



Original Research Article

Thyroid disorders in reproductive age presenting with abnormal uterine bleeding

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ABSTRACT

Background: Abnormal uterine bleeding (AUB) is a frequently encountered clinical presentation in gynecological OPD. They are not life threatening but can cause social, psychological and occupational disturbances. As thyroid hormones play a major role in the menstrual and reproductive function of women, studying for thyroid disorder in patients with AUB should be a logical step.

Materials and Methods: This is a prospective observational study conducted in Kalinga Institute of Medical Sciences, BBSR, Odisha. Two hundred and eighty patients of age group 18 to 45 years presenting with AUB were included in this study. All were subjected to routine investigations along with thyroid function tests.

Result: Out of 280 patients, 56 patients (20%) had thyroid abnormality. Among which 26 were diagnosed as subclinical hypothyroidism, 24 had hypothyroidism and 6 patients had hyperthyroidism. The frequent menstrual symptom associated with hypothyroidism and subclinical hypothyroidism was menorrhagia. Oligomenorrhea was seen in 50% of hyperthyroid patients.

Conclusion: Any type of menstrual disorder should be considered as a possible presenting symptom of thyroid dysfunction and thyroid assessment deemed necessary in such cases, so that we can treat patients at the earliest and prevent morbidities in later life.

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1. Introduction

Abnormal uterine bleeding is defined as any type of bleeding that is abnormal in volume, frequency, duration and periodicity.¹ Frequent complaints include heavy and prolonged menstrual bleeding with or without pain, passage of clots, fatigue and lethargy. Women's Health Related Quality of Life (HRQL) worsen in dealing with such bleeding and the consequences of excessive blood loss.²

AUB is one of the frequent presentation in gynecological OPD, occurs in 9-14% women between menarche to menopause.³ Menstrual abnormality is primarily a disorder of hypothalamic-pituitary-ovarian axis either directly or indirectly by their effects on target organs. Other than the reproductive hormones endocrinological disturbances also play a crucial role for etiopathogenesis of AUB. Amongst

the endocrinological causes, thyroid hormone has a wide range of effect on the development, growth and metabolism of every organ system of human body.⁴

Variation in production and activity of thyroid hormones that is thyroxine (T₄), tri-iodothyronine(T₃) and thyroid stimulating hormone (TSH) may cause menstrual abnormality. TSH receptors have been found on granulosa cells. T₃, T₄ have been found in follicular fluid and T₄ can enhance the action of gonadotropins in luteinisation and progesterone secretion – all these facts suggest the role of thyroid hormone in female reproductive physiology.⁵

The aim of evaluation of AUB is to reach at an precise and clinically useful diagnosis in the most productive and cost effective manner possible. As thyroid disorders are not always detected clinically, we need to detect and treat thyroid disease in patients with AUB before frank signs and symptoms develop.

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2. Aim and Objectives

1. To estimate the prevalence of thyroid dysfunction in patients with abnormal uterine bleeding in reproductive age group (18-45yrs).
2. To analyse the patterns of menstrual disorders of such women with thyroid disorders.

3. Materials and Methods

This is a prospective observational study conducted in Kalinga Institute of Medical Sciences and PBM hospital, BBSR, Odisha. Two hundred and eighty patients of age group 18 to 45 years presenting to Gynecology OPD with complaints of AUB from October 2018 to July 2020 included in this study.

3.1. Inclusion criteria

Women in age group of 18-45 years presenting with abnormal uterine bleeding.

3.2. Exclusion criteria

1. Unwilling patients.
2. Pregnancy & associated complications.
3. Women who are using Intrauterine Contraceptive Device (IUCD).
4. Women who are on any hormonal preparation (eg- Oral Contraceptive Pills).
5. Women on thyroid replacement therapy.
6. Presence of pelvic pathology like fibroids, polyps or cervical growths.
7. Known case of genital malignancy.
8. Pelvic inflammatory disease.
9. Diagnosed case of Polycystic Ovarian Disease (PCOD).
10. H/O bleeding disorder.
11. Taking any medications like steroids, anticoagulants, antithyroid medication and cytotoxic drugs.

3.3. Study procedure

Data was collected in gynecological Out Patient department of Kalinga Institute of Medical Sciences, Pradyumna Bal Memorial Hospital.

