

Hospital based Cross-Sectional Study of Menstrual Migraine in an Urban Slum Population

Sudipta Patnaik¹, Rajat Mohanty²

ABSTRACT

Introduction: Prevalence of migraine is higher in women than men. Incidence of menstrual migraine is more in comparison to premenstrual migraine. Migraine is a complex condition with headache and sensory disturbances. This study was carried out to analyze the incidence of different type of menstrual migraine in varying age group.

Material and methods: In this study 155 women of age group 17 to 31 years taken. They were complaining of at least two times migraine attack per month during menstrual cycle. They were advised to record the day of migraine i.e. on 5th days before menstruation, 2 days before menstruation and 1st day of menstruation to 3 days following bleeding with history of headache, severity, attack duration and disability at work and association with aura or without aura, for 3 months. The statistical analysis was done under SPSS software by using chi-square test.

Results: We found that severe attacks occurred during the premenstrual phase i.e. 5 days before onset of menstruation and it is more severe before 2 days of onset of menstruation. The severity of migraine in age group (17-21) years is higher than other age groups. The incidence of migraine during menstrual period is more in comparison with the premenstrual period. Relative incidence of only migraine during menstrual period is found more i.e. 70.09%, whereas migraine with aura found more in premenstrual period, i.e. 75%.

Conclusion: The incidence of migraine in female increases during adolescent period and peaks during menarche due to delay in decline of oestrogen level. So preventive measures for migraine can be taken by individual awareness, establishment of a stable oestrogen state and use of non-steroidal anti-inflammatory agents.

Keywords: Migraine, Menstrual Migraine, Estrogen, Aura.

INTRODUCTION

Prevalence of migraine is higher in women than men.^{1,2} In clinical practice 50% of women have migraine related to menstruation.³ In girls after onset of menarche the migraine increases steadily throughout the adolescent period which is related to cyclical hormone changes due to fluctuation of estrogen level. Incidence of menstrual migraine is 73% in comparison to premenstrual migraine.^{4,5} Migraine is a complex condition having headache with sensory disturbances like physiological changes in sleep, vision, sensitivity to light, sound, smell, and feeling of sickness, vomiting and hunger also occur. This is due to instability in the way that the brain deals with incoming sensory informations. The symptoms may vary from person to person having different attacks, which effects daily work and social lives. Migraine attack last from 4 to 72 hours. The menstrual cycle is due

to the complex hormonal changes in hypothalamic-pituitary-ovarian axis, resulting in ovulation, which can be suppressed by use of combined oral contraceptives. Withdrawal of estrogen level plays an important role and triggers menstrual migraine attacks. Hence this study was undertaken to assess the incidence of menstrual migraine occurring among women of an urban based slum area, which may worsen the life style of economically backward people.

MATERIAL AND METHODS

This study was carried out in an urban based slum population from January 2018 to November 2018 in a health center, Jobra, Cuttack to analyze the incidence of different type of menstrual migraine in varying age groups. In this study 155 women of age group between 17 to 31 years were enrolled. Consent was taken from all the subjects. This study was carried out with the permission of the authority of health center, from among the women who were attending the OPD. Women with self-reported migraine in different menstrual period were included in the study.

According to the International Classification of Headache Disorders III beta appendix criteria the subjects included had migraine with aura or migraine without aura. Subjects complaining at least two times migraine attacks per month during menstrual period were included in this study.

They were advised to keep a record, the day of migraine with aura or without aura and its relation to menstruation at least for three consecutive months. Severity of migraine depends upon only headache, duration of attack and disability at work and associated with nausea and vomiting. Accordingly the enrolled subjects were grouped as mild, moderate and severe type of migraine. Patient under medication or hormonal treatment were excluded.

Keeping in view the severity of migraine in different age group the analysis was done by calculating the percentage of incidence in five days before the onset of menstruation and the day of menstruation to three days following bleeding.

