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Sexual function in female juvenile idiopathic arthritis patients

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Abstract

Objective: To evaluate sexual function female adolescents and young adults with juvenile idiopathic arthritis (JIA) and healthy controls.

Methods: After exclusion, 21 female adolescent and young JIA patients and 25 healthy controls were selected for this study. Sexual function was assessed by the Sexual Quotient Questionnaire for Females (SQQ-F) score, which is a validated tool and adapted for Brazilian Portuguese language. Demographic data, JIA clinical/laboratory parameters and treatment were also assessed.

Results: The median current age [26.5 (17–38.1) vs. 29.3 (19.7–35.8) years, $p = 0.700$)] as well as age at the first sexual activity [18 (14–30) vs. 17 (10–24) years, $p = 0.158$] were similar in JIA patients and healthy controls. The median of SQQ-F score was alike in both groups [75.9 (50–92) vs. 78.2 (58–94), $p = 0.529$], as well as frequencies of sexual dysfunction (14% vs. 12%, $p = 1.000$). The frequencies of all sexual domains (desire/sexual fantasies, desire/interest, arousal/foreplay, arousal/lubrication, arousal/in tune with partner, penetration/relaxation, pain/penetration, desire/involvement, orgasm and general satisfaction scores) were similar in JIA patients and healthy controls ($p > 0.05$).

Conclusions: To our knowledge, this was the first study using a validated sexual score in a chronic arthritis population suggesting a low frequency of overall sexual dysfunction in young JIA patients. Future multicenter studies with a large sample will be necessary to confirm this finding.

Keywords: Juvenile idiopathic arthritis, Sexual function, Sexual activity, Adolescent, Adult

Introduction

Juvenile idiopathic arthritis (JIA) is the most common autoimmune rheumatic disorder in the pediatric population, which is characterized by a heterogeneous group of diseases, that include chronic arthritis of unknown origin, and begins before 16 years of age [1, 2].

These JIA patients are living longer, often reach reproductive age and therefore sexual function is a relevant issue for them and requires analysis of the major domains of female sexual function, such as arousal, orgasm, comfort and sexual satisfaction [3, 4].

Sexual activity and dysfunction have been described in males and females JIA patients [3–7]. Female studies of sexual function were generally reported as case series and using semi-structured interviews or data of sexual history in female gender [4–7]. There are, however, no studies evaluating sexual function with validated a sexual instrument in female adolescent and young adults with JIA.

Therefore, the objective of present the study was to evaluate sexual function in female adolescents and young adults with JIA and healthy controls.

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Material and methods

A cross-section study was performed evaluating post-pubertal female JIA patients, aged between 15 to 40 years followed at the pediatric and adult JIA outpatient clinics at the same tertiary hospital. A total of 110 JIA patients fulfilled the International League of Associations for Rheumatology classification criteria and were selected for this study [2].

Exclusion criteria were: other concomitant chronic diseases, current gestation, lactation, contraindication or refusal to stop hormonal contraceptives for at least 6 months and refusal to participate in this study.

Healthy controls were selected from second-degree family members or patient's best friend. They were post-pubertal female adolescents or young adults, using the same exclusion criteria. The Local Ethics Committee of our university hospital approved the study. Informed consent was obtained from all participants and their legal guardians.

The demographic data included current age, disease duration and body mass index (BMI). BMI was stated as weight in kilograms divided by the square of the body height (m^2).

Sexual Quotient Questionnaire for Females (SQQ-F) score is a validated tool and adapted for Brazilian Portuguese language to access sexual function in female population [8]. This instrument is composed of 10 questions of female sexual function: desire/sexual fantasies, desire/interest, arousal/foreplay, arousal/lubrication, arousal/in tune with partner, penetration/relaxation, pain/penetration, desire/involvement, orgasm and general satisfaction. Each question is scored from 0 to 5 and higher scores indicate better sexual function, except for the question regarding pain during intercourse. The score ranges from 0 to 100 and sexual dysfunction is defined with score < 62 points. Sexual performance according to SQQ-F is also classified as: absent to poor (0–20 points), poor to unfavorable (22–40 points), unfavorable to fair (42–60 points), fair to good (62–80 points) and good to excellent (82–100 points) [8]. This tool was applied to all JIA patients and healthy controls by a gynecologist.

