



Obstetrics & Gynaecology

A PROSPECTIVE STUDY: TO EVALUATE THE PREVALENCE OF THYROID DYSFUNCTION IN REPRODUCTIVE AGE WOMEN WITH ABNORMAL UTERINE BLEEDING IN BUNDELKHAND REGION

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ABSTRACT **Background:** Abnormal uterine bleeding is one of the commonest clinical presentation in gynecological OPD, affecting primarily women in reproductive age group. **Aims And Objectives:** To determine the correlation between thyroid dysfunction and menstrual abnormalities, and to establish its association with pattern of bleeding in women of age group 18-45 years of age. To evaluate prevalence of thyroid dysfunction in women with abnormal uterine bleeding. To analyse possible predictors helping in early detection in subclinical stage. **Materials And Methods:** This was a prospective analytical study, conducted in department of Obstetrics and Gynecology, Maharani Laxmi Bai Medical College Jhansi, U.P. from June 2020 to July 2021 over a period of 15 months. A total of 150 patients were enrolled in study after fulfilling inclusion and exclusion criteria. Approval from Institutional ethical committee was granted. Thyroid profile of patients done on hormone analyser at Central Pathology Lab of MLBMC Jhansi. **Results:** In this study the prevalence of thyroid abnormalities was 30.67% in the study group, among which 15.33% had hypothyroidism, 8.0% had hyperthyroidism and 7.33% had subclinical hypothyroidism. An association of heavy menstrual bleeding (HMB) of 59.33% was found in women with hypothyroidism, while 78% of women with subclinical hypothyroidism suffer with menorrhagia. **Conclusion:** There is significant association between thyroid dysfunction and abnormal uterine bleeding. The study also correlates prevalence of hypothyroidism among women with heavy menstrual bleeding, and hyperthyroidism is more correlated in women having oligomenorrhea. The study suggested that thyroid function testing could be offered in women with early onset of abnormal uterine bleeding to detect thyroid dysfunction in subclinical stage. Detection of thyroid dysfunction early in subclinical stage itself and specific pharmacotherapy will provide superior alternative over surgical interventions.

KEYWORDS : Abnormal uterine bleeding, Thyroid dysfunction, hypothyroidism, hyperthyroidism, Heavy menstrual bleeding, Oligomenorrhea

INTRODUCTION

Thyroid disorders are amongst the most prevalent disorders globally second only to diabetes¹. Thyroid hormones play an important role in development, growth, metabolism and functions of major organ systems in human body². The mechanism of thyroid dysfunction affecting menstrual cycle and bleeding patterns may be explained by altering thyroid stimulating hormone (TSH) response, increase in levels of prolactin, inhibiting Luteinizing hormone (LH), affecting lipid profile thus effect on peripheral conversion of androgens to estrogen and also altering levels of Sex Hormone Binding Globulin (SHBG).³ Elevated TRH thyrotropin releasing hormone from hypothalamus leads to increase in prolactin release from pituitary, which then inhibits LH surge, resulting in anovulatory cycles causing breakthrough bleeding manifesting as heavy menstrual bleeding⁴.

Abnormal uterine bleeding poses a major burden, approximately 15-20% on gynecology OPD⁵. It has an adverse impact on day to day activities henceforth affecting quality of life. The definition of Abnormal uterine bleeding by FIGO (The International Federation of Gynaecology and Obstetrics) states any bleeding originating from uterine corpus that is not normal, regarding its regularity, amount, frequency or cyclicity with pregnancy excluded⁶. The causes of AUB as defined by FIGO in an acronym PALM-COEIN, in which PALM (Structural causes): Polyps, Adenomyosis, Leiomyomas, Malignant causes. COEIN (Non-structural causes) refers to Coagulopathies, Ovulatory dysfunction, Endometrial, Iatrogenic causes and not classified⁷. Thyroid dysfunction is one of the leading causes among ovulatory disorders. About 10-15% of women are affected by thyroid abnormalities during their reproductive life⁸.