¹Associate Professor, Department of Physiology, ²Specialist in O & G, S.C.B. Medical College, Cuttack, India

Corresponding author: Dr. Rajat Mohanty, Plot No-55, Satyanagar, Bhubaneswar, Odisha, Pin-751007, India

How to cite this article: Sudipta Patnaik, Rajat Mohanty. Hospital based cross-sectional study of menstrual migraine in an Urban slum population. International Journal of Contemporary Medical Research 2019;6(4):D4-D7.

DOI: <http://dx.doi.org/10.21276/ijcmr.2019.6.4.19>

STATISTICAL ANALYSIS

The statistical analysis was done under SPSS software by using chi-square tests to know the relationships between categorical variables in the study groups. χ^2 , df and P value were derived. $P < 0.0001$ was considered as statistically significant.

RESULTS

From Table-I it is seen that the incidence of migraine is 28.39% in the age group (17to21) years, 34.83% are in age group (22to26) years and 36.78% are in the age group (27to31) years, which is highest in comparison to other age group, suggesting increased incidence in the reproductive age.

Table-II shows that the incidence of migraine attack in premenstrual period is 30.96% in comparison to attack in menstrual period which is more i.e. 69.04%.

In Table-III it is concluded that severity of migraine in the age group of 17 to 21 years is more i.e.54.54% in comparison to other age groups. Moderate migraine is found highest in age group of 22 to 26 years i.e.42.59% and mild migraine is highest in age group of 27 to 31 years i.e.26.32% in comparison to other age groups. There is no significant

difference seen among severity of migraine in different age group as $\chi^2 = 7.006$, $df = 4$ and $P = 0.136$.

From Table-IV we found that the incidence of migraine is higher in menstrual period i.e.70.09% and lower in premenstrual period i.e.25% in contrast to migraine with aura, which is higher in premenstrual period i.e.75% and lower in menstrual period 29.91%. There is significant difference in occurrence of various types of migraine among premenstrual and menstrual period, where $\chi^2 = 27.362$, $df = 1$ and $P < 0.0001$.

DISCUSSION

The above study was help to know the pattern of migraine in premenstrual and menstrual period.¹ severe migraine occurred in premenstrual period and was highest during 5 day before the onset of menstruation, compared with all other times of cycle among younger age group.³

Records of migraine were especially helpful for the precise diagnosis of menstrual migraine which provides challenges in epidemiological studies. Self-recording of migraine were especially useful for clinical assessment and further management. We assumed that participants were equally affected by menstrual migraine due to similar reply pattern, it was self-reported.^{4,5}

It was found that women had more migraine in reproductive age group (27to31years), i.e.36.78% in comparison to other group.⁶

Incidence of migraine in menstrual period was higher i.e.69.04%, in comparison with premenstrual period. It was indicated that out of all study group 2/3rd subjects were having migraine in menstruation period.^{7,8}

Incidence of severity of migraine was found to be highest in the age group of 17 to 21 years i.e.54.54% compared to other age groups and mild type of migraine was more in reproductive age group i.e.26.32%.^{9,10} The statistical analysis was done and found $\chi^2 = 7.006$, $df = 4$ and $P = 0.136$. There was no significant difference seen in the severity of migraine among varying age group. The severity of migraine was more in younger age group due to delay decline and longer exposure to high level of estrogen or prostaglandin release,

Age Group in Years	No. of Women	Percentage (%)
17 to 21	44	28.39
22 to 26	54	34.83
27 to 31	57	36.78
Total	155	100

Table-1: Distribution of subjects according to age group.

Time of Cycle.	No of Women	Percentage (%)
Premenstrual Period. (<5days of mens.)	48	30.96
Menstrual period. (<2days and >3days of mens.)	107	69.04
Total	155	100

Table-2: Incidence of migraine in different times of menstrual period.

