

Study of thyroid dysfunction in women with menstrual disorders - A prospective study

Sudha Rani Gandhi¹, Pallavi Vishwekar^{2*}, Raj Shekhar Yadav³, Nusrat Chauhan⁴

^{1,2}Associate Professor, ³Professor, ⁴Resident, Department of Gynaecology, Dr. D.Y. Patil Hospital, Nerul, Navi Mumbai, Maharashtra-400706, INDIA.

Email: sudharani_gandi@yahoo.com

Abstract

Background: Menstrual disorder is a common problem among women in the reproductive age. These menstrual irregularities can be of polymenorrhoea, menorrhagia, oligomenorrhoea, amenorrhoea etc. Thyroid dysfunction is associated with menstrual disorders in females of all age groups. **Aims and objectives:** 1. To evaluate and detect the thyroid dysfunction in patients presenting with menstrual disorders between 18 to 45 years Study the prevalence of thyroid dysfunction in menstrual disorders. 2. To correlate between menstrual bleeding pattern and T3, T4, and TSH hormones. **Materials and methods:** A hospital based prospective observational study was carried out in the department of obstetrics and gynaecology of D.Y Patil Medical College, Nerul over a period of two years from August 2014 to November 2016. Hundred women of reproductive age group between 18-45 years presenting to OPD with menstrual disorders were recruited in this study. **Results:** In this study 44% out of 100 cases had thyroid dysfunction. Among which 20% had subclinical hypothyroidism and 11% had hypothyroidism. Hyperthyroidism was seen in 5 % of the cases and subclinical hyperthyroidism seen in 8%. Menorrhagia was the commonest menstrual disorder seen in hypothyroid patients followed by polymenorrhoea. Oligomenorrhoea followed by amenorrhoea were commonly seen in hyperthyroid patients. **Conclusion:** Thyroid dysfunction is an important causative factor of menstrual abnormalities. Therefore every woman with menstrual disorders should be evaluated for thyroid function test. If these thyroid disorders are diagnosed and treated in time, menstrual disorders settle and unnecessary interventions like hormonal and surgical treatment can be avoided.

Key Word: Menstrual disorders, Thyroid dysfunction, Hypothyroidism, Hyperthyroidism

*Address for Correspondence:

Dr. Pallavi Vishwekar, Associate Professor, Department of OBGY, Dr. D.Y. Patil Hospital, Nerul, Navi Mumbai, Maharashtra-400706, INDIA.

Email: sudharani_gandi@yahoo.com

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INTRODUCTION

Menstrual disorders are a common problem among women in the reproductive age. Abnormal Uterine Bleeding (AUB) is a term used to describe any type of bleeding that does not fall within the normal range for amount, frequency and duration. It occurs in 9 – 14% of women from menarche to menopause, accompanied by pain and discomfort causing significant social

embarrassment and also effects quality of life, leads to loss of productivity, imposes financial burden¹ and also surgical interventions like hysterectomy². In India the reported prevalence of AUB is around 17.9%³. Thyroid disorders are more common in women than in men and cause abnormal sexual development, menstrual irregularity, infertility and premature menopause.⁴ Menstrual abnormality precedes the onset of clinically overt hypothyroidism or hyperthyroidism.⁵ International Federation of Gynaecology and Obstetrics in 2011 formally accepted a new classification system for causes of AUB in reproductive years. The system is based on acronym PALM-COEIN. PALM (structural causes)- Polyps, Adenomyosis, Leiomyoma, Malignancy and hyperplasia. COEIN (nonstructural causes) - Coagulopathy, Ovulatory disorders, Endometrial causes, Iatrogenic, not classified.⁶ This will allow standardization and uniformity as well as rectify the problem of inconsistency in AUB management. In India thyroid disorders are the most common endocrine diseases onset

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of which increases with age as 26% of premenopausal women and menopausal women are diagnosed with thyroid diseases⁷. Thyroid hormone plays an important role in normal reproductive physiology through direct effects on the ovaries and indirectly by interfering with sex hormone binding globulin. Alterations in production and activity of the thyroid hormones thyroxine (T4) and tri-iodothyronine (T3) may result in menstrual abnormality that is both hyperthyroidism and hypothyroidism may result in menstrual disturbances. TRH induced hyperprolactinemia alter the GnRH pulsatile secretion leading to defective or delay in LH response leading to luteal phase defect and anovulation in women with hypothyroidism. Menorrhagia in these women is due to anovulation and alteration of coagulation factors like decrease in clotting factors⁸. The menstrual changes associated with hyperthyroidism are unpredictable ranging from normal cycles to oligomenorrhoea, amenorrhoea which can be due to increase in SHBG, increase in peripheral conversion of androgen to estrogen and effect on synthesis of haemostatic factors. Timely detection of thyroid disorders in patients presenting with menstrual disorder and their management can prevent surgical interventions like curettage, hysteroscopy, hysterectomy etc.⁹

AIMS AND OBJECTIVE

1. To evaluate and detect thyroid dysfunction in patients presenting with menstrual disorders (18 to 45 years)
2. To study the prevalence of thyroid dysfunction in menstrual disorders
3. To correlate between menstrual bleeding pattern and T3, T4 and TSH hormones.

