordination and balance (ataxia), difficulties in moving, problems in swallowing (dysphagia), speech (dysarthria), and urination (dysuria), and visual problems. Also, depression, and marital and sexual dysfunction are being considered as the outcomes of Multiple sclerosis. Symptoms of MS usually appear in episodic acute periods of worsening (called relapses, exacerbations, bouts, attacks, or “flare-ups”), in a gradually progressive deterioration of neurologic function, or in a combination of both [2]. The total estimated number of people with MS diagnosis, reported by the countries that responded, is 1,315,000, of whom approximately 630,000 are in Europe, 520,000 in the Americas, 66,000 in the Eastern Mediterranean, 56,000 in the Western Pacific, 31,500 in South-East Asia, and 11,000 in Africa [3]. Multiple sclerosis is usually diagnosed in the second and third decade of life [4].

According to the Declaration of Sexual Rights, published in 2002 by the World Health Organisation, sexual health is a basic human right. According to this declaration, sexuality is an integral part of the personality of every human being. Among the many areas of human activity, sexuality is considered one of the most important [5]. Bearing in mind that the most common sexual problems manifest themselves when interacting with another person, it should be noted how important is to look at the problem in two ways: through the prism of the individual unit, and its relationship [6].

In various patient populations there is a lack of research on appropriate assessment of prevalence of sexual dysfunction, both in males and females with MS, in comparison to control groups, using standardised tools such as the International Index of Erectile Function (IIEF), the Female Sexual Function Index (FSFI), and the Index of Marital Satisfaction (IMS). The literature is dominated by reports of female dysfunction, which seems to be justified by numerous reports that MS occurs about twice as often in women as in men and typically begins in the reproductive age [7]. The occurrence of sexual dysfunction may therefore significantly impair reproductive capacity of patients, especially as seen in these significant abnormalities of the menstrual cycle and fluctuations in hormone levels during the menstrual cycle [8, 9]. The most common problems among women both in Poland and rest of the world are: anorgasmia (72%), decreased sensitivity to stimulation (48%), abnormal lubrication (35%), and

dyspareunia. An important factor limiting sexual activity is also fatigue (68%). Among the males erectile disturbances (63%), abnormal ejaculation (50%), and a reduction of sex drive (39%) dominated [10–12].

Aim of the research

The aim of this study was to evaluate sexual function of patients suffering from MS. The secondary objective was to evaluate the frequency of occurrence of sexual dysfunction in the Polish population of MS patients compared with the control group, using standardised test methods.

Material and methods

In this case-control study 197 people were investigated. The study group (SG) consisted of 95 people with multiple sclerosis diagnosis – 55 women and 40 men, respectively. The control group (CG) consisted of 102 healthy persons (55 women and 47 men). All SG participants were members of the Polish National Multiple Sclerosis Society. The study was performed in Poland. Inclusion criteria in both groups were: age between 18 and 45 years, completed sexual initiation, and informed consent. Additional criteria for SG were MS diagnosis and current remission status. Exclusion criteria for both groups were: organic sexual dysfunctions, psychiatric disorders, and other diseases that could affect sexual life, including chronic and systemic diseases. The study was approved by a research Ethics Committee.

Neurological status and level of disability of patients was assessed by Expanded Disability Status Scale (EDSS), in accordance with the criteria described by Kurtzke [13], by a single researcher without access to medical records. The EDSS scale is the most common scale used to assess physical function and symptoms in patients with MS.

An anonymous questionnaire was used. It consisted of the IIEF, the FSFI, and the IMS. In addition, the questionnaire contained questions about socio-demographic status, medical history, and physical activity.

Index of Erectile Function is a multidimensional, five-grade instrument for self-evaluation of all male sexual functions within the previous 4 weeks. It is characterised by high validity, reliability, sensitivity, and test-retest reliability in the diagnosing of changes, confirmed by over 50 clinical trials. The implementation of IIEF is a recommended standard in the diagnosis and evaluation of erectile dysfunctions and their intensification [14–16]. The IIEF questionnaire encompasses 15 items grouped in five collective domains describing: I – erectile function, II – orgasm function, III – sexual desire, IV – intercourse satisfaction, and V – overall satisfaction. The total scores within the domains (I–V) create a positive dependence with correct sexual functioning. In addition, clinically significant erectile dysfunctions (erectile function domain)

are diagnosed at values equal to or less than 25 points (cut-off point) [17–19].