Severity of Migraine	(17to21) Age in years N (%)	(22to26) Age in years N (%)	(27to31) Age in years N (%)	Total
Mild	8(18.18)	12(22.23)	15(26.32)	35
Moderate	12(27.28)	23(42.59)	25(43.86)	60
Severe	24(54.54)	19(35.18)	17(29.82)	60
Total	44	54	57	155

Table-3: distribution of subjects according to severity of migraine in different age group.

Type of Migraine	Premenstrual phases (<5 days of mens.)	Menstrual period (<2days and >3 days of mens.)	Total
	No. of Women. N (%)	No. of Women. N (%)	
Migraine	12(25)	75(70.09)	87
Migraine with Aura	36(75)	32(29.91)	68
Total	48	107	155

Table-4: Relative incidence of migraine in premenstrual and menstrual period.

which might trigger migraine attack.¹¹

Relative incidence of only migraine during menstrual period was found more i.e.70.09%, whereas migraine with aura was found more in premenstrual period i.e.75%.¹²⁻¹⁴ From the above study it was observed that there were 48 numbers of women in premenstrual period and 107 were in menstrual period. Considering the type of migraine 87 were having only migraine whereas 68 were having migraine with aura. There was significant difference of occurrence in types of migraine among premenstrual and menstrual periods. Statistical analysis was done and found that $\chi^2 = 27.362$, $df = 1$ and $P < 0.0001$, which was highly significant.

Different types of menstrual migraine with aura and without aura were seen in different studies that was related to variable presence of high level of oestrogen in plasma.¹⁵ Rapid fall in oestrogen level at menses was the trigger of menstrual migraine. Aura in menstrual migraine might be due to activation of trigeminal nerve, cerebral vasodilatation, inflammation with cortical depression.¹⁶

Awareness and understanding the risk factors of menstrual migraine were considered an important element in accepting healthy behavior.^{17,18} Thus patients with migraine were required to be educated to enable them to correct their nutrition styles and maintain healthy eating habits which would prevent inappropriate consumption of pills and reduce drug side effects, frequency, severity, and duration of migraine attacks.^{19,20} Prophylactic use of non-steroidal anti-inflammatory agents were helpful for prevention of onset of migraine.²¹

CONCLUSION

This study confirms that the severity of migraine in age group (17-21) years is higher than other age groups. The incidence of migraine during menstrual period is more in comparison with the premenstrual period.

The aim of this cross sectional study is to provide prevalence data on different type of menstrual migraine from the urban based slum area as migraine is more common in low socioeconomic populations and to explore the full spectrum of menstrual migraine and its boundaries.

It is necessary to put more emphasis on the significance of regular exercise, populations and to, cessation of addiction and sleep to prevent migraine attacks and reduce the complications of drug consumption in migraine patients, thus improving the social and economic efficiency of the patients.

Further epidemiological studies in different areas can be done to know the incidence and severity of migraine related to age groups and socioeconomic status among larger populations. Preventive measures for migraine can be taken by individual awareness, establishing a stable estrogen state and use of non-steroidal anti-inflammatory agents.

REFERENCES

1. Headache Classification Subcommittee of the International Headache Society. Classification of Headache Disorders, 2nd ed. Cephalalgia. 2004;24:1-

