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Prevalence of Primary Headache Disorders in Pregnant Women (A Hospital Based Study from Kashmir -North-West India).

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ABSTRACT

Background: Objective: A hospital based observational study of Primary headache disorders among pregnant women attending tertiary care hospitals in Srinagar. **Methods:** The study sample comprised of pregnant women who reported to ante-natal clinics or medical outpatients department of associated hospitals of Govt. medical College, Srinagar, with the chief complaint of headache. A pretested questionnaire was presented to the participants and the diagnosis of various primary headache disorders was established by adopting the ICHD-2 criteria. **Results:** Among 2000 women screened, 34.25% of cases complained of headaches during pregnancy. Primary headache disorders (migraine, tension-type headache) was observed in 70.51% patients. **Conclusion:** Among primary headache disorders, migraine and tension type headache were observed in (59.48%) and (39.65%) cases respectively.

Keywords: Primary headache disorders, pregnancy, migraine, tension type headache.

INTRODUCTION

Headaches occur in over 80% of women during their childbearing years.[1,2] The hormonal changes accompanying pregnancy and the post-partum period believed to influence headache profile in women of reproductive age.[3] Over 90% of headaches are either migraine or tension-type in nature,[4,5] Migraine may worsen during periods of estrogen decline such as menstruation and puerperium, but improve during high estrogen states like pregnancy.[6] Migraine tends to improve during pregnancy.[2,4,7,8] Tension-type headache occurs more commonly than migraine headaches.[10] The trigeminal neurovascular system and unstable serotonergic neuro-transmission play an important role in the pathogenesis of this disorder. Tension-type and cluster headaches are not influenced by pregnancy.[7,11]

MATERIALS AND METHODS

The present prospective, cross- sectional observational study was conducted in the tertiary care hospitals of government medical college, Srinagar (North-west India). The study was conducted from April 2013 to March 2014.The study sample comprised of pregnant women attending the medical out- patient department, medical emergency, and ante-natal clinics. 2000 pregnant women were screened for the presence of primary headache disorders. 464 pregnant women with primary headache disorders were included in the study. A pretested questionnaire structured on the basis of International Classification of Headache disorders 2nd edition, ICHD-2, 2004 12 was presented to the participants in local vernacular. Age of onset of headache, trimester of presentation and gravidity of the subjects was recorded. Characteristics of the headache like duration of each attack, intensity, number of attacks per month, laterality, sites, quality (whether pulsating or pressing), association with nausea/vomiting, aggravating and relieving factors were also recorded. Intensity of headache was assessed by using Visual Analogue Scale® and stress as an aggravating factor by DASS 2113.Family history of primary headache disorders and presence of co-morbid illness, if any, too was elicited .Co-morbid psychiatric disorder was assessed by using DSM-4 criteria. The patients were subjected to detailed neurological examination and investigated where ever deemed necessary to rule

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out any secondary cause of headache. Secondary/pathological headaches were excluded from the study. The diagnosis of various primary headache disorders was established adopting the ICHD-2 criteria. Proper informed consent was obtained from the patients. The study protocol was approved by the institutional review and ethical Committee. For data analysis, Chi-square test and Fishers exact test were used, with a P value of <0.05 being considered to be statistically significant.

RESULTS

658 (34.25%) cases complained of headache during current pregnancy. 194 (9.7%) of women with secondary headaches were excluded from the study. Primary headache disorders was observed in 464 (23.2%) women.

Most common primary headache disorder (PHD) among the study subjects was Migraine seen in 276 cases (59.48%) followed by Tension type headache (TTH) in 184 women (39.65%). 4 cases (0.86%) of other PHD were also seen. These included primary stabbing headache (1), primary cold stimulus headache (2) and primary cough headache (1). No case of trigeminal autonomic cephalalgias was seen.

Most of these women (320) had onset of headache between 25-34 years of age i.e. 68.96% corresponding to the peak reproductive years. Mean age of onset was 28.86 years. It was 29.17 years in migrainuers and 28.6 years for patients with TTH.

