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Analysis of sexual function of patients with dermatomyositis and polymyositis through self-administered questionnaires: a cross-sectional study

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ABSTRACT

Introduction: To date, there are no descriptions in the literature on gynecologic and sexual function evaluation in female patients with dermatomyositis (DM) and polymyositis (PM).
Objective: To assess sexual function in female patients with DM/PM.
Patients and methods: This is a monocentric, cross-sectional study in which 23 patients (16 DM and 7 PM), with ages between 18 and 40 years, were compared to 23 healthy women of the same age group. Characteristics on sexual function were obtained by applying the questionnaires Female Sexual Quotient (FSQ) and Female Sexual Function Index (FSFI) validated for the Brazilian Portuguese language.
Results: The mean age of patients was comparable to controls (32.7 ± 5.3 vs. 31.7 ± 6.7 years), as well as the distribution of ethnicity and socioeconomic class. As for gynecological characteristics, patients and healthy controls did not differ with respect to age at menarche and percentages of dysmenorrhea, menorrhagia, premenstrual syndrome, pain at mid-cycle, mucocervical secretion, and vaginal discharge. The FSQ score, as well as all domains of the FSFI questionnaire (desire, arousal, lubrication, orgasm and satisfaction), were significantly decreased in patients vs. controls, with 60.9% of patients showing some degree of sexual dysfunction.
Conclusions: This was the first study to identify sexual dysfunction in patients with DM/PM. Therefore, a multidisciplinary approach is essential for patients with idiopathic

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inflammatory myopathies, in order to provide prevention and care for their sexual life, providing a better quality of life, both for patients and their partners.

Análise da função sexual de pacientes com dermatomiosite e polimiosite através de questionários autoaplicados: um estudo transversal

Palavras-chave:
Dermatomiosite
Disfunção sexual
Miopatias inflamatórias
Polimiosite
Sexualidade

RESUMO

Introdução: Até o presente momento, não há descrições na literatura da avaliação ginecológica e da função sexual em pacientes do sexo feminino com dermatomiosite (DM) e polimiosite (PM).
Objetivos: Avaliar a função sexual em pacientes do sexo feminino com DM/PM.
Casuística e métodos: Estudo transversal unicêntrico em que 23 pacientes (16 DM e sete PM), entre 18 e 40 anos, foram comparadas com 23 mulheres saudáveis, com a mesma faixa etária. As características sobre a função sexual foram obtidas por meio da aplicação dos questionários *Female Sexual Quotient* (FSQ) e *Female Sexual Function Index* (FSFI) validados para a língua portuguesa do Brasil.
Resultados: A média de idade das pacientes foi comparável à dos controles (32,7 ± 5,3 vs. 31,7 ± 6,7 anos), assim como a distribuição de etnia e da classe socioeconômica. Quanto às características ginecológicas, pacientes e controles saudáveis não apresentaram diferenças em relação à idade na menarca e às porcentagens de dismenorreia, menorragia, síndrome pré-menstrual, dor no meio do ciclo, secreção mucocervical e corrimento vaginal. O escore de pontuação do FSQ, assim como todos os domínios do questionário do FSFI (desejo, excitação, lubrificação, orgasmo e satisfação), estavam significantemente diminuídos nas pacientes comparativamente com os controles, 60,9% das pacientes apresentavam algum grau de disfunção sexual.
Conclusões: Este foi o primeiro estudo que identificou disfunção sexual nas pacientes com DM/PM. Assim, uma abordagem multidisciplinar é essencial para pacientes com miopatias inflamatórias idiopáticas para fornecer medidas de prevenção e cuidados para sua vida sexual e propiciar uma melhor qualidade de vida das pacientes e de seus parceiros.