Either excess hormonal activity or under production of thyroid hormone can present with a variety of menstrual abnormalities. In our study, based on thyroid function tests, four groups can be found: Euthyroid, Hypothyroidism, Subclinical hypothyroidism and hyperthyroidism. Subclinical hypothyroidism has received attention in recent time due to increase in its prevalence. Other than menstrual irregularities, thyroid dysfunction associated with subfertility and infertility, pregnancy wastages, premenstrual syndrome and systemic manifestations like hyperlipidemia, neuromuscular and neuropsychiatric symptoms and risk of cardiovascular disease⁹.

AIMS AND OBJECTIVES

- To determine the correlation between menstrual abnormalities and thyroid dysfunction
- To determine the prevalence of thyroid dysfunction in women with abnormal uterine bleeding who are in reproductive age group
- To analyse predictors which help in early detection of thyroid dysfunction and diagnose the disease in subclinical stage

MATERIALS AND METHODS

Study Design- Prospective Analytical study

Setting And Duration Of Study- Study was conducted in the Department of Obstetrics and Gynaecology, MLB Medical College Jhansi UP from June 2020 to August 2021.

Sample Size And Patient Selection Criteria:

A total no. of 150 patients enrolled in study after fulfilling all inclusion and exclusion criteria. Approval has been granted from Institutional Ethical Committee prior to initiation of the study. Informed written consent was taken from all patients.

Inclusion Criteria:

Age group 18-45 years with irregular menstruation, devoid of any pelvic pathology, not on thyroxine therapy and women with or without symptoms of thyroid disorders, not an IUCD intra uterine contraceptive device user.

Exclusion Criteria :

Women in age group other than 18-45 years of age, presence of palpable pelvic pathology, women on thyroxine therapy for hypothyroidism or with known thyroid disorder, women on anti-thyroid agents, steroids, aspirin or other anticoagulants and lithium, women with IUCD as contraceptive or those who are on hormone therapy, known case of malignancy of pelvic or genital tract origin, women refusing to give consent for study.

Procedure Of Data Collection:

Detailed history was taken regarding age, menstrual history, onset and duration of complaints, amount of blood flow, parity and any other specific complaints followed by thorough clinical examination including general and systemic examination, gynecological, pelvic and

thyroid examination. Basic routine investigations like CBC, RBS, urine routine, coagulation profile, BT and CT, pap smear and ultrasonography of abdomen and pelvis were performed. Venous blood sample of 5ml in plain vial in fasting state was drawn from all enrolled women in the study and sent for testing. Thyroid profile was done by Hormone Analyser at Central Pathology Lab in Department of Pathology MLB Medical College Jhansi. Patients with TSH <0.5 mIU/L considered as hyperthyroid and TSH >5 mIU/L considered as hypothyroid.

HORMONE REFERENCE RANGE: TSH 0.5-5.0 mIU/L
 FREE T3 1.7-4.2 mIU/L
 FREE T4 0.30-5.5 mIU/L

Data Analysis :

To keep record of the data of the study and to generate graphs, tables and flowcharts etc. Microsoft word and Excel have been used. For statistical analysis we use software SPSS 26.0, MedCalc 9.0.1 and R environment ver.2.11. p value < 0.05 will be considered statistically significant. All data will be expressed as means ± standard error.

OBSERVATIONS

As shown in table no.1 ,among the total no. of patients (n=150) under the study, majority fall in the age group of 25-31 years(40.0%) followed by 33.33% in 32-39 years, 14.66% in 18-24 years and 12.0% in more than 40 years of age.

Majority of patients were multipara in which P2L2 contribute 40.0%, followed by 24.66% by P1L1 whereas 10.67% patients were nulliparous.

Table No. 1 : Distribution Of Cases According To Age And Parity

Age group (in years)	No. Of cases (n = 150)	Percentage
18-24	22	14.66%
25-31	60	40.0%
32-39	50	33.33
>40	18	12.0
Parity	No. Of cases	Percentage
Nulliparous	16	10.67
Para1 living1	37	24.66
Para2 living2	60	40.0
Multiparous more than P2L2	37	24.66

Table-2: Distribution Of Cases According To Pattern Of Abnormal Uterine Bleeding.

Type of AUB	No. of cases	percentage
Amenorrhoea	15	10.0
HMB	89	59.33
Oligomenorrhoea	41	27.33
Hypomenorrhoea	2	1.33
Polymenorrhoea	3	2.0

As shown in Table no. 2, majority in study group had Heavy Menstrual Bleeding in 59.33% followed by Oligomenorrhoea in 27.33%. Whereas 10% patients had amenorrhea ,Polymenorrhoea and hypomenorrhoea contributes 2% and 1.33% respectively.