MATERIALS AND METHODS

This prospective study was conducted in department of Obstetrics and Gynecology of D Y Patil Medical College and Hospital; Nerul over a period of 2 years from August 2014 to November 2016, after taking permission from hospital ethics committee. 100 women of reproductive

age group between 18 to 45 years presenting in OPD with menstrual disorders were included as subjects in proposed study. Patients with previous known thyroid disorder, abortion within 3 months, childbirth within 1 year, IUCD /OC pill users, patients with known liver disorders or coagulopathy, cases of cancer of genital organs, cases of autoimmune disorders, patients not willing to give consent, patient with palpable pelvic pathology were excluded from study. History was taken thoroughly in the form of age and parity status. Detailed menstrual history was obtained with respect to bleeding pattern. Amount of bleeding was judged upon number of pads soaked and clots passed and any complaint regarding thyroid dysfunction was recorded. Clinical examination including general examination, systemic examination, routine gynecological examination and examination of thyroid gland was done. Patients with clinical signs and symptoms of thyroid disease were excluded. All the recruited patients were subjected to routine investigations like hemoglobin, ESR, LFT, RBS, complete urine examination, bleeding time, clotting time, chest x-ray, ultrasound abdomen and pelvis, pap smear to rule out exclusion criteria and endometrial biopsy was done when indicated. Then all patients were subjected to estimation of serum T3, T4, TSH which was direct quantitative determination by ELISA using human serum-based calibration. Reference values taken were (TSH level = 0.39–6.16 IU/ml, free T3 level = 1.4–4.2 pg/ml, and free T4 level = 0.8–2.0 ng/ml); when T3 and T4 are within normal range and TSH was high they were labelled as subclinical hypothyroidism. Overt hypothyroidism was diagnosed with low T3 and T4 levels and high TSH, subclinical hyperthyroidism if T3 and T4 levels were in normal range and TSH was low, and overt hyperthyroidism when T3 and T4 levels were high and TSH was low. Patients were thus categorized into five groups as follows: Euthyroid, Subclinical hypothyroidism, Hypothyroidism, Hyperthyroidism, Subclinical Hyperthyroidism.

OBSERVATIONS AND RESULTS

Age distribution, parity distribution, distribution according to bleeding pattern and association with thyroid dysfunction was studied in all 100 study patients.

Table 1: Age

Age in years	No of patients	Percentage
<20	4	4%
20 -30	37	37%
31 – 40	49	49%
>40	10	10%
	100	100%

Age wise distribution of menstrual disorder patients in our study showed that maximum number of them were in age group 31 –40 years (49%), followed by age group 20 –30 years (37%).

Table 2: Parity

Parity	No of patients	Percentage
Unmarried	17	17%
Nullipara	12	12%
1	15	15%
2	19	19%
3	17	17%
>4	20	20%

Parity 56% patients had parity 2 and more than 2 and 12% were nullipara and 17 were unmarried.

Table 3: Distribution according to menstrual disorders

Bleeding pattern	No of cases	Percentage %
Menorrhagia	49	49%
Metrorrhagia	16	16%
Polymenorrhoea	09	09%
Oligomenorrhoea	20	20%
Amenorrhoea	06	06%

Bleeding pattern – Maximum patients were seen with complaints of menorrhagia (49%) followed by oligomenorrhoea (20%) and minimum were seen with amenorrhoea(6%).

Table 4: Distribution according to thyroid function

Thyroid function	No of cases	Percentage
Euthyroid	56	56%
Hypothyroid	11	11%
Subclinical Hypothyroid	20	20%
Hyperthyroid	5	5%
Subclinical Hyperthyroid	8	8%

In the study group 56 % (n = 56) patients were euthyroid and rest 44 % (n = 44) were associated with some or other forms of thyroid dysfunction. Hypothyroidism was the commonest abnormality seen in 31% of cases of which 20% belonged to the category of subclinical hypothyroidism

Table 5: Correlation of thyroid dysfunction with menstrual disorders

Menstrual disorders	No of cases	Euthyroid	Subclinical Hypothyroid	Hypo-thyroid	Subclinical Hyperthyroid	Hyper-thyroid
Menorrhagia	49	29(59.2%)	13 (26.5%)	7 (14.3%)	0	0
Metrorrhagia	16	14(87.5%)	2(12.5%)	0	0	0
Oligomenorrhoea	20	8(40.0%)	2(10.0%)	1(5.0%)	5(25.0%)	4(20.0%)
Polymenorrhoea	9	4(44.4%)	3 (33.3%)	2 (22.2%)	0	0
Amenorrhoea	6	1(16.7%)	0	1(16.7%)	3(50.0%)	1(16.7%)
Total	100	56	20	11	8	5

Menorrhagia was the most common presenting complaint (49%). Out of these 59.18% were euthyroid, and most common thyroid disorder was subclinical hypothyroid in 26.53% and 14.28% were overt hypothyroid. Among cases of oligomenorrhoea and amenorrhoea, Hyperthyroidism was more common i.e. 45% and 66.66% respectively

