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Original Article

A comparision of haemoglobin levels in women with and without premenstrual syndrome during premenstrual, menstrual and postmenstrual stages.

Nazmeen Silotry[a], Haritha kumari Nimmagadda[b]*, Reenu Kumari[c]

Associate professor [a] ,Lecturer [b] ,Post graduate [c] , Department of Anatomy, Mahatma Gandhi Mission's Medical College, Sector-18, Kamothe, Navi Mumbai-410209, Maharashtra, India.*

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ABSTRACT

About 80% of women experience premenstrual symptoms. Premenstrual syndrome (PMS) is a combination of physical, emotional, psychological and mood disturbances that occur after woman ovulates and ends with the onset of her menstrual flow. As no specific causes of PMS has still been proven, various theories have been postulated and hence specific treatment for PMS is still not available. The current aim of our study is to assess the hemoglobin levels in subjects suffering from PMS and correlate with the probable cause of PMS. About 50 female students of MBBS were included in the study . Depending upon the presence of group of symptoms such as physical, emotional and psychological changes, the students were divided into Premenstual syndrome (PMS) group and non-PMS group. Blood samples for hemoglobin assessment were collected during Prementrual, Menstrual and Post menstrual stages for a period of 2 consecutive months and comparison between the two groups were done statistically. As compared to non-PMS group, the hemoglobin levels in the PMS group were found to be significantly low along with presence of other physical, emotional and psychological symptoms. From this study, it can be concluded that fall in the hemoglobin levels in PMS subjects can be regarded as one of the reason for causing various symptoms of PMS.

1. Introduction

Many women feel physical or mood changes during the days before menstruation. When these changes affect women's normal life, then the condition is known as Premenstrual syndrome. PMS is a combination of physical and emotional disturbances that occur after a woman ovulates and ends with menstruation. These symptoms typically include depression, irritability, crying, oversensitivity and mood swings [16]. For some women PMS symptoms can be controlled with medications and life stylechanges such as exercise , nutrition and family support systems etc.

About 80% of women experience some or the other premenstrual symptoms. The incidence of the true PMS has often been over estimated by including all women who experience any physical or emotional symptoms prior to menstruation [4].

It is estimated that clinically significant PMS which is moderate to severe in intensity and effect woman's functioning occurs in 20% to 30% of women. About to 2% to 6% of women are believed to have severe variant known as Premenstrual Disphoric Disorder (PMDD) [4]. Most evidence suggests that PMS results from the alteration in or interactions between the levels of sex hormones and neurotransmitters.

The most helpful diagnostic tool is the menstrual diary, which documents physical and emotional symptoms over months. The hallmark of the diagnosis of PMS is that symptom free interval after the menstrual flow and prior to the next ovulation. The symptoms and discomfort levels vary from woman to woman [4].

The underlying pathological mechanisms of PMS remains unknown; however the altered function or even slight disorder of blood circulation system which includes the hemoglobin levels can cause various changes in the internal environment and cause various physical changes leading to few symptoms which are faced during the PMS.

* Corresponding Author : Mrs. Haritha Kumari
Lecturer in Anatomy,
MGM Medical College,
Kamothe, Navi Mumbai-410209,
Maharashtra, India.
Mobile: 91-8097199630
E.mail: haritha_anat@yahoo.com

Hence, the present study, therefore, investigates to what extent the levels of hemoglobin changes during the PMS and comparision is done between the women with and without PMS.

2. Material and Methods

2.1.Subjects: A total of 50 eumenorrheic young students with the age of 17-25 years volunteered to participate in this research. The study protocol was approved in advance by the ethical review board of Mahatma Gandhi Mission's University of Health Sciences. All subjects received an explanation of nature and purpose of study and all gave their written informed consent to participate in the study.