Table-3: Distribution Of Cases According To Symptoms Of Thyroid Disorders

Symptoms	No. Of cases	Percentage
Asymptomatic	110	73.33
Weight gain	12	8.0
Lethargy	4	2.6
Cold Intolerance	4	2.6
Constipation	2	1.33
Weight loss	9	6.0
Anxiety	4	2.6
Palpitations	1	0.67
Tremors	1	0.67
Diarrhoea	1	0.67

As shown in Table 3, 73.33% patients had no symptoms of thyroid dysfunction. Weight gain(8%) is most frequent symptom followed by weight loss(6%). Cold intolerance, lethargy and anxiety comprises 2.6% each.

Table No.4: Distribution Of Cases According To Signs Of Thyroid Dysfunction

Signs	No. Of cases	Percentage
Coarse skin	9	6.0

Cold skin	9	6.0
Slow movements	8	5.33
Periorbital puffiness	4	2.67
Bradycardia	3	2.0
Delayed ankle jerk	1	0.67

In our study group, predominant sign of thyroid dysfunction shown by patients are coarse and cold skin with 6% each, followed by slow movements in 5.33% as shown in table no.4.

Table No. 5: Distribution Of Cases According To Values Of Serum TSH, Free T3 and Free T4 levels

TSH(mIU/mL)	No. Of cases	Percentage
< 0.5	11	7.33
0.5-5.0	104	69.4
>5.0	35	23.34
FT4 (ng/ml)		
< .70	23	15.33
.70 -1.80+	116	77.33
>1.80	11	7.34
FT3(pg/ml)		
<1.7	23	15.33
1.7 -4.2	116	77.33
>4.2	11	7.34

Table no.5 shows that majority of patients (69.3%) were found in normal reference range of serum TSH levels between 0.5-5.0 mIU/mL followed by 23.34% cases having TSH levels >0.5 mIU/mL. Only 7.33% of cases had TSH levels <0.5 mIU/mL. It is also observed that majority of cases had FT4 values in range 0.70-1.80 ng/ml and FT3 in range 1.7-4.2 pg/ml respectively.

Table No. 6 : Distribution Of Cases According To Type Of Thyroid Disorder

Type of thyroid disorder	No. Of cases	Percentage
Hypothyroidism	23	15.33
Hyperthyroidism	12	8.0
Subclinical hypothyroidism	11	7.33
Euthyroid	104	69.33

Table no. 6 depicts 69.33% of cases were euthyroid . 15.33% cases were hypothyroid, 8% were having hyperthyroidism and 7.33% cases were having Subclinical hypothyroidism.

Table No. 7 : Relationship Between Thyroid Dysfunction And Abnormal Uterine Bleeding In The Present Study

Type of AUB	Thyroid dysfunction			
	Euthyroid (%)	Hypothyroid (%)	Hyperthyroid (%)	Subclinical Hypothyroidism (%)
Menorrhagia	64	74	5	78
Oligomenorrhoea	24	8	95	10
Hypomenorrhoea	2	0	0	0
Polymenorrhoea	2	0	0	0
Amenorrhoea	8	18	0	12

Table no. 7 shown above depicts possible correlation of thyroid dysfunction with abnormal uterine bleeding in this study group. 74% of hypothyroid females presented mainly with Menorrhagia while percentage of menorrhagia being chief complaint in patient with Subclinical hypothyroidism is 78% ,this association found to be statistically significant (p<0.001)

DISCUSSION

By measuring serum TSH, free T3 and free T4 levels, our study demonstrates how distinct bleeding patterns in women with abnormal uterine bleeding are related to thyroid dysfunction. The aetiology of menstrual irregularities is predominately thyroid dysfunction. On the other hand, irregular menstruation could also be the first sign of underlying thyroid abnormality.