Introduction

Dermatomyositis (DM) and polymyositis (PM) form a heterogeneous group of acquired inflammatory myopathies associated with high morbidity, functional disability, and decreased quality of life related to health, predominantly affecting females and presenting different mechanisms and outcomes as to the impact on physical and psychosocial health.[1–4]

Sexual dysfunction is any change occurring in one of the phases of the sexual response cycle, potentially ending in frustration, pain and/or a reduced number of sexual intercourses,[5] a condition described in patients with systemic autoimmune diseases.[6–23] About 26% of women with systemic lupus erythematosus (SLE) with an active sexual life have some degree of sexual dysfunction,[6] with a potential relationship with a persistent disease activity, menstrual cycle changes, and/or an associated vascular involvement.[7] In addition, in these patients one can notice a reduced frequency of sexual activity and satisfaction, and also decreased vaginal lubrication.[8] In the population with juvenile SLE, one can perceive an increased sexual dysfunction, delayed menarche, and greater frequency of menstrual abnormalities, with lengthy menstrual cycles.[9–13] In patients with rheumatoid arthritis (RA), desire and sexual satisfaction are decreased, with limitations during intercourse mainly related to fatigue and joint pain.[14] However, to date, studies that specifically evaluate sexual dysfunction in women with DM/PM have not yet been published. The only study available in the literature[24] pointed only to sexual impairment, along with other parameters, as factors relating to a diminished quality of life in this population. Considering the impact of sexual dysfunction on human functioning and its physical and psychosocial effects, the aim of this study is to evaluate the sexual and gynecological characteristics of patients with DM/PM.

Materials and methods

Patients and healthy controls

Twenty-three female patients (16 DM and 7 PM), aged 18–40 years, were consecutively selected and interviewed during the period from 2011 to 2013. All patients met the classification criteria of Bohan and Peter[25] and were in regular outpatient monitoring in our tertiary unit.

Exclusion criteria were: use of a hormonal contraceptive in the last six months, ongoing pregnancy, fibromyalgia, and the presence of other systemic autoimmune diseases. As a control group, 23 healthy volunteers from basic health units of the region and HCFMUSP workers, matched for age and who met the exclusion criteria, were also consecutively selected.

This study was approved by the local Research Ethics Committee (No. 0325/11) and an informed consent was obtained from all participants.

Evaluation of female patients with DM and PM

All participants were clinically evaluated and answered questions of a standardized interview. The following data were collected:

(a) Demographic data: age, ethnicity, current family income (socioeconomic status, according to the Brazilian Association of Market Research Institutes).[26]
(b) Clinical data: age at the onset of the disease and its duration.
(c) Current status of the disease: Manual Muscle Test (MMT-8),[27] Health Assessment Questionnaire (HAQ),[28] overall assessment of the disease by the physician and the patient using a visual analog scale (VAS), creatine phosphokinase (normal range: 24–173 U/L), and aldolase (normal range: 1.0–7.5 U/L) using a kinetic automated method.
(d) Drugs: Current use of corticosteroids and immunosuppressants.
(e) Gynecologic features: menarche, menstrual cycles (dysmenorrhea, menorrhagia), premenstrual syndrome, mid-cycle pain, mucocervical secretion, and vaginal discharge.
(f) Evaluation of sexual function: Female Sexual Quotient (FSQ)[29] and Female Sexual Function Index (FSFI), in a Brazilian Portuguese language version.[30] FSQ consists of 10 questions, with a total index ranging from 0 to 100. Higher values indicate better sexual performance/satisfaction (0–20 points: nil to poor; 22–40 points: poor to unfavorable; 42–60; unfavorable to fair; 62–80: fair to good; 82–100: good to excellent). FSFI is a self-administered questionnaire with 19 items that is applied in order to assess sexual functioning in women in six separate domains (sexual desire, sexual arousal, vaginal lubrication, orgasm, sexual satisfaction, and pain) in the last four weeks. Each domain has a maximum score of 6 points. The lower the total score, the greater the possibility of sexual dysfunction; for this study, a score below 26.55 was regarded as a cutoff point to differentiate between women with and without sexual dysfunction.[31]
(g) The patients were also asked about their sexual activity: first sexual intercourse, dyspareunia and blood loss during intercourse.