- 150.
2. Zwart J-A, Dyb G, Holmen TL, Stovner LJ, Sand T. The prevalence of migraine and tension-type headaches among adolescents in Norway. The Nord-Trøndelag Health Study (Head-HUNT-Youth), a large population-based epidemiological study. Cephalalgia 2004; 24:373-379.
3. E.A. MacGregor, A. Frith, J. Ellis, L. Aspinall and A. Hackshaw. Incidence of migraine relative to menstrual cycle phases of rising and falling estrogen. Journal of the American Academy of Neurology 2006;67;2154-2158.
4. Christine L. Lay, Ann Marie Mascellino. Menstrual Migraine: Diagnosis and Treatment. Current Pain and Headache Reports, 2001, 5:195-199.
5. W. E. Waters', P. J. O'Connor. Epidemiology of headache and migraine in women. J. Neurol. Neurosurg. Psychiat., 1971, 34, 148-153.
6. Vincent T. Martin. Menstrual Migraine: A Review of Prophylactic Therapies. Current Pain and Headache Reports, 2004, 8:229-237.
7. Kjersti GrottaVetvik, E. Anne MacGregor, Christofer Lundqvist, Michael Bjorn Russell. Self-reported menstrual migraine in the general population. J. Headache Pain 2010;11:87-92.
8. Simona Sacco, Silvia Ricci, Diana Degan, Antonio Carolei. Migraine in women: the role of hormones and their impact on vascular diseases. J. Headache Pain, 2012; 13:177-189.
9. Johannes CB, Linet MS, Stewart WF, Celentano DD, Lipton RB, Szklo M. Relationship of headache to phase of the menstrual cycle among young women: a daily diary study. Neurology, 1995;45:1076-82.
10. Wöber-Bingöl C. Epidemiology of migraine and headache in children and adolescents. Curr Pain Headache Rep 2013, 17: 341
11. Menstrual migraine: a review of hormonal causes, prophylaxis and treatment. Avi Ashkenazi, & Stephen Silberstein, Journal Expert Opinion on Pharmacotherapy, 2007;8:1605-1613.
12. W.F. Stewart, R.B. Lipton, E. Chee, J. Sawyer, S.D. Silberstein, Menstrual cycle and headache in a population sample of migraineurs. American Academy of Neurology, 2000; 55:12-19.
13. Sillanpaa M, Piekkala P. Prevalence of migraine and other headaches in early puberty. Scand J Prim Health Care 1984, 2: 27-32.
14. Boubacar S, Seck LB, Assadeck H, Diallo IM, Cisse O, Ntenga P, Adji DB, Diagne NS, Maiga DD, Adehossi EO2, Maiga Y, Touré K, Ndiaye M, Diop AG and Ndiaye MM: Boubacar et al. Migraine in Women: What Specificities? A Review. J. Women's Health Care. 2017, 6:1.
15. The International Classification of Headache Disorders, 3rd edition. Cephalalgia, 2018;38:1-211.
16. K. Ibrahim, W. van Oosterhout, W. Dorp, A.H.J. Danser, I.M.Garrelts, S.A. Kushner, E.M.E.H. Lesaffre, G.M. Terwindt, M.D. Ferrari, A.H.V.denMeiracker & A. M. Van Den Brink. Reduced trigeminovascular cyclicity in patients with menstrually related migraine. Neurology 2015;84:2, 125-131.

17. Karem H. Alzoubi, Nizar Mhaidat, Sayer Al azzam, Yousef Khader, Saad Salem, HaninIssaifan, Rania Haddadin. Prevalence of migraine and tension-type headache among adults in Jordan. *J Headache Pain* 2009; 10:265–270.
18. Han Le, Peer, Tfelt-Hansen, Axel Skytthe, Kirsten Ohm Kyvik, and Jes Olesen. Association between migraine, lifestyle and socioeconomic factors: a population-based cross-sectional study. *J Headache Pain* 2011;2:157-172.
19. Patricia Sulak, Sherilyn Willis, Thomas Kuehl, Andrea Coffee, Jeffrey Clark. Headaches and Oral Contraceptives: Impact of Eliminating the Standard 7-Day Placebo Interval. *Headache, Journal compilation American Headache Society*, 2007;47:27-37.
20. Sex hormones and headache; Silberstein, Merriam GR. *Journal of pain symptoms management*; 1993;8:98-114.
21. Lisa K. Mannix, Anne H. Menstrual migraine. *Calhoun. Current treatment option in neurology*, 2004;6:489–498.

Source of Support: Nil; **Conflict of Interest:** None

Submitted: 13-02-2019; **Accepted:** 08-04-2019; **Published:** 20-04-2019