

Study of Hypothyroidism in Women with Abnormal Uterine Bleeding

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Abstract

Background: Abnormal uterine bleeding is a common problem amongst women and is associated with an array of symptoms. Hence in investigating a patient with menstrual irregularities, evaluation of thyroid functional status forms an essential component. **Aim & Objective:** Study was aimed to evaluate hypothyroidism in patients with AUB in the reproductive age group 15 – 45 years. **Methodology:** It Was a observational study. 100 cases clinically diagnosed as AUB selected from Department of Obstetrics and Gynecology, Gandhi Medical College and Hospital, Secunderabad, over a period from September 2019 to August 2020. **Results:** In the present study, the patients with AUB belong to various age groups ranging from 15 – 45 years, maximum no. of cases belong to 35 – 45 years(53%). Parity of patients ranged from unmarried, nullipara to para 4 and above. Maximum no. of patients with AUB belong to multipara. Commonest bleeding pattern in patients with AUB was menorrhagia (38%). Most common patients were euthyroid. Hypothyroid was found in 19% of cases. Hypothyroidism was commonest in the age group of 35 – 45 years (57.8%) and are more common with multipara (89.47%). Hypothyroidism was commonest in cases with menorrhagia (57.89%), next common was polymenorrhoea (57.78%), oligomenorrhoea (5.2%), hypomenorrhoea (5.2%) and metropathiahemorrhagica (5.2%). In AUB patients with hypothyroidism most common endometrial pattern is proliferative type (63.15%), next common secretory type of endometrium (26.31%) and cystic glandular hyperplasia (10.52%). **Conclusion:** The present study is done to find the association of hypothyroidism with AUB, as there is a high incidence of hypothyroidism in our area, these evaluations of thyroid in AUB would also avoid unnecessary surgeries, exposure to hormones and early diagnosis will help in early intervention and good outcome.

Keywords: Hypothyroidism, Endometrium, Thyroid, Nullipara, Hyperplasia, Hemorrhagica.

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Introduction

Abnormal uterine bleeding is a common but complicated clinical presentation. It is one of the most frequently encountered conditions in Gynaecology and is defined as abnormal bleeding from the uterus. It occurs in 9 – 14% of women between menarche and menopause, significantly impacting quality of life and imposing financial burden. Thyroid dysfunction causes a broad spectrum of reproductive disorder ranging from abnormal sexual development to menstrual irregularities, infertility and premature menopause[1,2]. Thyroid disorders are 10 times more common in women and this high prevalence of thyroid disorders in women is possibly due to autoimmune nature. At extremes of the reproductive years, irregular cycles resulting from an ovulation can occur. Following menarche, the immature hypothalamic- pituitary-ovarian axis may result in an ovulatory cycles for two to three years[3,4], up to eight years before menopause, women may again have intermittent an ovulatory cycles. During the rest of the reproductive years, however, recurrent irregular cycles may be caused by anovulation and are considered abnormal[5,6]. Hyperthyroidism reduces menstruation and hypothyroidism causes menorrhagia. Hyperthyroidism is associated with menorrhagia followed by oligomenorrhoea and the decrease in flow is proportional to the severity of the thyrotoxicosis. Hence the present study was undertaken to evaluate the thyroid function in patients having abnormal menstrual bleeding.

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The introduction of serum thyroxine and serum thyroid stimulating hormone (TSH) radioimmunoassay has increased the sensitivity and specificity of thyroid function testing[7-10]. The serum TSH assay has been shown to be a sensitive indicator of diminished thyroid functional reserve, since TSH levels become elevated before circulating serum thyroxine levels fall below the normal range[11]. Hence, this study is to evaluate the hypothyroidism in patients having abnormal uterine bleeding in reproductive age group of 15 to 45 years which will help in further management and also know the prevalence of hypothyroidism in abnormal uterine bleeding.

Aims and Objectives

Aim

Study of hypothyroidism in women with abnormal uterine bleeding in reproductive age group (15– 45 years).

Objectives

- To determine the prevalence of hypothyroidism in women in reproductive age group with AUB (15 – 45 years).
- To assess the menstrual pattern in women with hypothyroidism.
- To determine the endometrial pattern in abnormal uterine bleeding with hypothyroidism.

Materials and Methods

Source of Data

This study is conducted in the department of obstetrics and Gynaecology, Gandhi Medical College and Hospital on all women in the age group of 15-45 years attending or admitted in hospital during the period September 2019 to August 2020.

Inclusion Criteria

Patients attending OBG, OPD and IPD with complaints of abnormal uterine bleeding in the age group of 15 - 45 yrs.