Statistical analysis

The Kolmogorov–Smirnov test was used to evaluate the distribution of each parameter. The results were expressed as mean ± standard deviation (SD) or median (interquartile 25–75%) for continuous variables, and as a percentage (%) for categorical variables. Comparisons between patients and the control group were performed using the Student's *t*-test or the Mann–Whitney *U* test for continuous variables. Analysis was performed using STATA software – version 7 (Stata, College Station, TX, USA).

Results

The mean age of patients was comparable to the mean age of controls (32.7 ± 5.3 vs. 31.7 ± 6.7 years), as well as the distribution of ethnicity and socioeconomic status (Table 1). The age at disease onset and its duration, as well as clinical and laboratory data on disease status and pharmacological treatment are also listed in Table 1. In general, patients were clinically stable and with lab tests also stable at the time of the interview and of the application of the questionnaires.

No difference was found between patients and control group regarding gynecologic characteristics (Table 2).

The FQS score was lower in patients vs. control group [60 (42–72) vs. 88 (66–87); $p = 0.021$] (Table 3). In addition, no response of patients attained a good/excellent level (FSQ), while in the control group, this response was observed in 26.1% of cases.

All domains of FSFI (sexual desire, sexual arousal, vaginal lubrication, orgasm and sexual satisfaction) were decreased in patients vs. healthy controls ($p < 0.05$, Table 3), and FSFI scores below 26.55 were found in a significant number of patients vs. controls (14.7% vs. 60.9, $p = 0.036$).

The analysis of sexual function showed higher rates of dyspareunia (65.2 vs. 7.7%, $p < 0.001$) in patients, but no differences were observed in relation to age of first sexual intercourse and rates of blood loss during intercourse (Table 3).

Discussion

DM and PM are chronic diseases with a potential to affect all aspects of the patients life, including sexual functioning. Within this context, the present study evaluated sexual function and gynecologic changes in adult women with DM/PM. Our results showed greater impairment of sexual function in patients, which helps in the outlining of the real impact of this dysfunction in these myopathies.

As advantages of this study, we analyzed our patients under strict exclusion criteria. In addition, in the sexual evaluation, we used tools for assessment of sexual characteristics validated for the Brazilian Portuguese language.[29,30] This study is part of a comprehensive survey to evaluate reproductive health in DM/PM, particularly with respect to follicular reserve.[32,33] Thus, a limitation of this study was the small number of patients with inflammatory myopathies, thanks to our strict exclusion criteria, such as the current use of hormonal contraceptives, which clearly interfere with the assessment of ovarian reserve.[32,33] Moreover, in view of the reduced sample of patients with DM/PM, we were unable to identify, in this study, if the sexual dysfunction observed in these patients was associated with disease activity, or with the treatment administered. We also did not evaluate the sexual function of partners of women with DM/PM.

An appropriate sexuality relates to a balance between sexual stimulation (tactile, visual, auditory, olfactory, or

Table 1 – Demographic, clinical and laboratory features of dermatomyositis patients and healthy individuals.

Parameters	DM (n = 35)	Controls (n = 48)	p
Age (years)	33.3 ± 7.6	33.2 ± 6.5	0.951
Caucasian	26 (74.3)	34 (70.8)	0.807
Body mass index (kg/m²)	24.5 ± 3.2	24.3 ± 2.6	0.872
Weight (kg)	63.5 ± 9.3	63.7 ± 7.4	0.914
Socioeconomic status	31 (81.6)	46 (95.8)	0.586
Age at disease onset (years)	28.4 ± 9.0	–	–
Duration: diagnosis-symptoms (months)	5 (2–18)	–	–
Disease duration (years)	1.0 (0–6.0)	–	–
Creatine phosphokinase (U/L)	124 (86–458)	98 (72–122)	0.011
Aldolase (U/L)	6.3 (4.0–11.0)	3.4 (2.8–3.4)	<0.001
Lactic dehydrogenase (U/L)	423 (654–715)	322 (293–385)	0.001
Alanine aminotransferase (U/L)	22 (13–51)	15 (12–20)	0.003
Aspartate aminotransferase (U/L)	19 (16–71)	19 (16–21)	0.001
MMT-8 score (0–80)	76 (70–80)	–	–
HAQ score (0.00–3.00)	0.86 (0.00–0.71)	–	–
Patient VAS (0–10)	3 (0–5)	–	–
Physician VAS (0–10)	4 (0–5)	–	–
MYOACT	0 (0–1)	–	–
Prednisolone			–
Current use	23 (65.7)	–	–
Total cumulative dose (g)[a]	15.40 (5.90–27.69)		
Antimalarial	8 (22.9)	–	–
IS/IM[b]			
None	18 (51.4)	–	–
One	12 (34.3)	–	–
Two	5 (14.3)	–	–