Table 6: Correlation of thyroid dysfunction with menstrual disorders

Bleeding pattern	No of cases	%	Thyroid Function	No.of cases	%	PEARSON CORRELATION
Menorrhagia*	49	49%	Euthyroid*	56	56%	
Metrorrhagia*	16	16%	Hypothyroid*	11	11%	
Polymenorrhoea*	09	09%	Subclinical Hypothyroid*	20	20%	0.91*
Oligomenorrhoea*	20	20%	Hyperthyroid *	5	5%	
Amenorrhoea*	06	06%	Subclinical Hyperthyroid*	8	8%	

* Pearson correlation =0.91

* Pearson correlation shows high degree positive correlation between thyroid dysfunction and menstrual disorders.

DISCUSSION

Thyroid dysfunction is more commonly seen in women with menstrual irregularities ranging from menorrhagia to oligomenorrhoea when compared to general population. All phases in women's life from menarche, puberty, and reproduction to menopause are influenced by the thyroid status. In our study most of the patients with menstrual disorders were in the age group of 31 to 40 years (49%) followed by 10% in the age group of more than 40 years. N Bhavani *et al* observed that in their study 37% were in the age group of 31 to 40 years.¹⁰ Sangeeta Pahwa *et al* reported that majority of the patients in their study were in the age group of 31 to 40 years (42%).¹¹ In the present study most of the menstrual disorders are seen in multiparous women (56%), followed by nulliparous women (12%) and primipara (5%). N Bhavani *et al* study observed that majority of DUB patients were seen in multipara (41.5%) followed by primipara (12%) and nullipara (19%).¹⁰ Pahwa *et al* reported that menstrual abnormalities were seen more in multiparous (80%) than other parity, 12% in primipara and 7% in nullipara.¹¹ In this study the most common bleeding pattern among the patients with menstrual disorders was menorrhagia (49%). This observation was similar to the study done by Ajmani *et al* (50%)¹² Pahwa *et al* (50%)¹¹ and Padmaleela *et al* (50%)¹³ where menorrhagia was the most common complaint in 50% of their patients. The other menstrual disorder common in the present study was oligomenorrhoea (20%), which was similar to the observation by Ajmani *et al* study (20%).¹² In our study, we observed that 44% of patients with menstrual disorders were diagnosed with thyroid dysfunction of which 11% had hypothyroidism, 20% had subclinical hypothyroidism, 5% had overt hyperthyroidism and 8% had subclinical hyperthyroidism. Euthyroid was seen in 56%. The study done by Ajmani *et al* reported 20% as subclinical hypothyroidism, 14% as overt hypothyroidism, 2% subclinical hyperthyroidism and 8% overt hyperthyroidism and 56% as euthyroid.¹² Sangeeta *et al* reported in their study that 22% of cases were hypothyroid 2% hyperthyroid and 76% were euthyroid.¹¹ The prevalence of hypothyroidism in our study was similar to Kaur *et al* study¹⁴ which reported 14%. The prevalence of hyperthyroidism was 5% among the menstrual disorder patients studied which was similar to the study by Gowri *et al* that reported as 4.7%.⁸ In our study the most common type of menstrual abnormality in hypothyroidism was menorrhagia seen in (64.5%) followed by polymenorrhoea in (16.1%) which is similar to the observation by Ajmani *et al* study which reported 58% for menorrhagia followed by 23.5% for polymenorrhoea.¹² Pahwa *et al* study reported that their 72% of the hypothyroid patients had menorrhagia

followed by Polymenorrhoea in 18%.¹¹ 64.3% cases of hypothyroid cases had menorrhagia followed by oligomenorrhoea in 21.4% cases in Kaur *et al* study.¹⁴ The most common type of menstrual abnormality seen in hyperthyroid patients (including both overt and subclinical hyperthyroidism) in our study was oligomenorrhoea in 69.2% followed by amenorrhoea in 30.7%. This was similar to the study by Ajmani *et al* which reported oligomenorrhoea as the most common menstrual disorder in hyperthyroid cases (80%) followed by amenorrhoea in 20%.¹² Pahwa *et al* study observed that menorrhagia was the complaint in both their patients of hyperthyroidism.¹¹

CONCLUSION

Thyroid dysfunction is one of the important causative factors of menstrual disorders. Prevalence of hypothyroidism is more than hyperthyroidism in menstrual disorders. The most common menstrual abnormalities seen are menorrhagia followed by polymenorrhoea in hypothyroid patients where as oligomenorrhoea and amenorrhoea are mostly seen in hyperthyroid patients. Since thyroid dysfunction is an important cause of menstrual disorders, estimation of thyroid status should be done in all women with menstrual disorders. In patients with menstrual disorders if thyroid dysfunctions are timely diagnosed and treated, the menstrual disorder will settle and unnecessary interventions like hormonal treatment and surgeries like Dilatation and Curettage, Hysteroscopy, Hysterectomy can be avoided.

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