Exclusion Criteria

1. Diagnosed cases of ovarian cyst, uterine fibroid, polyp, endometriosis, PCOD and malignant (endometrial and cervical) tumors.
2. Pelvic infections including endometritis, PID.
3. Patients with goiter, carcinoma thyroid, with overt clinical symptoms of thyroid dysfunction.
4. Patients who are on drugs or hormones, IUCD users.
5. History of bleeding disorders (haemophilia, vonwille brands disease)

Study Design :Observational study

Sample Size:100

Study Period:Sept 2019 to August 2020

Methodology

- A detailed history is obtained with special relevance to age, bleeding pattern.
- Onset, duration, amount of bleeding, complaints related to thyroid dysfunction will be noted in detail.
- A thorough clinical examination including general physical examination, neck examination, gynecological, and systemic examination will be carried out, with special reference to thyroid dysfunction; in cases with a provisional clinical diagnosis of AUB.
- Patients with clinical signs and symptoms of thyroid disease are excluded.
- All these patients will be subjected to routine investigations like hemoglobin percentage, blood counts, urine examination for albumin, sugar, microscopy, bleeding time, clotting time, (to rule out coagulation defect).
- Then all patients will be subjected for T3, T4 and TSH estimation in their sera. T3 and T4 were assayed by competitive chemiluminescent immunoassay.

These tests are done in random blood samples as the variation in TSH secretion due to circadian rhythm with a peak at 0100 hrs and

nadir at 1100 hrs is small and does not influence the timing of blood sampling.

The following are noted.

- Level of T3.
- Level of T4.
- Level of TSH

Reference values

Serum T4 – 60 – 120 ng/ml Serum T3 – 0.8-16 ng/ml Serum TSH – 0.5-5 mU/ml

Patients will then be grouped into 3 categories

- Euthyroid
- Hypothyroid
- Hyperthyroid
- Patients with AUB who are diagnosed as hypothyroidism are subjected to endometrial biopsy for histopathological examination.

Patients found to have hypothyroid dysfunction will be referred to physician for further management.

Statistical Methods

Data were entered into an excel spreadsheet and double checked for any errors. It was analyzed by using Epi – Info version 3.5.2.

Observation and Results

Abnormal uterine bleeding is one of the most frequently encountered conditions in gynaecological practice.

The following tables will analyse

- Age
- Parity
- Symptomatology of AUB
- Association with Hypothyroidism
- Endometrial Pattern in hypothyroid cases with AUB

The total number of patients studied was 100 from March 2014 - October 2015.

Table 1: Distribution of patients according to age

Age (years)	No.of Cases	Percentage of prevalence (%)
15 – 24	17	17
25 – 34	30	30
35 – 45	53	53
Total	100	100

According to above table maximum number of patients in the study group belongs to the age group of 35 – 45 years – (53%) and minimum in the age group of 15 – 24 years (17%) were seen.

Table 2: Distribution of patients according to parity

Parity	No. of Patients	Percentage of prevalence (%)
Unmarried	3	3
Nullipara	7	7
1	16	16
2	23	23
3	37	37
≥ 4	14	14

The above column shows relationship of AUB with parity. Among 100 cases of AUB maximum are with para 3 – 37 cases (37%) and minimum cases are with unmarried 3 cases (3%).

Table 3: Distribution of patients according to menstrual disorders

Type of Bleeding	No. of Cases	Percentage of prevalence (%)
Menorrhagia	38	38
Polymenorrhoea	26	26
Polymenorrhagia	12	12
Oligomenorrhoea	6	6
Hypomenorrhoea	10	10
Metropathiahemorrhagica	8	8

The above table shows 100 patients who came with the complaint of different bleeding pattern. Maximum were seen with complaints of menorrhagia (38%). Minimum were seen in oligomenorrhoea (6%).

Table 4: Distribution of patients according to age group and bleeding pattern

Age	No. of cases	Menorrhagia	Polymenorrhoea	Polymenorrhagia	Oligomenorrhoea	Hypomenorrhoea	Metropathia hemorrhagica
15 – 24	17	4 (23.5%)	5 (29.4%)	2 (11.7%)	2 (11.7%)	3 (17.6%)	1 (5.8%)
25 – 34	30	9 (30%)	7 (23.3%)	4 (13.3%)	3 (10%)	5 (16.6%)	2 (6.6%)
35 – 45	53	25 (47.1%)	14 (26.4%)	6 (11.3%)	1 (1.8%)	2 (3.7%)	5 (9.4%)
Total	100	38	26	12	6	10	8

Most common bleeding pattern was menorrhagia (38 cases) and are more in the age group of 35 – 45 years (25 cases).