Results expressed as a percentage (%), mean ± standard deviation, median (25th–75th interquartile range).
DM, dermatomyositis; IS, immunosuppressive drugs; IM, immunomodulatory drugs; MYOACT, myositis disease activity assessment visual analog scales.

[a] Since disease symptoms.

[b] Azathioprine (2–3 mg/kg/day), methotrexate (15–25 mg/week), cyclosporine (1.5–2.5 mg/kg/day), mycophenolate mofetil (2–3 g/day), rituximab [1 g, intravenous, at baseline and after one month (first cycle) and repeat this schema after six months], cyclophosphamide (0.8 g/m² body surface), leflunomide (20 mg/day) and/or intravenous human immunoglobulin (2 g/kg, 1×/day, two consecutive days).

Table 2 – Metabolic syndrome and laboratory parameters of patients with dermatomyositis and healthy individuals.

Parameters	DM (n = 35)	Control (n = 48)	p
Metabolic syndrome	12 (34.3)	3 (6.3)	0.001
Abdominal circumference (cm)	88.6 ± 10.1	78.9 ± 9.0	<0.001
≥80 cm	26 (74.3)	22 (45.8)	0.013
Systemic arterial hypertension	3 (8.6)	1 (2.1)	0.305
Fasting blood glucose (mg/dL)	81 (76–89)	79 (70–84)	0.157
≥100 mg/dL	5 (14.3)	1 (2.1)	0.078
Total cholesterol level (mg/dL)	175.2 ± 36.8	185.4 ± 31.5	0.190
LDL-cholesterol level (mg/dL)	103.2 ± 32.1	107.03 ± 27.0	0.540
HDL-cholesterol level (mg/dL)	48 (42–63)	55 (52–65)	0.017
≤50 (mg/dL)	18 (51.4)	7 (14.6)	0.001
Triglyceride level (mg/dL)	83 (61–180)	82 (64–109)	0.017
≥150 (mg/dL)	13 (37.1)	4 (8.3)	0.002
Insulin (U/L)	13.0 (9.3–19.5)	7.5 (5.4–12.1)	<0.001
Adiponectin (ng/mL)	87.3 (56.1–115.8)	58.8 (39.5–75.8)	0.010
Leptin (ng/mL)	7.9 (0.7–13.6)	14.8 (7.9–22.1)	0.004
Resistin (pg/mL)	100 (80–167)	89 (70–112)	0.049

Results expressed as a percentage (%) or median [25th-75th interquartile range].
CVD, cardiovascular disease; DM, dermatomyositis; HDL, high-density cholesterol; LDL, low-density cholesterol.

gustatory), the sexual cycle itself (desire, arousal, orgasm and pleasure, resolution, and sexual satisfaction), and the ability of the individual to participate in the intercourse in a satisfactory manner. Many factors are involved in a healthy sexuality, including physiological, psychological, and socio-cultural aspects, as well as subjective perceptions; and any change in one or more of these aspects may cause a negative impact on sexual life.[15,16]

In the literature, the interaction between hormonal contraceptives and sexual functioning of their users is an uncertain

Table 3 – Comparison of DM patients with or without metabolic syndrome.