The presence of dysmenorrhea, menorrhagia and premenstrual syndromes and sexual function (age at first sexual intercourse, number of sexual intercourses in the last month, number of sexual intercourses in the last year, number of sexual partners in the last month and number of sexual partners in the last year) were also systematically evaluated by recall.

The following seven JIA onset categories were assessed: systemic, polyarthritis rheumatoid factor-positive, polyarthritis rheumatoid factor-negative, oligoarthritis, enthesitis-related arthritis, psoriatic arthritis and undifferentiated arthritis [2]. Number of limited joints and number active joints were assessed. Disease activity was evaluated by: physician global assessment of arthritis activity (10 cm horizontal visual analog scale), Juvenile Arthritis Disease Activity Score (JADAS) 71 for JIA patients up to 18 years [9] and Disease Activity Score 28-Joint Counts (DAS28) for patients over 18 years [10]. Erythrocyte sedimentation rate was measured by modified Westergren and C-reactive protein by nephelometric method.

The following drugs were evaluated: non-steroidal anti-inflammatory drugs, corticosteroids, methotrexate, leflunomide, sulfasalazine, hydroxychloroquine and biological agents (etanercept, adalimumab, golimumab, certolizumab, abatacept and tocilizumab).

Statistical analysis

The Statistical Package for the Social Sciences version 13.0 was used. The results for the continuous variables were presented by median (minimum and maximum value) or mean ± standard deviation (SD), and for categorical variables presented as frequency (percentage). The results that had normal distribution were compared by Student's t-test and the ones that had abnormal distribution by Mann-Whitney test. Categorical variables comparisons were assessed by Fisher's exact test. *P* values less than 0.05 were considered significant.

Results

The exclusion criteria were: other concomitant chronic diseases ($n = 10$), current gestation or lactation ($n = 3$), refusal to participate in this study (n = 10) and refusal to stop hormonal contraceptives ($n = 66$). Thus, after the exclusion of 89 patients, 21 post-pubertal JIA patients were studied. The healthy controls included 25 post-pubertal female adolescents or young adults.

The median disease duration was 17.5 (5.9–33) years. Polyarthritis rheumatoid factor-negative JIA subtype was observed in 16/21 (76%), systemic onset JIA in 3/21 (14%) and oligoarthritis JIA in 2/21 (10%). The median of DAS28 was 2 (1.05–4.14) and 38% of JIA patients has DAS28 > 2.3.

Table 1 includes demographic data, gynecological features and sexual function in JIA patients and healthy controls. The median current age [26.5 (17–38.1) vs. 29.3 (19.7–35.8) years, $p = 0.700$)] as well as age at the first sexual activity [18 (14–30) vs. 17 (10–24) years, $p = 0.158$] were similar in JIA patients and healthy controls. No differences were evidenced in frequencies of dysmenorrhea (62% vs. 60%, $p = 0.859$), menorrhagia (24% vs. 20%, $p = 1.000$) and premenstrual syndromes (67% vs. 75%, $p = 0.538$) in both groups (Table 1).

The median of age at first sexual activity, number of intercourses in the last month and in the last year and sexual partners in the last month and in the last year were alike in JIA patients and healthy controls ($p > 0.05$, Table 1). The median of SQQ-F score was alike in both

Table 1 Demographic data, gynecological features and sexual function in juvenile idiopathic arthritis (JIA) patients and healthy controls

Variables	JIA patients ($n = 21$)	Heathy controls ($n = 25$)	P
Demographic data			
Current age, years	26.5 (17–38.1)	29.3 (19.7–35.8)	0.700
Ethnic groups			0.153
Caucasian	14 (67)	18 (72)	–
African-Latin American	7 (33)	7 (28)	–
Body mass index, kg/m^2	22.4 (19–29)	22.5 (19–32)	0.530
Gynecological features			
Menarche age, years	13 (9–19)	12 (8–15)	0.088
Dysmenorrhea	13 (62)	15 (60)	0.859
Menorrhagia	5 (24)	5 (20)	1.000
Premenstrual syndrome	14 (67)	18 (75)	0.538
Sexual function			
Age at first sexual activity, years	18 (14–30)	17 (10–24)	0.158
Sexual activity in the last year	21 (100)	25 (100)	1.000
Number of intercourse in the last month	4.5 (0–15)	4 (0–30)	0.979
Number of intercourse in the last year	54 (1–180)	48 (4–360)	0.948
Sexual partners in the last month	1 (0–1)	1 (0–2)	0.256
Sexual partners in the last year	1 (1–2)	1 (1–5)	0.329
SQQ-F score	78 (50–92)	82 (58–94)	0.529
SQQ-F < 62 (sexual dysfunction)	3 (14)	3 (12)	1.000

Results are presented in n (%) and median (range), SQQ-F - Sexual Quotient Questionnaire for Females

groups [75.9 (50–92) vs. 78.2 (58–94), $p = 0.529$], as well as the frequencies of sexual dysfunction (14% vs. 12%, $p = 1.000$).