Table 5: Distribution of patients according to thyroid function

Thyroid Function	No. of Cases	Percentage (%)
Euthyroid	79	79
Hypothyroid	19	19
Hyperthyroid	2	2
Total	100	100

According to this table maximum number of apparently normal patients with AUB belongs to the category of hypothyroidism (19%) and hyperthyroidism in 2% cases though they were clinically normal.

Table 6: Parity wise Distribution of Hypothyroidism

Parity	No. of cases	Euthyroid	Hypothyroid	Hyperthyroid	Total Thyroid dysfunction	Percentage of Hypothyroidism (%)
Unmarried	3	3	0	0	0	0
Nullipara	7	5	2	0	2	10.4
1	16	12	2	2	4	10.52
2	23	18	5	0	5	26.31
3	37	30	7	0	7	36.84
≥ 4	14	11	3	0	3	15.78
Total	100	79	19	2	21	99.85

The table shows relationship of the parity to hypothyroidism in patients with diagnosed AUB. Hypothyroidism was maximum in para 3 about 36.84% and minimum in nullipara and unmarried women.

Table 7: Age wise distribution of hypothyroidism

Age	No. of cases	Euthyroid	Hypothyroid	Hyperthyroid	Total Thyroid Dysfunction	Percentage of hypothyroidism (%)
15 – 24	17	16	1	0	1	5.2
25 – 34	30	22	7	1	8	36.8
35 – 45	53	41	11	1	12	57.8
Total	100	79	19	2	21	100

Table shows the relationship of hypothyroidism in different age group. Hypothyroidism was commonest in the age group between age group 35 – 45 years (57.8%), followed with 36.8 % among patients between 25 – 34 years. 5.2 % of patients of age group 15 – 24 years showed hypothyroidism. This shows that hypothyroidism becomes common in reproductive age group.

Table 8: Menstrual Disorders In Hypothyroidism

Observed Menstrual Irregularity	Hypothyroidism (n=19)	Total (n=19) Percentage (%)
Menorrhagia	11	57.89
Polymenorrhoea	3	15.78
Polymenorrhagia	2	10.52
Oligomenorrhoea	1	5.26
Hypomenorrhoea	1	5.26
Metropathia hemorrhagica	1	5.26
Total	19	99.97

Among hypothyroid patients (n=19) the most common menstrual irregularity was menorrhagia 57.89% (n=11), polymenorrhoea 15.78% (n=3), polymenorrhagia 10.52% (n=2) and least common were oligomenorrhoea, hypomenorrhoea and metropathia hemorrhagica.

Table 9: Distribution of patients according to bleeding pattern in relation to TSH levels (N=19)

Bleeding Pattern	TSH Level(µiu/ml)	Thyroid Status	Total
Menorrhagia	5.98 – 32.12	Hypothyroid	11
Polymenorrhoea	9.83 – 31.76	Hypothyroid	3
Polymenorrhagia	6.27 – 8.25	Hypothyroid	2
Oligomenorrhoea	17.93	Hypothyroid	1
Hypermenorrhoea	7.2	Hypothyroid	1
Metropathia hemorrhagica	15.2	Hypothyroid	1
Total			19

This table shows distribution of hypothyroid patients according to bleeding pattern in relation to TSH levels (19 cases). In this group maximum no of patients presented with menorrhagia and with TSH levels are between 5.98 – 32.12 µIU/ml followed by polymenorrhoea 9.83 – 31.76 (3 cases).

Table 10: Endometrial Biopsy In Menstrual Disorders Detected As Hypothyroidism

Thyroid Status	Proliferative	Secretory	Cystic Glandular Hyperplasia
N=19	12	5	2
Percentage (%)	63.15	26.31	10.52

In this table most common hypothyroid patients shows Proliferative type (63.15%) in Endometrial Biopsy followed by Secretory type (26.31%) and least common type is Cystic Glandular Hyperplasia (10.52%).

