

ORIGINAL ARTICLE

Sexual dysfunction in women with migraine and tension-type headaches

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Primary headaches (PHAs) prominently affect the performance and life quality of people. Sexual dysfunction (SD) is an important health problem caused by several factors. This study aimed to compare the sexual function of women who have PHAs. Forty-one female patients who were diagnosed with migraine, 39 female patients who were diagnosed with tension-type headache (TTHA) and 41 healthy subjects were included in study. Sexual function of the cases were evaluated by using the 'Female Sexual Function Index (FSFI)'. Beck Depression Scale was applied to subjects and those who were diagnosed with depression were excluded from the study. SD was detected in both the migraine and TTHA groups. FSFI subgroup scores were statistically significantly lower in the migraine and TTHA groups compared with the control group. No significant differences were detected between the migraine and TTHA groups in terms of FSFI and its components. In addition, no significant differences were detected between the blood prolactin levels or SD and headache. It was concluded that primary headaches (which are chronic diseases) itself may cause SD in female patients with migraine and TTHA independently of factors that may cause development of SD such as comorbid condition, depression, drug use and age.

International Journal of Impotence Research (2016) **28**, 201–204; doi:10.1038/ijir.2016.22; published online 22 September 2016

INTRODUCTION

Sexual dysfunction (SD) is a health problem that may occur owing to several medical and social factors. Usually, it cannot be expressed owing to socio-cultural pressures and not questioned adequately by the physicians as well.¹ Sexual function require normal functioning of neuronal, endocrinal, hormonal and psychogenic factors. This requires an intact hypothalamic–pituitary axis. In the literature, the previously described studies have reported that different chronic diseases can cause SD, and they suggested that this relationship has very different and complex mechanisms. But in all of these studies, the exact etiopathogenetic mechanisms have not been demonstrated.^{2–5} One of these chronic disorders is headache. The most commonly observed types of primary headache (PHA) in the community are migraine and tension-type headaches (TTHAs). Prevalence of TTHAs in the community is approximately 30–78% in both sexes,⁶ whereas the prevalence of migraine is 16.4%, with a rate of 21.8% for women and 10.9% for men.⁷ Both types of headaches are known to significantly affect the productivity and daily life activities of individuals.^{8,9} The relationship of headaches, particularly migraine with neurotransmitters (such as Serotonin, melatonin, dopamine, noradrenaline) has also been evaluated in a limited number of studies.^{10,11} Hyperprolactinemia have been reported to induce the attacks of migraine and is also involved in other PHAs.¹²

It is believed that SD and thus the comorbid psychiatric disorders, such as deterioration in daily living activities, reduced self-confidence, anxiety and depression are very common in the presence of PHA. Literature appears to have limited number of studies conducted for SD in PHAs, which have limitations owing to factors, such as comorbidity and drug use.^{8,9,13}

In our study, we aimed to determine whether the sexual function of patients is affected by PHAs, if yes, the extent of this effect, and whether this is associated with the type, frequency and duration of headache.

MATERIALS AND METHODS

Women aged between 18 and 50 years, who applied to our neurology clinic with the complaint of headache and diagnosed with migraine and TTHA according to diagnosis criteria of International Headache Society, did not receive any drug therapy for the past 3 months, had no hysterectomy, had no comorbid conditions such as depression, hypertension, diabetes mellitus, coronary artery disease, demyelinating disease, cerebrovascular disease, epilepsy, chronic pain (such as chronic low back pain, trigeminal neuralgia, postherpetic neuralgia), were at least primary school graduate and married for at least 1 year were randomly included in our study by obtaining their consent. In addition, age- and gender-matched healthy subjects with normal routine examinations were included in study. The exclusion criteria of control group were having any of these: depression, hysterectomy, urinary disease and operation, use of drug, chronic pain, chronic diseases (previously described), and other conditions that might be a reason for SD. All patient and control groups were sexually active persons.