The demographic profile of all eligible patients was recorded under the following headings, study serial no, age, gender, contact no. All the patients underwent a thorough history taking regarding their age, parity, present history, past history, medical history, any previous surgical history, treatment history & a detailed menstrual history like pattern onset & duration of bleeding, quantity of bleeding & other associated menstrual complaints & also complaints related to thyroid dysfunction. Then all patients were subjected to a detailed clinical examination which includes general physical examination, systemic examination, neck

examination, routine gynecological examinations. Routine investigations like Hemoglobin, Random Blood Sugar, Erythrocyte Sedimentation Rate, Urine routine microscopy, Bleeding Time and Clotting Time to rule out any coagulation defect, pelvic ultrasound to exclude any gross pathology were sent for each patient. Then patients were subjected to thyroid profile test i.e. Estimation of serum T3, T4 & TSH.

3.4. Reference value

1. TSH- 0.5-4.7mU/L
2. T3- 0.92-2.78 nmol/L
3. T4- 58-140 nmol/L

4. Results and Analysis

A total 280 patients with abnormal uterine bleeding recruited in this study. And subjected to thyroid profile test. Patients with thyroid dysfunction were grouped as thyroid dysfunction cohort and the remaining patients had AUB were grouped as normal or euthyroid cohort. Factors that were taken for analysis- age, parity, types of AUB, family history of thyroid disorders, size of thyroid gland.

Statistical analysis is done and difference with a p value of <0.05 was considered statistically significant.

Table 1: Distribution of thyroid disorders in study population

Type	No of Cases	Percentage
Euthyroid (Normal)	224	80%
Hypothyroid	24	8.6%
Subclinical hypothyroid	26	9.3%
Hyperthyroid	6	2.1%
Total	280	100%

In a study population of 280, 80%(n-224) had normal thyroid function and out of the 56 patients with thyroid disorders maximum 26 patients had subclinical hypothyroid, followed by 24 hypothyroid patients and least was hyperthyroid that is 6 patients.

Out of 280 patients, 99(44.2%) belonged to normal cohort i.e. Euthyroid and 27(9.64%) belonged to thyroid disorder group- in age group of 31-40 years. Out of 56 thyroid dysfunction, majority 27(48.2%) were in age group of 31-40 years, followed by 21-30 years.

It was observed that most of the patients were multiparous, that is 114 out of 224 euthyroid patients and 25 out of 56 patients in thyroid dysfunction cohort were multiparous. There is a significant association between thyroid disorders with parity.

The Table 4 represent the commonest pattern of bleeding in study population was menorrhagia in both euthyroid and thyroid dysfunction group that is 118 in 280 patients(42.14%), followed by oligomenorrhea(25%) then metrorrhagia(10%), followed by amenorrhea (10%) and

Table 2: Age and thyroid dysfunction distribution

		Euthyroid	Thyroid dysfunction	Total	
Age Group (Years)	<=20	count	31	11	42
		%	13.8%	19.6%	15.0%
	21-30	count	70	14	84
		%	31.2%	25.0%	30.0%
	31-40	count	99	27	126
		%	44.2%	48.2%	45.0%
Above 40	count	24	4	28	
	%	10.7%	7.1%	10.0%	
Total	count	224	56	280	
	%	100.0%	100.0%	100.0%	

Table 3: Parity & thyroid disorder distribution

		Euthyroid	Thyroid dysfunction	Total	
Parity	Nulliparous	count	83	16	99
		%	37.1%	28.6%	35.4%
	Primiparous	count	27	15	42
		%	12.1%	26.8%	15.0%
	Multiparous	count	114	25	139
		%	50.9%	44.6%	49.6%
Total	count	224	56	280	
	%	100.0%	100.0%	100.0%	

Table 4: AUB & thyroid dysfunction distribution

Type of AUB	Euthyroid	Hypothyroid	Subclinical hypothyroid	Hyperthyroid	Total
Menorrhagia	90 40.18%	14 58.33%	12 46.15%	2 33.33%	118 42.14%
Oligomenorrhea	58 25.89%	5 20.83%	4 15.38%	3 50.00%	70 25.00%
Metrorrhagia	25 11.16%	2 8.33%	1 3.85%	0 0.00%	28 10.00%
Amenorrhea	27 12.05%	0 0.00%	1 3.85%	0 0.00%	28 10.00%
Polymenorrhea	14 6.25%	0 0.00%	7 26.92%	1 16.67%	22 7.86%
Hypomenorrhea	10 4.46%	3 12.50%	1 3.85%	0 0.00%	14 5.00%
Total	224	24	26	6	280

polymenorrhea(7.86%) and least no of patients presented with hypomenorrhea.