The Female Sexual Function Index is a multidimensional self-evaluation instrument for all spheres of female sexual functions, within the previous 4 weeks. The FSFI has been confirmed and clinically documented with regard to validity, sensitivity, reliability, internal consistency, stability, and test-retest reliability. Female Sexual Function Index is composed of 19 items divided into six collective domains: I – desire, II – arousal, III – lubrication, IV – orgasm, V – satisfaction, and VI – pain. Final results are obtained separately for each domain in a linear dependence – the higher the score, the better the sexual functioning within a given domain. The next stage is a global evaluation of FSFI total score, with analogical dependence. In addition, clinically significant female sexual dysfunctions are diagnosed at total score values lower or equal to 26.55 points [20–22].

The Index of Marital Satisfaction consists of 25 questions. The IMS is designed to measure the degree, severity, or magnitude of a problem one spouse or partner has in the material relationship. It is characterised by high reliability, validity, and sensitivity. The final score of IMS creates a linear dependence – the higher the score, the better the partner relationship. In addition, a score of below 30 suggests the presence of a clinically significant problem (cut-off point) [23, 24].

Statistical analysis

In the statistical analysis Statistica 10.0 for Windows was used. Differences among parameters were considered significant at the level of 0.05. Shapiro-Wilk test for normality evaluation, nonparametric Mann-Whitney *U* test, χ^2 , and logistic regression analysis were used.

Results

The study group and control group were homogenous with regard to age (mean \pm SD in SG was 36.74

Table 1. Demographic and clinical characteristics of multiple sclerosis patients (*n* = 95)

| Parameter | Results |
|--------------------------|--|
| Age [years] | Mean: 39.74, SD: 7.31, median: 39, range: 20–45 |
| Disease duration [years] | Mean: 10.77, SD: 7.47, median: 9.58, range: 0.17–33.92 |
| Number of relapses | Mean: 5.86, SD: 5.17, median: 4, range: 1–25 |
| EDSS | Mean: 3.32, SD: 1.97, median: 3, range: 0–10 |

SD – standard deviation, *EDSS* – Expanded Disability Status Scale.

± 7.31 and 36.28 ± 7.23 in CG). Groups were also homogenous with regarding to place of residence (village: 28.42% SG and 22.55% CG; city: 71.58% SG and 77.45% CG), marital status (married: 64.21% SG and 76.46% CG) and education level (university degree: 30.53% SG and 34.31% CG). Regarding occupational status, 26.32% of the study group were working or studying, compared to 85.29% of the control group. 62.11% of the study group declared physical activity more often than once a week in comparison to 43.11% of the control group. Additional parameters only for the study group were assessed (Table 1). 61.05% of SG participants were moving independently, while 30.53% were using a cane and 8.42% a wheelchair. The mean value of time elapsed from MS diagnosis was 129.20 ± 89.66 months, and the mean value of lifetime number of relapses was 5.86 ± 5.17 .

Evaluation of IIEF showed that men from the study group, in all domains, indicated lower sexual function comparing to the control group, which is represented by lower IIEF scores (Table 2).

In the evaluation of the FSFI, lower sexual function regarding FSFI total score was found in the study group, compared to the control group. In specific domains analogical differences were found only regarding lubrication and orgasm (Table 3).

Table 2. Sexual dysfunctions in men

| IIEF domain | Possible scores | Study group | | Control group | | Mann-Whitney <i>U</i> test (<i>p</i>) |
|--------------------------|-----------------|------------------|----------------|------------------|----------------|---|
| | | Mean \pm SD | Median (range) | Mean \pm SD | Median (range) | |
| Erectile function | 0–30 | 18.95 \pm 8.56 | 20.5 (2–30) | 27.74 \pm 2.16 | 28.0 (22–30) | < 0.001 |
| Orgasmic function | 0–10 | 6.72 \pm 2.89 | 7.5 (1–10) | 9.87 \pm 0.45 | 10.0 (8–10) | < 0.001 |
| Sexual desire | 0–10 | 7.28 \pm 2.15 | 8.0 (2–10) | 9.06 \pm 1.01 | 9.0 (6–10) | < 0.001 |
| Intercourse satisfaction | 0–15 | 9.15 \pm 4.29 | 10.0 (0–15) | 12.91 \pm 1.87 | 13.0 (7–15) | < 0.001 |
| Overall satisfaction | 0–10 | 6.88 \pm 2.41 | 7.0 (2–10) | 9.30 \pm 1.25 | 10.0 (3–10) | < 0.001 |

SD – standard deviation.