Forty-five migraine and 45 TTHA patients and 45 healthy subjects (who met the inclusion criteria) were examined by dividing into 3 groups. The study was approved by the local ethics committee and conducted according to Declaration of Helsinki. All cases were evaluated for detailed physical examination and neurological examination. Parameters such as gender, age, body weight and height, income and educational status as well as smoking and alcohol consumption status were recorded in patient and control groups. Duration of complaints, onset time, weekly and monthly frequency of attacks and comorbidity status of all patients with migraine and TTHA were also recorded. Measurements of body height and weight were taken for the patient and control groups and body mass index

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Received 22 July 2014; revised 21 March 2016; accepted 24 April 2016; published online 22 September 2016

Table 1. Demographic and clinical characteristics of the patient and control groups

	Migraine (n = 41)	TTH (n = 39)	Control (n = 41)	P
Age (years)	35.17 ± 6.40	34.71 ± 8.05	32.43 ± 7.14	0.19
BMI (kg m ⁻²)	28.92 ± 5.19	27.12 ± 5.09	26.412 ± 4.04	0.70
BDS	7.43 ± 4.66	6.53 ± 4.83	7.31 ± 4.07	0.63
Prolactin (ng dl ⁻¹)	10.76 ± 3.60	10.36 ± 4.80	11.60 ± 4.50	0.65
TSH (uIU ml ⁻¹)	2.14 ± 1.30	2.81 ± 5.29	1.75 ± 0.70	0.31
T4 (ng dl ⁻¹)	1.38 ± 0.33	1.48 ± 0.45	1.76 ± 0.79	0.28
Smoking	7 (17.1%)	7 (17.9%)	3 (7.3%)	0.31
FSFI	21.59 ± 6.38	22.31 ± 5.29	31.15 ± 3.60	< 0.001
<i>Education</i>				
Primary school	28 (68.3%)	20 (51.3%)	11 (26.8%)	0.019
Secondary school	7 (17.1%)	13 (33.3%)	11 (26.8%)	
High school–university	6 (14.6%)	6 (15.4%)	19 (46.3%)	

Abbreviations: BDS, Beck depression scale; BMI, body mass index; FSFI, Female Sexual Function Index; T4, plasma-free T4 levels; TSH, thyroid-stimulating hormone; TTH, tension-type headache. Data are expressed as means ± s.d or n (%).

(BMI: weight (kg)/height (m)²) was calculated from these measurements. Migraine patients were divided into two groups of migraine with and without aura.

Blood-free T4 (fT4), thyroid-stimulating hormone (TSH) and prolactin (PRL) levels were measured in the patient and control groups. Blood samples were taken from the patient group during the period without headache.

Presence of unrecognised depression was investigated using the Beck Depression Scale (BDS) in all cases included in the study, and subjects in the patient and control groups who scored ≥ 16 points in the BDS were excluded from the study. Validity and reliability study of BDS in our country was performed by Tegin¹⁴ in 1980 and by Hisli¹⁵ in 1988.

Patient and control groups completed the 19-item questionnaire of 'Female Sexual Function Index (FSFI) for which the validity and reliability study was performed by Oksüz and Malhan.¹⁶ FSFI questionnaire measures the sexual function of a woman within past 4 weeks with each of the question. This form investigates the sexual intercourse in terms of desire, sexual arousal, lubrication, orgasm, sexual success (satisfaction) and pain. Each question has 1–5/6 items and scored from 0 or 1 to 5 and final score of a question is calculated by multiplying with its own coefficient. Total score is 36. A total score of < 26.55 in FSFI indicates the presence of SD.¹⁷

Statistical analysis

Normality distribution of numeric variables was examined using Kolmogorov–Smirnov normality test. Student's t-test and one-sided analysis of variance as well as *post hoc* Tukey's HSD were applied to variables with normal distribution. Kruskal–Wallis and Mann–Whitney U-tests were applied to variables without normal distribution. Chi-Square Test was used for comparison and analysis of qualitative data (Fisher's Exact Chi-Square test was used if a value < 5 is expected in 2 × 2 tables).

