

Erectile Dysfunction in Migraine in Indian Patients

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Abstract

Background: Migraine is one of the common causes of primary headache worldwide. Migraine headaches significantly affect family and social activities. Migraine also impacts the sexual function of the sufferers. There are no published studies in India so far where they have studied the erectile function in male migraineurs. This study is done to look for erectile dysfunction in male migraineurs. **Materials and Methods:** This case-control study was done to look for presence of erectile dysfunction in male migraineurs and the factors affecting it. Thirty age matched males with migraine and without migraine were studied. The International Headache Society's International Classification of Headache Disorders, 3rd Edition, was used to diagnose migraine with or without aura. Migraine disability assessment scale was used to assess migraine-related disability, Numerical Rating Scale was used to assess the severity of headaches, Migraine-Specific Quality of Life Questionnaire to assess the quality of life, and International Index of Erectile Function score was used to assess the erectile function. **Results:** The mean age of the cases was 38.83 ± 5.7 years and that of the controls was 38.63 ± 5.3 years. The erectile dysfunction was seen in 80% of migraineurs and none in the control group had erectile dysfunction. Those with erectile dysfunction had more severe headache which were severely disabling. **Conclusion:** Erectile dysfunction is common in migraine. There is a significant negative correlation of erectile dysfunction with severe disabling migraine.

Keywords: Erectile dysfunction, migraine, migraine disability, migraine specific quality of life

INTRODUCTION

Migraine is a common primary headache for which treatment is sought. Migraine is believed to affect over 20% of people at some point in their lives, and continues to be underdiagnosed and undertreated.^[1] Individuals place a considerable value on sexual functioning and is an important domain in the quality of life and it is vulnerable to disruption because of pain associated with migraine.^[2] The increased sensitivity to stress factors along with degradation in quality of life affects the social life significantly. The presence of sexual dysfunction in migraine sufferers can cause lack of self-confidence, social withdrawal, and divorces.^[3,4]

Many factors are known to disrupt the normal physiologic mechanisms which are involved in penile erection. Though the etiopathogenesis of erectile dysfunction in migraine is still debatable, there are only few studies done worldwide to look for sexual dysfunction. The aim of the study was to look for the presence of erectile dysfunction in male migraineurs and the objective of the study was to assess the factors affecting the erectile dysfunction.

MATERIALS AND METHODS

The ethics committee approval was obtained on 31/08/2019. This case-control study was done at headache clinic in the Department of Neurology. Thirty age matched male patients with migraine and without migraine were studied. The International Headache Society's International Classification of Headache Disorders, 3rd Edition, was used to diagnose migraine with or without aura.^[5] Married male

aged 21–45 years with migraine and without migraine and in active sexual relationship were included. Males with diabetes, hypertension, with psychiatric comorbidities like anxiety, depression, smokers, alcoholics, or any other medical condition that would result in erectile dysfunction were excluded. Written informed consent was obtained from the study participants. A structured questionnaire was used to collect the data regarding sociodemographic characteristics such as patient's age, educational status, occupation, and marital status. Headache characteristics including duration of migraine, duration of acute attacks of headache, frequency, and severity were assessed. Migraine disability assessment scale (MIDAS) was used to assess migraine-related disability.^[6] The MIDAS is a brief, self-administered questionnaire designed to quantify migraine-related disability over a 3-month period. The Numerical Rating Scale was used to assess the headache severity.^[7] The patients are asked to circle the number between 0 and 10 that fits best

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to their pain intensity and zero represents “no pain at all,” whereas the 10 represents “the worst pain ever possible.” The Migraine-Specific Quality of Life Questionnaire version 2.1 (MSQoL) was used to assess the quality of life.^[8] The Migraine-Specific Quality of Life Questionnaire version 2.1, which is 14 item, measures the impact of migraine across three essential aspects of a patient’s health-related quality of life (HRQL) over the past 4 weeks: Role function-restrictive (RR), role function-preventive (RP), and emotional function (EF). Erectile dysfunction was evaluated using International Index of Erectile Function Scale (IIEF) questionnaire.^[9] The 15-question IIEF Questionnaire is a validated, multidimensional, self-administered investigation that has been found to be useful in the clinical assessment of erectile dysfunction and treatment outcomes in clinical trials. A score of 0–5 is awarded to each of the 15 questions that examine the four main domains of male sexual function: Erectile function, orgasmic function, sexual desire, and intercourse satisfaction. The severity of ED was classified into five categories: No ED (EF score 26–30), mild (EF score 22–25), mild to moderate (EF score 17–21), moderate (EF score 11–16), and severe (EF score 6–10).^[10]

Statistical analysis

The data were analyzed using SPSS software version 18.0.^[11] All the quantitative variables were analyzed using mean and standard deviation and qualitative variables were analyzed using frequency and percentage. Comparison between cases and controls were carried out using independent sample *t*-test. One-way ANOVA was used to compare severity of erectile dysfunction with other parameters. Spearman’s correlation coefficient was used to find the correlation between erectile dysfunction scores and other parameters. The *P* value of <0.05 was considered as statistically significant.