Prior to obtain any data, the subjects completed a standardized health questionnaire regarding medical history, medications, current health conditions and menstrual cycle. All subjects self-reported regular menstrual cycles for atleast last three cycles. None of them were diagnosed clinically with Diabetes mellitus, Hypertension, Cardiovascular diseases or any other systemic disorders. The subjects were not taking any medications, including oral contraceptives.

2.2.Classification Into Groups

A blind study was conducted asking for the presence of symptoms of PMS to all of the subjects. Three types of symptoms were made such as emotional, psychological and physical. Each group consists around six or more symptoms, such as emotional group of symptoms consists of irritability or tension, anger or short temper, anxiety or nervousness, depression or sadness, crying or tearfulness, relationship problems. Psychological symptoms consists tiredness or lack of energy, insomnia, changes in the sexual interest, food cravings or over eating, difficulty in concentrating, feeling overwhelmed. Physical symptoms include headaches, breast tenderness or swelling, back pain, abdominal pain, muscle and joint pain, weight gain, nausea etc.

Students who consists atleast three symptoms from each group were selected and categorized into PMS candidates. Those who don't possess at least three from each group were separated into Non-pms Candidates. The PMS group of students were analyzed separately for having repeated attacks of PMS symptoms and rechecked for having any pathologies which mimic PMS. The menstrual cycle of each student is noted in dates. A chart of menstrual diary for a period of two months was given to each student of PMS and non-PMS groups.

3.Results

The number of students involved is 50. Out of them, a blind study is conducted asking for the following symptoms. (Table-1)

On the basis of presence of at least three symptoms in each of the above group, the students were divided into PMS and non-PMS groups and each student of both the groups were given menstrual diary for a period of 2 months. The menstrual dairy given to the subjects is according to Lori M.Dickerson et al (7) is as follows: (Table-2)

Table-1: List of Symptoms categorized in each group.

Emotional symptoms	Psychological symptoms	Physical symptoms
Irritability/Tension	Tiredness/lack of energy	Headaches
Anger/short temper	Insomnia	Breast tenderness/swelling
Anxiety/nervousness	Changes in sexual interest	Back painAbdominal pain
Depression/sadness	Food cravings/over eating	Muscle and joint pain
Crying/tearfulness	Difficulty in concentrating	Weight gainNausea
Relationship problems	Feeling overwhelmed	

The length of the menstrual cycle and the duration of the menstrual flow of all the subjects during this study were 28±3days. The days of collecting samples were 25±2 days in the late luteal phase, 2±1day from the first day of menstruation and 3±2days after completion of menstruation respectively for assessing premenstrual, menstrual and postmenstrual hemoglobin levels in individuals of both groups. According to the diary, the symptoms of PMS were insignificant in non-PMS individuals and in the PMS group there was a marked rise of symptoms from the follicular to the late luteal phase.The results of Hemoglobin levels are shown in the following table.

PMS GROUP: Table-3
NON-PMS GROUP: Table - 4

4.Disscussion

According to the result of menstrual diary which was given to the students, it has been found the symptoms in PMS group varied mostly in mild to moderate category during premenstrual stage as compared to other stages of menstrual cycle. In comparision with PMS and non-PMS groups it was found that no significant symptoms were experienced in non-PMS group.

Hemoglobin percentage in PMS stage of menstrual cycle has found to be significantly low i.e., p=0.03 in the first month and p=0.04 in the second month of study. No significant change in the hemoglobin level has been found in the premenstrual stage of non-PMS group where p=0.97 in both the months of study.

Estimation of hemoglobin percentage in the following study has emerged as a important inclusion criteria for diagnosis of PMS.

Table-2: Menstrual Diary

Name: **Month:**

Write the date in the first row, starting with today, Circle the days of you menstrual period.
Eachday, rate the severity of you symptoms: 1 = no symptoms: 2 = mild symptoms: 3 = moderate symptoms: 4 = severe symptoms.