Discussion

Abnormal Uterine bleeding is a common problem amongst women and is associated with an array of symptoms. Frequent complaints include heavier or prolonged menstrual flow with or without pain, passage of clots, weakness, lethargy associated with social embarrassment, significant alteration in lifestyle of individual and sexual compromise. Accurate determination of the prevalence of abnormal uterine bleeding is difficult, however approximately 15 - 20 % of scheduled office gynaecological visits are for abnormal uterine bleeding. The aetiology of abnormal uterine bleeding is very diverse. It may be due to systemic conditions like hormonal imbalance (usually hypothyroidism and hyperthyroidism), or local lesions of genital tract like endometrial hyperplasia, pelvic inflammatory disease, endometriosis, benign tumours (leiomyoma, polyps) and malignant tumours (endometrial carcinoma). In more than half of the subjects the cause is usually not apparent. Hypothyroidism is one of the common causes of excessive menstrual blood loss and menstrual irregularities. Menorrhagia has been reported in 32% of subjects with myxoedema. It may also lead to anovulation, infertility and recurrent abortion. With the advent of modern hormonal assay techniques precise estimation of thyroid hormones in serum is possible in a rapid and reliable manner. Treatment of hypothyroidism is very satisfying as it usually relieves patient of all the symptoms. Hence in investigating a patient with menstrual irregularities, evaluation of thyroid functional status forms

an essential component. Early detection of hypothyroidism in such subjects saves the patient from recurrent curettage and at times hysterectomy. Thyroid disorders in general and hypothyroidism in particular is extremely common especially in women. Menarche, pubertal growth and development, menstrual cycles, fertility and fetal development, postpartum period, reproductive years and postmenopausal years are profoundly influenced by the thyroid status of the women. Both Hyper and Hypothyroidism may result in menstrual disturbances although the hormonal and other biochemical aberrations are not the same in these two disorders. Hypothyroidism is marked by large number of menstrual aberrations. In the present study patients were taken from all age groups which included 15-45 years and maximum number of patients were in the age group of 35-45 years. In a similar study by Charusheela D. Doifode et al;(2001)[9] also maximum number of patients were in age group 31-40 years. In the present study patients with clinical symptoms and signs of thyroid dysfunction were excluded, but in author's study all patients with menstrual aberrations irrespective of the presence of symptoms and signs of thyroid dysfunction were included. Present study groups ranged patients according to parity as unmarried, nullipara, para 1, para 2, para 3, para 4 and above. Similarly Charusheela D Doifode, Kalpana Fernandes[9] had also grouped parity into unmarried, nullipara, para 1, para 2, para 3, para 4 and more. Similar study conducted by PahwaSangeetha et al;(2013)[13] out of 100 cases of abnormal uterine bleeding, the majority of the patients were of the age between 31 and 42 years.

Table 11: Hypothyroidism in AUB

Studies	Hypothyroid
Mukherjee & Ghosh; (1985)[8]	44%
Doifode & Fernandes; (2001)[9]	28%
Tajinder Kaur et al; (2011)[10]	14%
Neelu Sharma & Sharma (2012)[11]	22%
Padmaleela et al; (2013)[12]	18.1%
PahwaSangeetha et al; (2013)[13]	22%
Present Study	19%

The Prevalence of Hypothyroidism is 19% among the AUB patients as assessed by the findings of their thyroid function tests.

In the present study 100 cases are taken with complaints of menorrhagia, polymenorrhoea, hypomenorrhoea, oligomenorrhoea, and metropathiahaemorrhagica.

Table 12: Various Studies on Hypothyroidism in AUB

Study	No of Patients with AUB (Non Structural)	Patients who had Hypothyroidism	Percentage (%)
Doifode et al (2001)[9]	213	60	28.17
Padmaleela et al (2013)[12]	83	15	18.1
Deshmukh PY et al[14]	79	34	43.03
Present study	100	19	19

Among 100 women with AUB 19% are with hypothyroidism, 2% are hypothyroid and 79% are euthyroid, which was similar to the study done by Padmaleela et al ; (2013)[12], Kaur T et al; (2013)[10] and N Bhavani et al;(2015)[13]. One of the explanations is the activity of thyroid is that closely linked with the process of ovarian maturation. The thyroid gland is itself dependent on direct and indirect stimulation from the ovary to discharge its own function. In the study by Doifode et al; (2001)[9] 213 cases of clinically diagnosed DUB were taken. Patients with oligomenorrhoea hypomenorrhoea and Polymenorrhoea were excluded. Out of 213 cases, 60 patients are with hypothyroidism. In the study by Padmaleela et al;(2013)[12] 83 cases of clinically diagnosed AUB (Non Structural causes) were taken, 15 cases out of 83 showed their thyroid dysfunction as hypothyroidism and 7 cases were with hyperthyroidism. In the study