RESULTS

All the participants in the study were married. The mean age of the cases was 38.83 ± 5.7 years and that of controls was 38.63 ± 5.3 years. Body mass index (BMI) of cases was 22.65 ± 2.78 and that of controls was 23.62 ± 1.81 which was statistically not significant. 26 individuals had migraine without aura. The mean duration of headache was 3.63 ± 0.44 [Table 1]. Most of the study participants had a higher frequency of headache 9.86 ± 6.53 and the duration of episodes of headache were 11.13 ± 7.04 h. Migraine-related disability score was 37.46 ± 12.36 , indicating that the impact of headaches was severely disabling. In this study, 16 (53.34%) were on prophylactic medications. The most commonly used drug for the prophylaxis at the time of presentation was flunarazine ($n = 8$), followed by propranolol ($n = 3$), topiramate ($n = 3$), and sodium valproate ($n = 2$). The erectile dysfunction was seen in 80% of migrainers and none in the control group had erectile dysfunction. The education status, socioeconomic status, and occupation did not have an effect on the erectile function. 4 (25%) persons out of 16 who had been on prophylaxis did not have erectile dysfunction

and 2 (14%) persons out of 14 who were not on prophylactic medications did not have erectile dysfunction. The erectile dysfunction was found in those with and without prophylaxis. The mean IIEF Scale score in cases were low when compared to controls [Table 2] which was highly significant statistically. Those with erectile dysfunction had more severe headache as evidenced by higher Numerical Rating Scale and also had a more severe disabling headache as evidenced by higher MIDAS scores [Table 3]. The migraine-specific quality of life was affected more in all the domains in those with erectile dysfunction than those without erectile dysfunction. With increasing severity of migraine and migraine-related disability, the severity of erectile dysfunction was also more [Table 4]. There was a statistically significant negative correlation with severity of erectile dysfunction with headache severity and disabling migraines [Table 5].

DISCUSSION

Sexual health is a state of well-being in relation to sexuality across the life span which involves physical, emotional, mental, social, and spiritual dimensions. It is an intrinsic element of human health which is based on a positive, equitable, and respectful approach to sexuality, relationships, and reproduction, which is free of coercion, fear, discrimination, stigma, shame, and violence.^[12] Erectile dysfunction is inability to achieve or maintain an erection which is sufficient

Table 1: Characteristics of the participants

Migraine Duration (years)	3.63±0.44
Duration of each Headache (h)	11.13±7.04
Frequency/Month	9.86±6.53
Numerical Rating Scale (0-10)	6.6±1.25
MIDAS	34.16±16.43
MSQOL SCORE TOTAL	37.46±12.36
MSQOL RFR	20.26±6.77
MSQOL RFP	10.4±3.86
MSQOL EF	6.76±2.87
International Index of Erectile Function Scale score	
Erectile Function	20.00±5.56
Orgasmic Function	7.63±1.35
Sexual Desire	6.27±1.59
Intercourse Satisfaction	9.77±3.18
Overall Satisfaction	6.43±2.06

Table 2: Comparison of International Index of Erectile Function Scale score in cases and controls

	Cases	Control	<i>P</i>
Erectile Function	20.00±5.56	29.17±1.31	<0.0001*
Orgasmic Function	7.63±1.35	9.53±0.62	<0.0001*
Sexual Desire	6.27±1.59	8.7±0.91	<0.0001*
Intercourse Satisfaction	9.77±3.18	14.43±0.93	<0.0001*
Overall Satisfaction	6.43±2.06	9.2±0.92	<0.0001*

Comparison between cases and controls is carried out using independent sample *t* test. **P* value of <0.05 was considered as statistically significant

Table 3: Comparison of characteristics between migraine patients with or without erectile dysfunction