In our study, the mean age of women with thyroid dysfunction was 36 years old. In their cross sectional study on 148 women who had irregular menstruation, C A Petta et al 2007⁽⁹⁾ discovered mean age of 34.6 years. Vanderpump MP et al 1995⁽¹⁰⁾ identified mean age of 34 years for occurrence of thyroid abnormalities in their 20 years of followup of the Whickham Survey. In their study on clinicobiochemical spectrum of hypothyroidism on 944 women who were referred for thyroid hormone analysis, Sampath S et al 2007⁽¹¹⁾

observed a mean age of 36.2 years. Additionally, they note that mean age of women with subclinical hypothyroidism is 5.4 years lower than that of women with overt hypothyroidism.

Menorrhagia was found associated with (59.33%) hypothyroid women in this study. In a retrospective study by Andrew D Weeks et al 2000¹² among 50 patients with Myxoedema, 28 women (56%) reported irregular menstrual flow, with menorrhagia being the most common complaint in 36% of cases. Similar findings were made by Col P Singh et al 2007¹³, in their research of menstruation dysfunction in women with hypothyroidism, which identified menorrhagia as the chief complaint in 32.4% of hypothyroid females.

In the current study, women with hyperthyroidism experienced oligomenorrhoea more frequently (95%). This association was consistent with outcomes of other studies. In their study on analysis of bleeding pattern in hyperthyroid subjects, Tunbridge et al 2002¹⁴ discovered that oligomenorrhoea was more common (80%) in female hyperthyroid subjects. Daniels 2004¹⁵ showed that 85% of individuals with hyperthyroidism experienced oligomenorrhoea in related study¹⁵. Thyroid function testing is therefore crucial in women with menstrual irregularities.

Menstrual abnormalities have been identified as a presenting symptom in women with early stage or subclinical hypothyroidism in population surveys¹⁶⁻¹⁸. Menorrhagia (78%) and amenorrhoea (12%) were evident in female participants of our group with subclinical hypothyroidism. The correlation is statistically significant ($p < 0.001$) when compared to previous studies. In their publication on subclinical thyroid disorder, Wilson GR et al 2005¹⁹ claimed that menstrual dysfunction in preclinical hypothyroids was comparable to that in overt hypothyroidism. According to Jorde et al study on endocrinological abnormalities in hypothyroid women, oligomenorrhoea and amenorrhoea occurred in 76% and 16% of women respectively in present study.

In the present study, most of the cases were asymptomatic, while 8% had complaint of weight gain, 6% having weight loss and 2.6% were having anxiety. Stoffer SS et al 1999²⁰ found that weight loss 74% and anxiety 53% symptoms are prominent features in patients of Grave's disease. Vitti et al²¹ found tremors and heat intolerance as common clinical presentation of grave's disease.

The overall prevalence of thyroid dysfunction was 30.67% in our present study (selective screening of this population has resulted in a higher yield). The prevalence of hypothyroidism was 15.33%, hyperthyroidism was 8% and subclinical hypothyroidism was 7.33% among them. This is consistent with a research by Prentice et al 1999²², which found that 36% of women with thyroid insufficiency had menstrual abnormalities. Another study by Wilansky et al²³ reveals 22% prevalence of thyroid disorder in females. In their study, Hollowell JG et al²⁴ found that 8.3% of participants had subclinical hypothyroidism. Given that the development rate to overt hypothyroidism ranges from 4% to 18% (Huber G et al), this should be viewed as the main advantage of testing. There is strong evidence that treating patients with subclinical hypothyroidism can stop from progressing to overt hypothyroidism (Surks MI et al)²⁵.

Women are found to have overt hypo/hyperthyroidism experience symptoms for longer period of time, but thanks to advances in detection methods, morbidity in the form of poor quality of life brought on by abnormal bleeding and the onset of anaemia can be prevented. In women experiencing menstrual irregularities, early thyroid function is advised.

CONCLUSION

Thyroid dysfunction and abnormal uterine bleeding are strongly correlated. Thyroid disorders have prevalence of 30.67% in our research study. The study emphasises the correlation between increased frequency of hypothyroidism in women with heavy menstrual bleeding and also hyperthyroidism in Oligomenorrhoea. It is advised that thyroid function tests should be done on women who have early onset of menstrual irregularities, whether or not they exhibit symptoms and signs of thyroid dysfunction, in order to identify thyroid dysfunction in subclinical stage. A better alternative to invasive surgical treatments such as hysterectomy will be early detection by selective screening and specific therapy for subclinical thyroid dysfunction.

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