Table 3. Sexual dysfunctions in women

| FSFI domain | Possible scores | Study group | | Control group | | Mann-Whitney <i>U</i> test (<i>p</i>) |
|------------------|-----------------|-------------|----------------|---------------|----------------|---|
| | | Mean ± SD | Median (range) | Mean ± SD | Median (range) | |
| Desire | 1.2–6 | 4.10 ±1.41 | 4.2 (1.2–6) | 4.06 ±1.09 | 4.2 (1.2–6) | NS, <i>p</i> = 0.630 |
| Arousal | 0–6 | 4.27 ±1.52 | 4.8 (0–6) | 4.79 ±0.90 | 4.8 (2.1–6) | NS, <i>p</i> = 0.193 |
| Lubrication | 0–6 | 4.58 ±1.63 | 5.4 (0–6) | 5.41 ±0.75 | 5.7 (3–6) | <i>p</i> = 0.013 |
| Orgasm | 0–6 | 4.16 ±1.73 | 4.8 (0–6) | 5.11 ±0.85 | 5.2 (2.8–6) | <i>p</i> = 0.008 |
| Satisfaction | 0.8–6 | 4.74 ±1.29 | 4.8 (1.2–6) | 5.16 ±0.90 | 5.2 (2.4–6) | NS, <i>p</i> = 0.123 |
| Pain | 0–6 | 4.51 ±1.80 | 5.4 (0–6) | 5.37 ±0.72 | 5.6 (3.6–6) | NS, <i>p</i> = 0.081 |
| FSFI total score | 2–36 | 26.24 ±7.22 | 28.9 (5.2–36) | 29.91 ±3.79 | 30.8 (21.5–36) | <i>p</i> = 0.010 |

SD – standard deviation. *NS* – not significant.

Table 4. Partner relationship

| IMS | Possible scores | Study group | | Control group | | Mann-Whitney <i>U</i> test |
|-----------|-----------------|--------------|-----------------|---------------|--------------------|----------------------------|
| | | Mean ± SD | Median (range) | Mean ± SD | Median (range) | |
| IMS score | 0–100 | 43.61 ±10.14 | 46 (4.63–63.89) | 18.16 ±15.80 | 13.67 (0.67–70.67) | <i>p</i> < 0.001 |

SD – standard deviation.

Results of the Index of Marital Satisfaction were higher in the SG than in the CG, which indicates lower partner relationship satisfaction in the study group (Table 4).

Clinically significant dysfunctions regarding FSFI total score, IIEF Erectile Function, and IMS were evaluated using appropriate cut-off points. Sexual dysfunctions were found in 40% of the study group women, compared to 21.82% of the control group (*p* = 0.039). Erectile dysfunctions were found in 65.00% of men from the study group, comparing to 12.77% of the control group (*p* < 0.001). Partner relationship dysfunctions (IMS) were found in 89.47% of people from the study group and 19.61% of the control group (*p* < 0.001). In addition, results of IMS were divided by sex. Partner relationship dysfunctions were found in 89.09% of the SG women, compared to 23.64% of the CG (*p* < 0.001) and 90.00% the SG men, compared to 14.89% of the CG (*p* < 0.001).

Logistic regression procedure for IIEF Erectile Function domain in men was performed. It was found that erectile dysfunction is associated with SM diagnosis (OR = 16.13; 95% CI: 4.84–53.73), but also independently with higher age (OR = 1.12; 95% CI: 1.03–1.22). In logistic regression, regarding FSFI total score, it was found that sexual dysfunctions in women are associated with SM diagnosis (OR = 2.43; 95% CI: 1.03–5.74). This result was adjusted for age.

Also, relationships between sexual dysfunctions and other parameters, such as professional activity, physical activity, place of residence, and partner relationships (IMS) were assessed, but none of them was statistically significant. In addition, only in the

study group were relationships between sexual dysfunctions and parameters investigated, such as way of moving, time elapsed from MS diagnosis and lifetime number of relapses, but no statistically significant results were found.

Discussion

In this study sexual function and partner relationship in 95 patients with multiple sclerosis were examined. All these data were compared to 102 healthy controls. The results showed that both women and men from the study group presented lower sexual functions in all FSFI and IIEF domains. In addition, greater risk of erectile dysfunction in men and greater risk of sexual dysfunctions in women with SM diagnosis were found, comparing to the general population.