285 cases were of previous history (61.42%) i.e. the onset of headache was before the current gestation. 178 (38.36%) were of new onset i.e. headache was experienced for the first time during the current gestation. One case of a new type of headache-tension type, was observed in a subject with a previous history of migraine. 226 of the women with migraine had a previous history (81.88%) where as Tension type headache was new onset in 125 cases (67.93%).

293 of the subjects presented in the first trimester of pregnancy i.e. 63.14%, followed by 104 (22.41%) in the second trimester and least i.e. 67 (14.43%) in the third trimester. 324 of the women with PHD were multigravidas (69.82%).

Among the various sub-types, the most commonly observed was probable migraine without aura i.e. in 150 cases (32.32%) followed by probable infrequent episodic TTH in 103 cases (22.19%). No cases of cluster headache, chronic migraine or chronic TTH were noted among the study population. [Table 1]

Table 1: PHD with subtypes

		Total (464)		NO (178)		PH (285)		NT (1)	
		n	%	n	%	n	%	n	%
1	Migraine without aura (MO)	93	20.04%	0	0	93	32.63%	0	0
2	Migraine with aura (MA)	33	7.11%	22	12.35%	11	3.85%	0	0
3	Probable without aura (PMO)	150	32.32%	30	16.85%	120	42.1%	0	0
4	Frequent episodic TTH (FE)	10	2.15%	3	1.68%	7	2.45%	0	0
5	Infrequent episodic TTH (IE)	22	4.74%	8	4.49%	14	4.91%	0	0
6	Probable infrequent episodic TTH (PIE)	103	22.19%	72	40.44%	30	10.52%	1	100%
7	Probable frequent episodic TTH (PFE)	49	10.56%	40	22.47%	9	3.15%	0	0
8	Primary stabbing (PS)	1	0.21%	1	0.56%	0	0	0	0
9	Primarycough (PC)	1	0.21%	1	0.56%	0	0	0	0
10	Primary cold stimulus (PCS)	2	0.43%	1	0.56%	1	0.35%	0	0

NO= new onset, PH= previous history, NT= new type.

Clinical characteristics of Migraine and Tension type headache

In patients with migraine, duration of attacks was between 4-12 hours in 190 cases (68.84%) and 129 of the patients experienced 1-4 attacks per month (46.73%). Headache was mostly unilateral 210, (76.08%) with a pulsating quality (234,84.78%). 133 women (48.18%) reported the headache as moderate and in 87 (31.52%), it was severe. Most common associated symptom was nausea 215, (77.89%). Most common site was frontal 182, (65.94%) and neck pain was present in 94 cases (34.05%). Most frequent aggravating factor was emotional stress 150, (54.34%) followed by physical activity 143,(51.81%), bright lights 125,(45.28%) and not eating 96,(34.78%). 58 women with a previous history of migraine (25.89%) reported menstruation as a trigger. Most common relieving factor was sleep in in 83 cases (30.07%) followed by vomiting 82,(29.71%), medication 76,(27.53%) and isolating themselves 45,(16.3%).Aura was reported in 33 cases (11.95%) of which 22 (63.6%) were new onset. Aura was mostly visual 20,(60.6%), unilateral 28,(84.8%), usually less than 1 hour in duration (32,96.9%) and accompanied with headache in 20 cases (60.6%). 38 (13.76%) migraineurs (mostly migraine without aura) complained of cranial autonomic symptoms predominantly unilateral (38,100%), ocular symtoms (26,68.42%) like conjuctival injection, lacrimation. These women reported the headache as severe in intensity. [Table 4,6-8]

In patients with TTH, duration of attacks was between 2-12 hours in110 cases (59.78%) with 92 (50%) reporting 1-4 attacks per month. Headache was bilateral in 175 cases (95.1%), diffuse in 92 (50%) and described as a non-pulsating tightening type in 147 (79.89%). It was mild in 110 (59.78%) cases. It was associated with neck pain in 106

(57.6%) women. Peri-cranial tenderness was present in 7 (3.8%) cases of which 6 were frequent episodic TTH and one was probable frequent episodic TTH. Most common aggravating factor was psychological stress in 128 (69.56%) women followed by lack of sleep in 92 (50%). It was relieved mostly by medication in 94 cases (51.08%) followed by sleep (74, 40.21%) and rest (68,36.95%). [Table 2-4].