Three of 21 (14%) JIA patients had sexual dysfunction and were categorized as unfavorable to fair sexual performance according to SQQ-F. The first JIA patient, 20 years, had interphalangeal and metacarpophalangeal arthritis without hip limitation, DAS28 3.41, SQQ-F score 56 and were under prednisone 5 mg/day and methotrexate 25 mg/week. The second JIA patient, 38 years, interphalangeal arthritis without hip arthritis or limitations, DAS28 1.36, SQQ-F score 54 and with any treatment. The third patient, 28 years, had limitation on shoulders, elbows, knees, wrists and hips DAS28 1.05, SQQ-F score 50 and were under methotrexate 25 mg/week.

Table 2 shows sexual dysfunction according to the 10 questions of SQQ-F tool in JIA patients and healthy controls. The frequencies of all sexual domains (desire/sexual fantasies, desire/interest, arousal/foreplay, arousal/lubrication, arousal/in

Table 2 Sexual dysfunction according to the 10 questions of Sexual Quotient Questionnaire for Females (SQQ-F) tool in Juvenile Idiopathic Arthritis (JIA) patients and healthy controls

SQQ-F questions	Sexual domains	JIA Patients ($n = 21$)	Heathy controls ($n = 25$)	P
1	Desire/Sexual fantasies	14 (67)	13 (52)	0.314
2	Desire/Interest	3 (14)	4 (16)	1.000
3	Arousal/Foreplay	1 (5)	1 (4)	1.000
4	Arousal/Lubrication	4 (19)	3 (12)	0.686
5	Arousal/In tune with partner	0 (0)	0 (0)	1.000
6	Penetration/Relaxation	5 (24)	1 (4)	0.079
7	Pain/Penetration	7 (33)	3 (12)	0.15
8	Desire/Involvement	0 (0)	2 (8)	0.493
9	Orgasm	3 (14)	6 (24)	0.478
10	General sexual satisfaction	2 (9.5)	1 (4)	0.585

Results are presented in n (%)

tune with partner, penetration/relaxation, pain/penetration, desire/involvement, orgasm and general satisfaction scores) were similar in JIA patients and healthy controls ($p > 0.05$, Table 2).

Regarding sexual performance evaluated SQQ-F total score, the frequencies of categories were similar between JIA patients and controls for unfavorable to fair sexual performance [3/21 (14%) vs. 3/25 (12%), $p = 1.000$), fair to good [10/21 (48%) vs. 9/25 (36%), $p = 0.550$) and good to excellent [8/21 (38%) vs. 13/25 (52%), $p = 0.387$).

Sexual dysfunction (SQQ-F score < 62) was similar between JIA patients with age ≤ 26 years compared to those with age > 27 years [1/9 (11%) vs. 2/12 (17%), $p = 1.000$], as well as the frequencies of pregnancies [0/9 (0%) vs. 1/12 (8%), $p = 1.000$] and miscarriages [0/9 (0%) vs. 0/12 (0%), $p = 1.000$]. The median of number of active joints [1 (0–12) vs. 1 (0–3), $p = 0.760$] were similar between JIA patients with age ≤ 26 years compared to those with age > 27. The median number of limited joints was significantly higher in the former group [3.5 (0–32) vs. 2 (0–18), $p = 0.0026$].

No differences were evidenced between demographic data, gynecological features, disease parameters and acute phase proteins in JIA patients with and without sexual dysfunction (SQQ-F score < 62) ($p > 0.05$, Table 3).

Discussion

To our knowledge, this was the first study using a validated sexual score in a chronic arthritis population and evidenced the rarity of sexual dysfunction in young JIA patients.

The main strength of the present study was the use of a validated tool composed by questions that evaluated the major areas of female sexual function. This point was relevant, since assessment of semi-structured interviews or history information of sexuality may not include all relevant descriptive variables of sexual function [4].