Categorical variables were expressed in numbers (n) and percentages (%). Continuous variables were expressed as average and s.d. Statistical significance level was established to be P < 0.05 for all of the tests. 'SPSS (Statistical Package for the Social Sciences) 15.0 for Windows' package program (SPSS Inc, Chicago, IL, USA) was used in the analysis of data.

RESULTS

Average ages of the subjects in the migraine, TTHA and control groups were 35.17 ± 6.40, 34.71 ± 8.05 and 32.43 ± 7.14, respectively, and there were no statistically significant difference between the groups in terms of age (P = 0.19). (Table 1). SD was determined in 75.6% (n = 31) of the migraine group and 79.5% (n = 31) of the TTHA group. This was only 7.3% (n = 3) in the

Table 2. FSFI subgroup scores of the headache and control groups

	Migraine	TTH	Control	P
FSFI	21.59 ± 6.38	22.31 ± 5.25	31.15 ± 3.60	P < 0.001
Desire	3.16 ± 1.06	3.17 ± 1.00	4.72 ± 0.80	P < 0.001
Arousal	3.11 ± 1.20	3.30 ± 1.03	5.01 ± 0.66	P < 0.001
Lubrication	3.63 ± 1.33	3.82 ± 1.02	5.24 ± 0.60	P < 0.001
Orgasm	3.52 ± 1.38	3.61 ± 1.11	4.87 ± 0.67	P < 0.001
Satisfaction	3.63 ± 1.21	3.69 ± 0.99	5.40 ± 0.71	P < 0.001
Pain	4.41 ± 1.34	4.79 ± 1.05	5.74 ± 0.60	P < 0.001

Abbreviations: FSFI, Female Sexual Function Index; TTH, tension-type headache.

Table 3. Relationship between the headache frequency and duration (number of years of painful) with sexual dysfunction

Headache frequency	SD (+), n (%)	SD (–), n (%)	P
Monthly ≤ 3–weekly > 1	5 (83.3)	1 (16.7)	P = 0.07
Once a week	40 (71.4)	16 (28.6)	
Weekly ≥ 2	17 (94.4)	1 (5.6)	
<i>Headache duration</i>			
< 5 years	38 (76)	12 (24)	P = 0.890
> 5 years	24 (80)	6 (20)	

Abbreviation: SD, sexual dysfunction.

control group. When groups were compared for the presence of SD, a statistically significant difference was observed between the groups ($\chi^2 = 29.13$ P < 0.001). FSFI values were statistically significantly lower in the migraine and TTHA groups compared with the control group (P < 0.001), while no significant difference was detected in FSFI scores between the migraine and TTHA groups (P = 0.810). Individual evaluation of FSFI components of desire, sexual arousal, lubrication, orgasm, sexual success and pain revealed that each of the parameters was lower in the migraine and TTHA groups compared with the control group (P < 0.001 for each) (Table 2). However, no statistically significant difference was determined when the migraine and TTHA groups were compared with each other in terms of FSFI components (desire; P = 0.857, sexual arousal; P = 0.323, lubrication; P = 0.679, orgasm; P = 0.983, sexual success; P = 0.911, pain; P = 0.197).

Although there were no statistically significant differences in the groups for relationship between headache, frequency of attacks or number of painful years and FSFI, a percentage increase was observed in the number of cases with SD as the frequency of attacks and number of painful years were increased (P = 0.07, P = 0.89; Table 3).

A statistically significant difference was detected between the groups in terms of educational status and FSFI (P = 0.019), thus a reduction was observed in the number of subjects with SD with the increased level of education.

Comparison of groups for BMI, plasma TSH, T4 and PRL levels revealed no statistically significant difference (P = 0.70, P = 0.31, P = 0.28 and P = 0.65, respectively).

DISCUSSION

The most remarkable result of our study is that we found that the sexual function of female patients with PHAs are impaired in association with pain itself.