Table 2: Clinical characteristics of Migraine and TTH

		Migraine (276)		TTH (184)		P-value
		N	%	N	%	
No. of attacks per month	<1	120	43.47%	73	39.67%	0.719 (NS)
	1-4	129	46.73%	92	50%	
	>4	27	9.78%	19	10.32%	
Laterality	Unilateral	210	76.08%	9	4.89%	<0.001 (Sig.)
	Bilateral	66	23.91%	175	95.1%	
Pulsating quality		234	84.78%	35	19.02%	<0.001 (Sig.)
Pressing/tightening type		14	5.07%	147	79.89%	<0.001 (Sig.)
Intensity	Mild	56	20.28%	110	59.78%	<0.001 (Sig.)
	Moderate	133	48.18%	44	23.91%	
	Severe	87	31.52%	30	16.3%	
Nausea		215	77.89%	15	8.15%	<0.001 (Sig.)
Vomiting		82	29.71%	8	4.34%	<0.001 (Sig.)
Sites	Frontal	182	65.94%	84	45.65%	<0.001 (Sig.)
	Temporal	134	48.55%	61	33.15%	0.001 (Sig.)
	Neck	94	34.05%	106	57.6%	<0.001 (Sig.)
	Occipital	31	11.23%	15	8.15%	0.327 (NS)
	Orbital	26	9.42%	0	0	<0.001 (Sig.)
	Vertex	5	1.81%	6	3.26%	0.325 (NS)
	Diffuse	3	1.08%	92	50%	<0.001 (Sig.)

Table 3: Aggravating factors

	Migraine (276)		TTH (184)		P-value
	N	%	N	%	
Physical activity	143	51.81%	23	12.5%	<0.001 (Sig.)
Psychological Stress	150	54.34%	128	69.56%	=0.001 (Sig.)
Fasting/missed meal	96	34.78%	14	7.6%	<0.001 (Sig.)
Lack of sleep	41	14.85%	92	50%	<0.001 (Sig.)
Light	125	45.28%	6	3.26%	<0.001 (Sig.)
Sound	44	15.94%	4	2.17%	<0.001 (Sig.)
Smell	2	0.72%	0	0	0.519 (NS)
Specific foods/drinks	8	2.89%	9	4.89%	0.261 (NS)
Menses(in case of PH)	58	25.66%	0	0	<0.001 (Sig.)
OCPs(in case of PH)	4	1.76%	0	0	0.154 (NS)
Weather	32	11.59%	12	6.52%	0.066 (NS)
Travel	12	4.34%	2	1.08%	0.084 (NS)

Table 4: Relieving factors

	Migraine (276)		TTH (184)		P-value
	N	%	N	%	
Sleep	83	30.07%	74	40.21%	0.0245 (Sig.)
Medication	76	27.53%	94	51.08%	<0.001 (Sig.)
Rest	10	3.62%	68	36.95%	<0.001 (Sig.)
Vomiting	82	29.71%	8	4.34%	<0.001 (Sig.)
Eating	18	6.52%	5	2.71%	0.067 (NS)
Scalp massage	42	15.21%	18	9.78%	0.090 (NS)
Pressing head	36	13.04%	15	8.15%	0.102 (NS)
Isolating themselves	45	16.3%	10	5.43%	<0.001 (Sig.)
Applying cold stimulus	5	1.81%	2	1.08%	0.816 (NS.)