This study had limitations, such as: small sample size and cross-sectional design, precluding generalizability of the results for other populations. Sexual health is a broad conception that includes sociological, cultural and psychological aspects [7, 11], and we did not evaluate these issues in the present study. The main reason to a limited number of JIA patients and healthy controls observed herein was due to the refusal of hormonal contraceptive suspension. Of note, both groups had also

Table 3 Demographic data, gynecological features, disease parameters and acute phase proteins in juvenile idiopathic arthritis (JIA) patients with and without sexual dysfunction (SQQ-F score < 62)

Variables	JIA with sexual dysfunction ($n = 3$)	JIA without sexual dysfunction ($n = 18$)	*P*
Demographic data			
Current age, years	28 (20–38)	26.53 (17–38)	0.600
Gynecological features			
Menarche age, years	15 (12–16)	13 (09–10)	0.286
JIA onset categories			
Polyarthritis rheumatoid factor-negative	3 (100)	13 (72)	0.549
Systemic	0 (0)	3 (17)	1.000
Oligoarthritis	0 (0)	2 (11)	1.000
Disease parameters			
Number of limited joints	3.5 (0–32)	13 (6–39)	0.078
Limitation on motion of hip	1 (33)	11 (61)	0.553
Number active joints	0 (0–2)	1 (0–12)	0.566
DAS 28, $n = 20$	1.36 (1.05–3.41)	1.97 (1.05–4.14)	0.368
Acute phase proteins			
ESR, mm/1st hour	07 (03–16)	8.5 (02–25)	0.724
C-reactive protein, mg/L	1.9 (1.9–6.3)	2.3 (0.2–14)	0.919
Current treatment			
Prednisone	1 (33)	3 (17)	0.488
Methotrexate	2 (67)	6 (33)	0.531
Leflunomide	0 (0)	6 (33)	0.526
Biological agents	0 (0)	9 (50)	0.227

Results are presented in *n* (%) and median (range), SQQ-F - Sexual Quotient Questionnaire for Females, DAS28 - Disease Activity Score 28-Joint Counts, ESR - erythrocyte sedimentation rate

concomitantly participated in two other studies that required hormonal contraception withdrawal to assess ovarian reserve parameters and luteinized unruptured follicle syndrome [12, 13]. The most frequent exclusion criterion was the refusal to stop contraceptive, because the majority of JIA patients denied stopping this medication due to active sexual life and risk of pregnancy.

Reports of age of first sexual activity in adolescents with chronic inflammatory rheumatic diseases have rarely been described. Age of first sexual activity occurred mainly in late adolescence for our JIA patients and controls. However, other studies reported an earlier age of first sexual intercourse at 15 years in female JIA [4] and at 15 years in female childhood-onset systemic lupus erythematosus patients [14, 15].

The rate of sexual dysfunction altered overall score in JIA patients was very low compared to previous reports in adults with rheumatoid arthritis [16, 17] in Taiwan (48%) [18], Egypt (53–61%) [19, 20], Morocco (76%) [21] and Brazil (80%) [22]. The most likely explanation for this discrepancy is probably the younger age of JIA patients, inclusion of male gender, the use of distinct instruments and disease activity status [16–22].

The cut-off age of comparison between sexual dysfunction in JIA patients was chosen according to "The Institute of Medicine and National Research Council of United States" that suggested 26 years old as the upper age limit for young adults [23].

The deleterious effect of disease such as inflammation, disability, limitations on motion of hips and treatments did not seem to be a major relevant factor for sexual dysfunction in JIA patients of the present study [3].

Our study reinforces that JIA adolescents should be systematically screened for sexual function and contraception use frequently, thus reinforcing prevention on sexually transmitted infections and pregnancy [24].

Conclusion

To our knowledge, this was the first study using a validated sexual score in a chronic arthritis population suggesting a low frequency of overall sexual dysfunction in young JIA patients. Future multicenter studies with a large sample will be necessary to confirm this finding.

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Availability of data and materials

Not applicable.

Authors' contributions

All authors analyzed and interpreted the patient data.
ACP, GVRF, RBT, EB and CAS were the major contributor in writing the manuscript. All authors read and approved the final manuscript.

Ethics approval and consent to participate

This study was approved by our Ethics Committee.

Consent for publication

All JIA patients and healthy controls signed the consent for publication.

Competing interests

Not applicable.

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