In Polish literature, it is difficult to find studies based on questionnaires used by the authors. Lew-Starowicz and Rola in a similar study used the SFQ28 scale. In 82.5% of patients, hypoactive sexual desire (57.7%), arousal dysfunction (decreased genital sensation in 47.3%, decreased lubrication in 48.4%, decreased subjective arousal in 45.2%), and orgasmic dysfunction (39.8%) being the most probable [25]. The prevalence of sexual dysfunction was significantly higher in the MS patients than in the general population of Polish women, respectively: impaired arousal (vaginal lubrication) 48.4% vs. 12%, and difficulty in achieving orgasm 39.8% vs. 17% [26, 27]. A typical manifestation of primary sexual dysfunction according to Zaborski includes erectile dysfunction (70–92%), abnormal ejaculation (68–73%), anorgasmia

(45–60% in males, 40–65% in females), and decreased vaginal lubrication (36%) [28]. There is a lack of previous analogical research in Poland. Most authors worldwide described similar results.

Lilius *et al.* found in their study that erectile dysfunctions were the most common problem, reported by 62% of men. Other difficulties were weakness of body muscle (9%), spasticity (8%), and spouse frigidity (6%). Figures for the women were slightly different with 72% reporting changes in sexual life, of whom 39% were unsatisfied with sexual life or sexually inactive. In addition, loss of orgasm (33%), loss of libido (27%), and spasticity (12%) were reported as the main problems for women [29].

According to Demirkiran *et al.*, the frequency of primary sexual disorders in MS patients was 77.1% for RRMS, 77.8% for SPMS, and 100% for the PPMS group. All patients with any form of progressive multiple sclerosis and sexual disorders (SD) reported at least three symptoms of primary SD [30].

In Zorzon *et al.*'s study, sexual dysfunctions were present in 73.1% of MS patients, compared to 39.2% of chronic disease controls and 12.7% of healthy controls ($p < 0.0001$). Male patients reported symptoms of sexual dysfunction more frequently than did females ($p < 0.002$). The most commonly reported symptoms in patients with MS were anorgasmia or hypo-orgasmia (37.1%), decreased vaginal lubrication (35.7%), and reduced libido (31.4%) in women, as well as impotence or erectile dysfunction (63.2%), ejaculatory dysfunction and/or orgasmic dysfunction (50%), and reduced libido (39.5%) in men [31].

According to Celik *et al.*, sexual dysfunction, a frequent problem for MS patients, is associated with gender. Women reported more SD than men. Secondary SD symptoms were the most common complaints for both men and women [32]. In addition, lack of, or difficulties in achieving orgasm as well as reduced libido are commonly reported problems among 24% to nearly 60% of MS patients [14, 15, 33].

Sexual dysfunctions are not only common for MS patients, but also for the general population. In addition, physical conditions, such as vascular, endocrine, hormonal, neurological, or metabolic disorders, may also cause sexual disorders. Cigarette smoking, substance abuse, sleep apnoea, and certain medications are also contributing factors. Also, antipsychotics, tricyclic antidepressants, and other anticholinergic agents can hinder arousal and cause erectile dysfunction [34–37]. Other known factors that could affect sexual life are psychogenic problems including anxiety, depression, and previous traumatic sexual experience [16]. In this study most of those parameters were controlled by exclusion criteria.

Huws *et al.* reported that hypersexuality and fetishism appeared in a patient with multiple sclerosis, suggesting that the organic neuropsychological effects of MS may extend to sexual behaviour [34].

Nonetheless, the authors of this publication agrees with most researchers that generally people with MS experience high levels of sexual dysfunction, with hypoactive sexual behaviour, often associated with dissatisfaction with the relationship [35, 38].

When diagnosing or treating MS patients, one must remember that weakness, difficulties with coordination, balance, and locomotion, and problems of the urinary bladder are not the only problems. Sexual dysfunctions are probably the most overlooked symptom in MS patients.

Conclusions

Both women and men with multiple sclerosis diagnosis have greater risk of sexual dysfunctions than the healthy population in Poland. This fact should be considered in a holistic diagnosis and therapeutic process. In this respect, cooperation between a neurologist and sexologist seems to be important.

Conflict of interest

The authors declare no conflict of interest.

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