Table 5. In case of PH,Status in current gestation

	Total (285)		M (226)		TTH (58)		O (1)	
	N	%	N	%	N	%	N	%
Improvement	145	50.8%	125	55.3%	20	34.48%	0	0
Worsening	29	10.17%	25	11.06%	4	6.89%	0	0
No change	111	38.94%	74	32.74%	36	62.06%	1	100%
P-value=0.003 (Significant)								

145 cases (50.8%) of the headaches with onset before current pregnancy showed improvement during the current pregnancy, 111 (38.94%) reported no change and 29 (10.17%) worsened. Migraines in women with previous history improved in 125 (55.8%) cases, remained unchanged in 74 (33.03%) and worsened in 25 (11.16%). All cases of migraine without aura, reporting association with menstrual cycles, i.e. 58 women, showed improvement. All cases of migraine with aura, i.e. 11 women, worsened. Patients with TTH before pregnancy experienced no change in 36 (62.06%) cases, improvement in 20 (34.48%) and worsening in 4 (6.89%). [Table 5].

Family history was noted in 59 cases (12.71%) most of which were women with migraines (74.57%). 44 (15.94%) amongst migraineurs and 15 (8.15%) of women with TTH had given a positive family history. Family history was elicited in the mother in 37 (62.71%) cases.

Co-morbidities were found in 82 (17.67%) women of which maximum burden was of psychiatric illnesses (55,11.85%) followed by hypothyroidism in 10 cases (2.15%) . Psychiatric illness was found in 33 cases (19.02%) of TTH and 20 (7.24%) of migraines. Most common psychiatric illness observed was depression (43,9.26%). [Table 6].

Table 6. Co-morbidities

	Total (464)		M (276)		TTH (184)	
	N	%	N	%	N	%
Co-morbidity	82	17.67 %	39	14.13 %	43	23.36 %
Psychiatric illness	55	11.85 %	20	7.24%	35	19.02 %
Hypertension (primary)	6	1.29%	4	1.44%	2	1.08%
Diabetes mellitus	2	0.43%	2	0.72%	0	0
Hypothyroidism	10	2.15%	8	2.89%	2	1.08%
Acid peptic disease	9	1.93%	5	1.81%	4	2.17%
P-value=0.011 (Significant)						

DISCUSSION

In our study, most of the headaches observed in pregnancy were benign / primary. In the study conducted by Maggioni F et al in 1997, 29.3% (126) were found to be primary headache sufferers (IHS criteria, 1988) as compared to 23.2% in our study.[2]

The most common Primary Headache Disorder seen in pregnant women attending tertiary care hospitals in srinagar was Migraine followed by Tension type headache. In the study by Maggioni F et al, 81 (64.2%) of the primary headache sufferers had migraine without aura (MO), 12 (9.5%) migraine with aura (MA), and 33 (26.19%) tension-type headache (TTH) as compared to 59.4%,7.1% and 39.6% respectively in our study.[2] Headaches occur in over 80% of women during their childbearing years, thus they often present during pregnancy.[1,2] The hormonal changes accompanying the menstrual cycle, pregnancy and the post-partum period are thought to be responsible for many headaches in women of reproductive age.[3] Estradiol receptors are located in close proximity to 50 to 80% of catecholamine receptor sites in the brain,suggesting estrogen may affect the function of pain pathways.[14-16] Migraine headaches are associated with menarche, menstruation, oral contraceptive use, pregnancy, menopause, and post-menopausal hormone therapy, all of which are partially mediated by fluctuations in estrogen levels. PHD in pregnancy can also be attributed to the psychological stress, sleep disturbances etc associated with pregnancy.