by Deshmukh PY et al;(2015)[14] out of 79 , 43.03% showed their thyroid dysfunction as Hypothyroidism. In our study hypothyroidism seen in all age groups 15 to 24 years (15.2%), 25-34 years (36.8%) and 35-45 years (57.8%) similar to the study by Padmaleela et al; (2013)[12]. According to C.D. Doifode et al;(2001) hypothyroidism is most common in the age group of 31-40 years (17.39%), in presented study 17% in the age group of 15 -24 years[9]. In a study conducted by Sangeetha Pahwa et al; (2013)[13] majority of patients were of the age between 31-40 years (42%). In the present study hypothyroidism is 10.4% among nulliparous patients as compared to Charusheela D Doifode, Kalpana Fernandes (2001) which showed 6.67%. In the present study patients with Para 1 are (10.4%) with hypothyroidism but in C D, Doifode et al; [9] hypothyroidism was present in 33.33% of patients with Para 1. Maximum number of

patients with hypothyroidism were Para 3 (36.84%) in the present study as compared to the C D, Diofode et al study, where maximum number of patients with hypothyroidism belong to Para 1. In the present study most of the patients (89.47 %) with AUB are hypothyroidism belong to multi para (2 and above), same as in Neelu Sharma and Sharma study (2012), 81.81% were hypothyroidism in patients with AUB. Study conducted by Rema. V Nair [16], 20 % cases were nulliparous, 43.33% of women were para 2, 20% para 3, and both together were 63.33%. Uniparous women accounted for 16.7% cases. In present study, 79% patients are euthyroid, 19% are hypothyroid. In Neelu Sharma and Sharma (2012) [11] Study 64% are euthyroid, 22% patients are hypothyroid. In Kaur et al; (2011) [10] study 85% patients are euthyroid, 14 % are hypothyroid. The commonest menstrual pattern in hypothyroid patients in the present study is menorrhagia, accounting as high as 57.89%. Hypothyroidism is also associated with menstrual patterns like polymenorrhoea (15.78%), polymenorrhagia (10.52%), oligomenorrhoea (5.26%), hypomenorrhoea (5.26%) and metropathia hemorrhagica (5.26%). K. Padmaleela et al; (2013) [12] studied abnormal menstrual pattern in hypothyroid patients which is similar to present study, where 53.3% had menorrhagia, 13.3% had polymenorrhoea, polymenorrhagia, hypomenorrhoea and amenorrhoea 6.7% each. In our study the most common finding in endometrial biopsy was proliferative type 63.15%, secretory endometrium in 26.31% of hypothyroid patients and cystic glandular hyperplasia was found in 10.52% of hypothyroid patients. Padmaleela et al; (2013) [12] observed 60% of hypothyroid patients shows their endometrium as proliferative type. Secretory endometrium was found in 26.7%, cystic glandular hyperplasia was found in 13.3% of hypothyroid patients, which is close to the findings of our study. A study by Kaur et al; (2011), [10] revealed 64.3% hypothyroid patients had proliferative endometrium, 21.4% had endometrial hyperplasia and rest 14.3% had secretory endometrium.

Strength of The Present Study

- The present study is a observational study and only blood sample is required for estimation of T3, T4, TSH and thus there is no inconvenience to the patient.
- The instructions to collect the blood samples are simple and easy to understand.
- The present study is done to find the association of hypothyroidism with AUB, as there is a high incidence of hypothyroidism in our area, these evaluations of thyroid in AUB would also avoid unnecessary surgeries, exposure to hormones and early diagnosis will help in early intervention and good outcome.

Limitations of The Present Study

- The present study has small number of patients and hence significant value could not be made.
- The larger sample size will be required for more precise estimation of the prevalence of hypothyroidism in AUB.
- In the present study of known cases of hypothyroidism has not been included. Hence significant value could not be made.
- As thyroid function tests are done among these patients as a part of evaluation of AUB, but not a diagnostic test, we are bound to miss other causes of etiology of AUB leading to non specific and ineffective, invasive and non invasive procedures and treatment.

Recommendations

As hypothyroidism is considered as an important etiological factor for abnormal uterine bleeding biochemical estimation of T3, T4, TSH should be made mandatory in all reproductive age group women with abnormal uterine bleeding to avoid unnecessary interventions like hormone replacement and surgery.

Conclusion

Conflict of Interest: Nil Source of support: Nil

Our study was aimed at detecting and evaluating hypothyroidism in patients with AUB and positive cases are managed after discussing with physician. Our study concludes that hypothyroidism should be considered as an important etiological factor for menstrual irregularity. Biochemical estimation of T3, T4, TSH should be made mandatory in abnormal uterine bleeding especially in non structural causes and to detect profound hypothyroidism. These patients with hypothyroidism, if given medical treatment, it is possible to avoid unnecessary hormonal treatment and costly surgical interventions.

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