	Normal Erectile function (n=6 or 20%)	Erectile dysfunction present (n=24 or 80%)	P
Migraine Duration (years)	3.83±4.49	3.63±3.34	0.89
Duration of each Headache (Hrs.)	10.33±7.71	11.33±7.17	0.76
Frequency/Month	7.67±6.14	10.42±6.79	0.374
Numerical Rating Scale (0-10)	5.75±0.94	6.83±1.24	0.039*
MIDAS	17.33±5.85	38.38±15.89	0.004*
MSQOL SCORE TOTAL	23.67±3.61	40.92±11.59	0.001*
MSQOL RFR	12.83±2.13	22.13±6.4	0.002*
MSQOL RFP	7±1.78	11.25±3.87	0.015*
MSQOL EF	3.83±0.75	7.5±2.8	0.004

Comparison is carried out using independent sample *t*-test. **P* value of <0.05 was considered as statistically significant

Table 4: Comparison of severity of erectile dysfunction with migraine severity

	No ED (n=6)	Mild ED (n=8)	Mild to moderate ED (n=6)	Moderate ED (n=9)	Severe ED (n=1)	P
Migraine Duration (years)	3.83±4.49	2.25±1.58	3.67±4.54	4.89±3.62	3.00	0.682
Duration of each Headache (Hrs.)	10.33±7.71	6.38±2.32	14.00±8.57	13.22±7.61	18.00	0.178
Frequency/Month	7.67±6.15	8.50±5.23	8.83±6.14	13.22±8.35	10.00	0.512
Numerical Rating Scale (0-10)	5.83±1.17	5.63±1.3	7.33±0.51	7.44±0.72	8.00	0.002*
MIDAS	17.33±5.85	22.88±8.64	34.33±7.73	53.56±9.73	50.00	<0.0001*

One way ANOVA is used to compare severity of erectile dysfunction with other parameters. **P* value of <0.05 was considered as statistically significant

Table 5: Correlation of erectile dysfunction score with migraine duration, duration of episodes of headache, migraine frequency, and migraine disability assessment scale score

	Migraine Duration (years)	Duration of each headache (Hrs)	Frequency per month	Numerical Rating Scale (0-10)	MIDAS
<i>r</i>	-0.304	-0.192	-0.334	-0.710*	-0.911*
<i>P</i>	0.102	0.31	0.071	<0.0001*	<0.0001*

Spearman's correlation coefficient was used to find the correlation between erectile dysfunction scores and other parameters. **P* value of <0.05 was considered as statistically significant

for satisfactory sexual performance.^[13] For normal penile erection an integration of normal psychological, neurological, and normal vascular processes are required. Multiple factors can disrupt this normal physiologic processes involved in penile erection. Some of the etiological factors are hormonal, neurogenic, arterial pathologies, psychological, medications, and iatrogenic, systemic and chronic diseases. The mechanisms by which migraine causes erectile dysfunction are complex and heterogeneous. Chronic pain disorders differ mechanistically from acute pain, with the most predominant contributing factors stemming from the central nervous system. What once was understood to be a diverse range of disorders, including migraine, irritable bowel syndrome, and interstitial cystitis, are being recognized as different manifestations arising from a common set of central nervous system processes, with neurotransmitters acting as the volume control in the pain processes.^[14] Dopamine is considered to play an important role in the pathogenesis of migraine and certain dopamine-related gene variants are associated with migraines.^[15-17] Steroid hormones regulate the sexual behavior by genomically mediated effects. These effects are realized by enhancing the processing of relevant sensory stimuli and altering the

synthesis, release, and/or receptors for neurotransmitters like dopamine in integrative areas, and increasing the responsiveness of appropriate motor outputs,^[18] with dopamine long being known to enhance sexual motivation and copulatory behavior.^[19] Dopamine is released before and during copulation in many of the integrative sites, and is known to facilitate the masculine sexual function.^[18] The deregulations in dopamine pathways, which plays an important role in the etiopathogenesis of migraine affect the sexual functions negatively.^[18,20,21] An increase in the amount of serotonin (5-HT) in mid-brain also can cause sexual dysfunction by having an antagonist effect on testosterone of male migraine patients.^[22,23] The higher rates of comorbidity between "Primary headache associated with sexual activity" and migraine (25%) is also known^[24] and can have an effect on the sexual health. TS Sathyanarayana Rao, *et al.* found that prevalence of erectile dysfunction was 15.77% in south Indian rural population.^[25] Study done by Aksoy *et al.*^[26] found that the mean IIEF scores was 19.83+/-2.2 in migrainers which was similar to our study. In our study the thought of triggering or increasing the headache during sexual affected the sexual performance negatively.

CONCLUSION

Erectile dysfunction is common in migraine. There is a significant negative correlation of erectile dysfunction with severe disabling migraines.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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