Previous studies have reported that several chronic diseases may impair the sexual function.^{18–20} It has been reported that the presence of a chronic disease may lead to SD or increase the existing SD by causing the feelings of desperation, disappointment, reduced self-confidence and low confidence in appearance, anger, fear of rejection, abandonment and death, guilt feelings and depression.^{3,5}

In an Italian study conducted in 2011, sexual function has been studied in female cases with TTHA accompanied by migraine using FSFI and Female Sexual Distress Scale. This study has revealed that FSFI scores were lower in the patient group.¹³ Consistent with this data, our study also revealed that scores of FSFI and FSFI subgroup components were significantly lower compared with healthy subjects, and although not statistically significant, a percentage increase was observed in a number of cases with SD as the frequency of headache attacks and the number of painful years were increased. In the study of Nappi *et al.*,¹³ some of the patients were taking the drugs that may cause SD (such as antidepressants, antiepileptics and beta blockers) as prophylactic therapy, while others had comorbidities, such as depression and anxiety. This stands out as an important limitation that may negatively affect the SD evaluation. Also, distinct from this study, patients using drug and who had depression were excluded from our study. Additionally, average ages of the subjects in the patient group in our study were lower than those in the study of Nappi *et al.*¹³ with a more homogeneous distribution.

Bestepe *et al.*⁹ have used Arizona Sexual Experiences Scale (ASEX) in their study and determined that patients with TTHA and migraine had lower scores and dyspareunia was observed in the TTHA group only. ASEX scale is insufficient in evaluation of subcomponents of sexual function, such as frequency, satisfaction, communication and pain. FSFI scoring system appears to provide more detailed information on sexual function.^{16–17} Study of Ifergane *et al.*⁸ have reported that patients with migraine had more complaints about painful sexual intercourse compared with the control group. In our study, pain scores during the sexual activity were lower both in the migraine and TTHA groups compared with the control group just as all other subparameters of FSFI.

There is no certain data indicating the incidence of SD in migraine and TTHA (that is, which of them more commonly cause SD), and while study of Scuteri *et al.*²¹ on the issue have shown that SD was more commonly seen in patients with migraine, study of Houle *et al.*²² have shown that SD was more commonly seen in female patients with TTHA than in patients with migraine. SD was significantly higher in both of the headache groups compared with healthy subjects; however, there were no significant differences between the migraine and TTHA groups in terms of FSFI and subgroup scores in our study. This may be explained by the use of different SD tests in the mentioned studies and our study, different social and cultural factors and hormonal causes that we could not detect.

There are studies reporting that problems in dopamine–PRL axis cause SD in PHAs, especially in migraine.²³ The study of Guldiken *et al.*²⁴ have found PRL levels at normal limits during interictal period in patients with migraine, while another study have shown that serum PRL levels were significantly decreased during the attacks in patients with migraine.²⁵ In our study, PRL levels of patients with migraine and TTHA during the interictal period were similar to those of patients in the control group, and similarly, there were no significant differences between the groups in terms of TSH and T4 levels. We evaluated the hormone levels in the interictal period, this was a limitation of our study; another limitation of our study was that we could not evaluate the headache during the sexual function, but there is no validated assessment about this.

Thalamus and hypothalamus are the structures that have major roles in the modulation of the sensation of pain conveyed through

trigeminovascular system (trigeminal pathways); besides, the same structures have an important role for sexual activities and hormones.²⁶ The modulation disorders in these parts may be another organic reason that can explain the relationship between HA and SD. Studies have shown changes in the hypothalamus and thalamus in response to stimuli such as pain during the interictal period.²⁷ And all of these variables may have a negative effect on arousal or lubrication domains.

Another notable result of our study is the negative correlation between the education level and SD and there are studies in the literature reporting that low level of education is a risk factor for SD.^{28,29} Consistent with this data, our study also showed that the level of education is an important factor affecting the SD rates.

In conclusion, the result obtained from our study is that in female patients with migraine and TTHA sexual activity disorders develop, and they may be caused by organic reasons such as other hormonal reasons, regulation disorders in the cerebral neurotransmitter pathways or less likely it may be multifactorial such as psychogenic reasons that we were not able to determine. In order to clarify this cause–effect relationship, the long-term prospective studies carried out with a larger number of populations, involving the neuroimaging, and also evaluating other neuropeptides are needed.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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