Date of Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Irritability/Tension																															
Anger/short temper																															
Anxiety/nervousness																															
Depression/sadness																															
Crying/tearfulness																															
Relationship problems																															
Tiredness or lack of energy																															
Insomnia																															
Change in sexual interest																															
Food cravings or overeating																															
Difficulty concentrating																															
Feeling overwhelmed																															
Headaches																															
Breast tenderness or swelling																															
Back pain																															
Abdominal pain																															
Muscle and join pain																															
Weight gain																															
Nausea																															
Other (please specify)																															
Other (please specify)																															

Table-3: Results of Hemoglobin levels of PMS group

Number of the subject	First month hemoglobin levels in gm%			Second month hemoglobin levels in gm%		
	Premenstrual	Menstrual Period	Postmenstrual Period	Premenstrual	Menstrual Period	Postmenstrual Period
1.	12.1	13.4	13.4	12.2	13.5	13.5
2.	11.6	11.6	12.1	11.5	12.1	12.1
3.	9.7	10.2	10.5	9.8	10.5	10.7
4.	11.4	11.7	11.9	11.2	11.7	11.9
5.	11.2	12.2	12.4	11.5	12.2	12.2
6.	11.1	12.5	11.1	11.5	12	12
7.	11.7	12.5	12.5	11.1	11.8	11.8
8.	12.1	13.1	13.1	12.5	13.2	13.4
9.	12.4	12.6	12.6	12	12.4	12.4
10.	11.2	11.6	11.2	11.2	11.5	11.4
11.	12.1	13.2	13.2	12.6	13.2	13.2
12.	12.2	12.4	12.3	12.4	12.6	12.6
13.	13.3	13.8	13.8	13.2	13.8	13.8
14.	11.8	12.4	12.5	11.3	11.9	12.2
15.	12.1	13.2	13.2	12.5	13.1	13.5
16.	13	13.2	13.4	13.1	13.4	13.5
17.	12.1	12.4	12.2	12.1	12.6	12.6
18.	12.1	12.5	12.7	12.5	12.7	12.5
19.	11.2	11.5	11.9	11.2	11.5	11.7
20.	13.1	13.8	13.9	13.5	13.8	13.9
21.	12.6	12.5	12.5	12.7	12.5	12.5
22.	13.1	13.5	13.7	13.2	13.5	13.7
23.	12.7	13.2	13.5	13.1	13.7	13.7
24.	11.1	11.5	11.7	11	11.7	11.7
25.	12.7	12.2	12.5	12.1	12.7	12.7

Table-4 : Results of Hemoglobin levels of non-PMS group

Number of the subject	First month hemoglobin levels in gm%			Second month hemoglobin levels in gm%		
	Premenstrual	Menstrual Period	Postmenstrual Period	Premenstrual	Menstrual Period	Postmenstrual Period
1.	13.2	13.2	13.4	13.2	13.2	13.2
2.	11.2	11.0	11.0	11.0	11.0	11.0
3.	12.4	12.4	12.4	12.4	12.4	12.4
4.	8.2	8.2	8.3	8.3	8.2	8.3
5.	9.6	9.4	9.2	9.2	9.6	9.6
6.	9.7	9.6	9.6	9.6	9.6	9.6
7.	10.2	10.2	10.2	10.2	10.2	10.4
8.	13.4	13.4	13.2	13.4	13.2	13.4
9.	10.8	10.6	10.6	10.8	10.6	10.6
10.	11.4	11.2	11.4	11.2	11.2	11.4
11.	12.6	12.6	12.6	12.6	12.6	12.6
12.	9.4	9.81	9.8	9.31	9.8	9.8
13.	11.8	1.81	11.8	1.21	11.6	11.8
14.	13.6	3.61	13.8	3.6	13.6	13.6
15.	12.2	2.41	12.4	12.4	12.4	12.4
16.	14.2	4.31	14.3	14.3	14.3	14.5
17.	13.2	3.21	13.4	13.2	13.2	13.2
18.	11.2	1.01	11.0	11.2	11.2	11.4
19.	12.4	2.4	12.4	12.2	12.4	12.5
20.	8.2	8.2	8.4	8.2	8.4	8.4
21.	9.3	9.2	9.4	9.2	9.2	9.4
22.	9.6	9.6	9.6	9.4	9.4	9.6
23.	10.2	10.2	10.2	10.2	10.2	10.2
24.	13.2	13.2	13.4	13.2	13.2	13.2
25.	10.8	10.6	10.8	10.6	10.6	10.6

5.Conclusion

In the present study it has been found that Hemoglobin level are significantly low in premenstrual stage of cycle in PMS and non significant in non-PMS group.