Parameters	MetS (+) (*n* = 12)	MetS (–) (*n* = 23)	*p*
Age (years)	36.7 ± 5.6	31.5 ± 8.0	0.035
White ethnicity	7 (58.3)	19 (82.6)	0.220
Socioeconomic status	12 (100.0)	19 (82.6)	0.536
Age at disease onset (years)	31.0 ± 10.0	27.1 ± 8.3	0.260
Duration: diagnosis–symptoms (months)	4 (1–14)	5 (3–18)	0.381
Disease duration (years)	0 (0–9)	2 (0–6)	0.362
Body mass index (kg/m²)	2.50 ± 2.6	24.2 ± 3.5	0.511
Weight (kg)	63.6 ± 9.7	63.4 ± 9.2	0.938
Cutaneous manifestations			
Heliotrope	10 (83.3)	20 (87.0)	1.000
Gottron's signal	12 (100.0)	21 (91.3)	0.536
"V" sign	6 (50.0)	3 (13.0)	0.038
"Shawl" sign	5 (41.7)	1 (4.3)	0.012
MMT-8 score (0–80)	66 (60–76)	80 (74–80)	0.002
HAQ score (0.00–3.00)	1.15 (0.00–2.68)	0.57 (0.00–1.71)	0.172
Patient VAS (0–10)	6 (4–7)	2 (0–5)	0.001
Physician VAS (0–10)	6 (4–7)	2 (0–5)	0.011
MYOACT	0 (0–4)	0 (0–0)	0.344
Creatine phosphokinase (U/L)	122 (71–1447)	130 (84–232)	0.817
Aldolase (U/L)	6.9 (5.3–31.4)	5.7 (3.8–10.3)	0.292
Lactic dehydrogenase (U/L)	659 (425–1170)	372 (282–476)	0.010
Alanine aminotransferase (U/L)	57 (65–143)	20 (16–32)	0.028
Aspartate aminotransferase (U/L)	56 (22–96)	19 (19–30)	0.031
Prednisolone			
Current use	9 (75.0)	14 (60.9)	0.476
Cumulative dose[a] (g)	7.1 (1.6–23.0)	15.6 (11.0–30.4)	0.156
Antimalarials	2 (16.7)	6 (26.1)	0.685
IS/IM[b]			
None	9 (75.0)	9 (39.1)	0.075
One	2 (16.7)	10 (43.5)	0.149
Two	1 (8.3)	4 (17.4)	0.640
Systemic arterial hypertension	3 (25.0)	0	–
Abdominal circumference (cm)	92.3 ± 9.7	86.5 ± 9.9	0.112
≥80 cm	10 (83.3)	16 (69.6)	0.450
Diabetes mellitus	1 (8.3)	0	–
Ischemic stroke	0	0	–
Myocardial infarction	0	0	–
Hypothyroidism	2 (16.7)	1 (4.3)	0.266
Sedentary lifestyle	1 (8.3)	2 (8.7)	1.000
Food habit alterations	1 (8.3)	1 (4.3)	1.000
Alcohol consumption	0	0	–
Tobacco	0	0	–
Family history of CVD	1 (8.3)	0	–
Fasting blood glucose (mg/dL)	82 (65–144)	80 (74–85)	0.526
≥100 mg/dL	4 (33.3)	1 (4.3)	0.038
Total cholesterol level (mg/dL)	179 (145–212)	165 (144–191)	0.668
LDL-cholesterol level (mg/dL)	106.8 ± 33.8	101.3 ± 31.8	0.652
HDL-cholesterol level (mg/dL)	39.2 ± 11.0	59.3 ± 18.2	<0.001
≤50 (mg/dL)	11 (91.7)	7 (30.4)	0.001
Triglycerides level (mg/dL)	160 (99–241)	80 (60–136)	0.016
≥150 (mg/dL)	9 (75.0)	4 (17.4)	0.002
Insulin (U/L)	16.5 (9.4–30.0)	12.3 (6.8–18.2)	0.321
Adiponectin (ng/mL)	74.8 (39.3–125.0)	95.1 (54.0–116.3)	0.349
Leptin (ng/mL)	4.3 (39.3–125.1)	8.9 (0.7–14.7)	0.709
Resistin (pg/mL)	204 (86–292)	92 (76–123)	0.077

Results expressed as a percentage (%), mean ± standard deviation, median (25th–75th interquartile range).
CVD, cardiovascular disease; DM, dermatomyositis; HDL, high-density cholesterol; IS, immunosuppressive drugs; IM, immunomodulatory drugs; LDL, low-density cholesterol; MYOACT, myositis disease activity assessment visual analog scales.