Most of the women had onset between 25 to 34 years of age. This was comparable with the study conducted by Melhado EM et al in which 62.31% women presented in the age group of 20-34 years.[17]

Most of the PHD were of pre-gestational onset. Migraines were mostly of previous history and Tension type headaches, mostly new onset. These results were similar to the study conducted by Melhado EM et al, in which 93.4% women had history of headache prior to the current pregnancy, only 3.2% women first experienced headache during this pregnancy and 3.6% were new types.[17]

PHD mostly had onset in first trimester of pregnancy and were least common in third trimester. PHD in first trimester were mostly of previous history and in third trimester were mostly new onset. It is known that high estrogen levels, without fluctuations, affect migraine prevalence in the majority of the women, even in those with no history of pure menstrual migraine or menstrually related migraine.[8] The corpus luteum maintains the secretion of estrogen and progesterone up to the 10th-12th gestational week. Later, it is the placenta that assumes these secretions that continue to increase throughout pregnancy, although they tend to stabilize between the second and third trimesters of pregnancy.[8,18] Hence, lower frequency of migraines in second and third trimesters can be attributed to high stable estrogenic state achieved later in pregnancy.

PHD were more common in multi-gravidas. In the study conducted by Melhado EM et al, 58.49% women were multi-gravidas, comparable with our study.[17] Waldmiro Antônio Diégues Serva et al in his study showed multiparity had a statistical significant association with a higher prevalence of migraine attacks during the three trimesters of pregnancy.[19]

Among migraines, probable migraine without aura was most common and among TTHs, probable infrequent episodic was most commonly seen.

Clinical profile of migraine and TTH in pregnancy was mostly similar to that in non-pregnant population. The difference observed was in the intensity, duration and frequency of attacks that tends to decrease in pregnancy.

Migraines without aura usually improved in pregnancy with a decline in frequency and intensity towards the third trimester, especially menstrual migraines, where as TTHs remain unchanged. Migraines with aura did not improve in pregnancy. Several studies have shown that pregnant women show an improvement in their headache in 55 to 90% cases.[17] In the study conducted by Maggioni F et al, a higher than 50% showed decrease in the number of attacks as compared to 50.8% in our study.2 In the study conducted by Marcus DA, there was 30% improvement in headache between the second and third trimesters for the entire sample as compared to 45% in our study.[3] Rasmussen in his classical population study found that migraine improved in 48% of pregnant women and 4% worsened, where as in tension type headaches 67% women showed no change, 28% improved and 5% got worse during pregnancy.[7]

Fluctuations in oestrogen levels are known to influence migraines with high oestrogen levels improving and falling levels deteriorating the symptoms3 this being particularly apparent during the menstrual cycle with headache most likely to occur 2 days before or after the onset of menses.20 Hormonal influences may not be the only reason for symptom improvement in pregnancy and analgesic effects of increased β-endorphins, and emotional changes may account for some cases of improvement. 4–8% of women experience deterioration in their symptoms, migraine with aura less likely to improve for reasons that remain largely unexplained though platelet hyperaggregation is suggested.[21]

Most common co-morbidity observed in patients with PHD was psychiatric illness especially depression. It was more commonly seen in patients with TTH. Cross-sectional associations and bidirectional associations between migraine and a variety of psychiatric and somatic conditions have been reported in the literature. Patel et al,[24] assessed the prevalence of major depression in migraine headache sufferers and found 23.9% prevalence of major depression. Serrano Duenas M. et al,[25] found that prevalence of depression on chronic tension type headache was 37.3% and that in migraine was 32.3% respectively.

Migraines may have a genetic predisposition as family history was noted in a few patients. About 70% of migraineurs have a positive family history so genetic factors probably play a role in its onset.[22] Females have a strong family history more commonly than males, except in those with onset in childhood. The mother is the more frequently affected parent, but involvement of the father may be associated more closely with early onset.[23]

CONCLUSION

Most of the headaches in pregnancy are benign / primary.The most common Primary Headache Disorder seen in pregnant women attending tertiary care hospitals in srinagar is Migraine followed by Tension type headache. Primary headaches, usually pregestational in onset, present mostly in first trimester and are more common in multi-gravidas. Migraines without aura, especially menstrual migraines, improve in pregnancy.