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5. References

[1] Asano K Noninvasive monitoring of hemoglobin using near infrared images. Optronics. 1999; 12:159–162.

[2] Dickerson Lm, Mazyck PJ, Punter MH Premenstrual syndrome. Am Fam Physician.2003;67:1743–1752.

[3] Futterman LA, Rapkin AJ Diagnosis of premenstrual disorders. J Reprod Med. 2006;51:349–358.

[4] Halbreich U. The etiology, biology, and evolving pathology of premenstrual syndromes. Psychoneuroendocrinology.2006;28:55–99.

[5] Kanashima H, Yamane T, Takubo T, Kamitani T, Hino MT. Evaluation of non-invasive hemoglobin monitoring for hematological disorders. J Clin Lab Anal.2006;19:1–5.

[6] Kinoshita Y, Yamane T, Takubo T, Kanashima H, Kamitani T, Tatsumi N, Hino MT Measurement of hemoglobin concentrations using the Astrim non-invasive blood Vessel monitoring apparatus. Acta Haematol.2006;108:109–110.

[7] Lori M Dickerson, Pamela J, Mazyk, Melissa H Hunter T . Premenstrual Syndrome, Am Fam Physician.2006;15;67(8): 1743-1758.

[8] Matsumoto T,Tamada T, Honjo H Premenstrual syndrome, Editor. Text Book of Women's Psychosomatic Medicine. Tokyo, Nagai Publisher.2006; 188–201.

[9] Matsumoto T, Tatsumi N Efficacy and applicability of Astrim, a portable non-invasive device evaluating hemoglobin and peripheral circulation. Health Evaluation and Promotion. 2006;33:1–7.

[10] Matsumoto T, Ushiroyama T, Morimura M, Moritani T, Hayashi T, Suzuki T, Tatsumi N Autonomic nervous system activity in the late luteal phase of eumenorrheic women with premenstrual symptomatology. J Psychosom Obstet Gynaecol.2006; 27:131–139.

[11] Moos RH The Development of a menstrual distress questionnaire. Psychosom Med. 2008;30:853–867.

[12] Ozawa T, Saitou T, Numada S, Nishiyasu T, Kondo N Measurement of venous oxygen pressure by non-invasive blood vessel monitor "Astrim.". Biological and Medical Engineering.1968;40:178.

[13] Ross C, Coleman G, Stojanovska C Factor structure of the modified Moos Menstrual Distress Questionnaire: assessment of prospectively reported follicular, menstrual and premenstrual symptomatology. J Psychosom Obstet Gynaecol. 1968; 24:163–174.

[14] Saigo K, Imoto S, Hashimoto M, Mito H, Moriya J, Chinzei T, et al Non-invasive monitoring of hemoglobin. The effects of WBC counts on measurement. Am J Clin Patho 2004;121:51–55.

[15] Tamaki Matsumoto, Takahisa Ushiroyama, Noriyuki Tatsumi Lower peripheral circulation in eumenorrheic young women with premenstrual symptoms. Biopsychosoc Med.2004; 1: 8.

[16] Tatsumi N, Matsumoto T, Yokota M Anemia screening using a compact Hemoglobin meter. Health Evaluation and Promotion. 2004;32:24–28.

[17] Ushiroyama T Premenstrual syndrome. Hormone Frontier in Gynecology. 2004;11:149–159.