[a] Since disease symptoms.

[b] Azathioprine (2–3 mg/kg/day), methotrexate (15–25 mg/week), cyclosporine (1.5–2.5 mg/kg/day), mycophenolate mofetil (2–3 g/day), rituximab [1 g, intravenous, at baseline and after one month (first cycle) and repeat this schema after six months], cyclophosphamide (0.8 g/m² body surface), leflunomide (20 mg/day) and/or intravenous human immunoglobulin (2 g/kg, 1×/day, two consecutive days).

and controversial subject. Changes in menstrual flow, changes in body weight, inhibition of ovulation and in the physiological and variable production of sex hormones, symptoms related to the menstrual cycle, acne, and other skin-related hyperandrogenic conditions generate loss or indirect damage to sexuality.[34–36] In our study, patients taking contraceptives were excluded.

Comparatively, our study demonstrates that the sexual function assessed both by FSQ and FSFI in women with DM/PM with stable disease was significantly compromised. With respect to FSFI, our patients had worse scores in all sub-items (sexual desire, sexual arousal, vaginal lubrication, orgasm, and sexual satisfaction). In addition, our patients had significantly more dyspareunia vs. the control group.

Sexual problems have been identified in many rheumatologic diseases, for various reasons, at rates ranging from 27% to 67%.[11,15–22] For example, the presence of physical limitation, fatigue, and pain are related to sexuality change in each individual, as well as age, marital status, education, low income, and psychological factors.[11,19–22]

Sexual dysfunction in patients analyzed in this study was not related to any demographic variable, or to the presence of gynecologic changes. In addition, this study is an extension of previous studies, in which anatomical and functional urogenital changes were not identified in these patients.[32,33]

On the other hand, in patients with acquired inflammatory myopathies, the presence of muscle weakness and functional disability may restrict or prevent sexual performance, leading to a difficulty in finding a comfortable position for intercourse, as well as in maintaining certain sexual positions for an extended time; and the presence of myalgia can have a negative impact on sexual satisfaction. Both the perceived pain during sexual activity and the anticipation of myalgia can also negatively influence desire and sexual satisfaction. It is noteworthy that the patients involved in this study were stable under clinical and laboratory points of view. Still, they showed a high frequency of sexual dysfunction.

Another key element leading to sexual dysfunction is the use of corticosteroids, usually in high doses. This can affect the hypothalamic-pituitary-gonadal axis, leading to a decrease in sex steroid hormone levels.[37] The body change caused by the use of corticosteroids and related to the disease itself can lead to a low self-esteem and to body image disorders.[37] Almost 75% of our patients were using low-dose corticosteroids at the time of this study (mean 10 mg/day). Thus, the high frequency of sexual dysfunction in the present study does not seem to be justified by the use of corticosteroids.

A better understanding of the impact that chronic diseases have on the quality of life can lead to a treatment more focused on the patient's needs. Our study showed the negative impact that DM/PM have on the sexual life of patients, raising the question of how we can include this aspect in their care. Communication and counseling on sexuality can lead to a better acceptance of the disease by the patient, thus improving her therapeutic outcome.

One of the limitations of this study is that we did not evaluate the number of children, parity, education, perception of self-esteem, and history of sexual abuse – factors which could interfere with the results found. Therefore, more detailed studies will be needed to enhance the results.

In conclusion, this was the first study to identify sexual dysfunction in patients with DM/PM. A multidisciplinary approach is essential for patients with idiopathic inflammatory myopathies, in order to provide prevention and care for their sexual life, providing a better quality of life both for these patients and their partners.

Conflicts of interest

The authors declare no conflicts of interest.

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