REFERENCES

1. Waters WE, O'Connor PJ, Epidemiology of headache and migraine in women. J NeurolNeurosurg Psychiatry 1971;34:148
2. Maggioni F, Alessi C, Maggino T, Zanchin G. Headache during pregnancy. Cephalalgia 1998;17:765
3. Scharff L, Marcus DA, Turk DC. Headache during pregnancy and in the postpartum: a prospective study. Headache 1997;37:203
4. Hainline B. Headache. Neurolclin 1994;12:443
5. Bille B. A 40 year follow-up of school children with migraine. Cephalalgia 1997;17:488
6. Marcus DA. Interrelationships of neurochemicals, estrogen, and recurring headache. Pain 1995;62:129
7. Rasmussen BK. Migraine and tension type headache in a general population :precipitating factors, female hormones, sleep pattern and relation to lifestyle. Pain 1993;53:65
8. Sances G, Granella F, Nappi RE, et al. course of migraine during pregnancy and post partum: a prospective study. Cephalalgia 2003;23:197
9. Silberstein SD. Headache in pregnancy. Neurolclin 2004;22:727
10. Paulson GW. Headaches in women,including women who are pregnant. Am J ObstetGynecol 1995;173:1734
11. Manzoni GC, Micieli G, Granella F, et al. Cluster headache in women: clinical findings and relationship with reproductive life. Cephalalgia1988;8:37
12. The International Classification of headache disorders International Headache Society. 2nd edition, Published in Cephalgia 2004; 24 (Suppl 1): 1-160.
13. Lovibond S.H. & Lovibond P.f. Manual for the Depression anxiety Stress Scales. (2nd Ed) Sydney, Australia: Psychology Foundation, University of New South Whales.
14. Brandes JL. The influence of estrogen on migraine: a systematic review. JAMA 2006;295:1824
15. Martin VT, Behbehani M. Ovarian hormones and migraine headache: understanding mechanisms and pathogenesis — part 1. Headache 2006;46:3
16. Martin VT, Behbehani M. Ovarian hormones and migraine headache: understanding mechanisms and pathogenesis—part 2. Headache 2006;46:365
17. Melhado EM, Maciel JA Jr, Guerreiro CA. Headache during gestation: evaluation of 1101 women. Can J Neurolsci 2007;34:187
18. Tulchinsky D, Hobel CJ, Yeager E, Marshall JR. Plasma estrone, estradiol, estriol, progesterone and 17-hydroxyprogesterone in human pregnancy. I. Normal pregnancy. Am J Obstet Gynecol 1972;112:1095-1100
19. Waldmiro Antônio Diégues ServaI; Vilneide Maria Santos Braga Diégues ServaII; Maria de Fátima Costa CaminhaIII; Course of migraine during pregnancy among migraine sufferers before pregnancy Arq. Neuro-Psiquiatr. vol.69 no.4 São Paulo Aug. 2011
20. S. D. Silberstein, "Headache and female hormones: what you need to know," Current Opinion in Neurology, vol. 14, no. 3, pp. 323–333, 2001.
21. F. Granella, G. Sances, C. Zanferrari, A. Costa, E. Martignoni, and G. C. Manzoni, "Migraine without aura and reproductive life events: a clinical epidemiological study in 1300 women," Headache, vol. 33, no. 7, pp. 385–389, 1993.

22. Archana Dixit, Manish Bhardwaj, and Bhavna Sharma, Review Article:Headache in Pregnancy: A Nuisance or a New Sense? Obstetrics and Gynecology International,Volume 2012 (2012), Article ID 697697Z
23. T.J. Steiner M.B., Guha, Rudy Capildeo M.B, F. Clifford Rose, Migraine in Patients Attending a Migraine Clinic: An Analysis by Computer of Age, Sex and Family History Headache: The Journal of Head and Face Pain,Volume 20, Issue 4 ,July 1980.
24. Patel N.V., Bigal M.E., Kolodner K.B., et al: Prevalence and impact of migraine and probable migraine in a health plan. Neurology 63. (8):2004;
25. Serrano-Duenas M. Chronic tension-type headache and depression. Rev Neurol. 2000;30:822–6
26. M. Aubé, "Migraine in pregnancy," Neurology, vol. 53, no. 4, supplement 1, pp. S26–S28, 1999.

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