From the Table 4 we can also estimate the common bleeding pattern in different thyroid dysfunction. Menorrhagia was the commonest complaint in both hypothyroid and subclinical hypothyroid patients, likewise in hyperthyroid patients frequent complaint was oligomenorrhea followed by amenorrhea.

17.9% thyroid dysfunction and 3.6% of euthyroid patients had positive family history of thyroid dysfunction. So, thyroid dysfunction and family history has a significant association.

Out of 56 patients with thyroid dysfunction, 25 (44.6%) have enlarged thyroid gland.

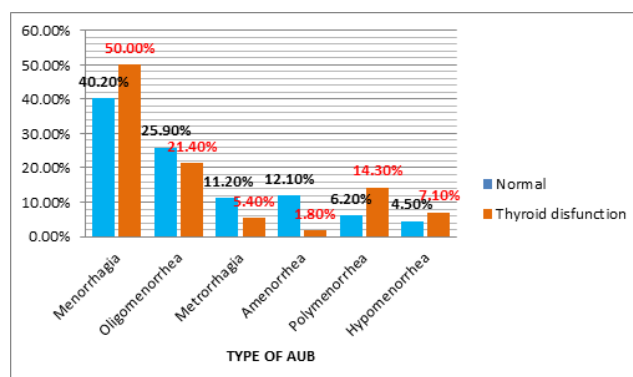
**Fig. 1:** Type of AUB in normal and thyroid dysfunction group

Table 5: Family history & thyroid dysfunction distribution

			Euthyroid	Thyroid dysfunction	Total
Family history	Absent	count	216	46	262
		%	96.4%	82.1%	93.6%
	Present	count	8	10	18
		%	3.6%	17.9%	6.4%
Total		count	224	56	280
		%	100.0%	100.0%	100.0%

Table 6: Clinical thyroid enlargement distribution in AUB

			Euthyroid	Thyroid dysfunction	Total
Size of thyroid gland	Not enlarged	count	220	31	251
		%	98.2%	55.4%	89.6%
	Enlarged	count	4	25	29
		%	1.8%	44.6%	10.4%
Total		count	224	56	280
		%	100.0%	100.0%	100.0%

5. Discussion

In our study we have taken reproductive age group patients between 18-45 years. Majority of patients (n=126) were in age group 31-40 years (45%), followed by the age group 21-30 years (30%). In the study by Sangeeta Pahwa et al,⁶ Tara et al,⁷ and Sudha HC et al.⁸ obtained similar result in their study i.e, maximum no of patients in 31-40 years age group (42%,34% and 40% respectively). In study by Das and Ahugs et al.⁹ maximum no of patients in age group 41-50 years (32.5%), that is in perimenopause age followed by 31-40 years (28.2%)

So all the study suggests that AUB becomes common as age advances.

Multiparous women comprised the major part of our study population i.e, 139 out of 280 patients (49.6%). Most of the women affected by thyroid dysfunction were also multiparous (44.6%), followed by nulliparous(28.6%). There is a significant association between parity and thyroid disorder. In our study marital status was not included. Similarly, study by Sudha HC et al.⁸ and Tara et al.⁷ multiparous patients (83%, 42% respectively) were maximum. In study by Sudha HC et al.⁸ though maximum patients were multiparous among those who attended OPD with AUB, maximum thyroid dysfunction were found in nulliparous patients (54%).

Thyroid diseases are common worldwide. According to a projection from various studies, in India also there is a notable burden of thyroid diseases. In present study on the basis of TSH, T3, &T4 value, thyroid disorders are divided in to hypothyroid, hyperthyroid and subclinical hypothyroid.

In our study all the patients are further subgrouped under normal cohort and thyroid dysfunction cohort. Eighty percent (n =224) of AUB patients were euthyroid (normal cohort). In thyroid dysfunction cohort (20 %, n=56),

hypothyroid is 8.6%, subclinical hypothyroid is 9.3% and hyperthyroid is 2.1%. In general population the prevalence of subclinical hyperthyroidism is approximately 1.5%. In our study no subclinical hyperthyroid patient was found.

Similarly in study by Kundoor R et al.¹⁰ majority of thyroid disorder was subclinical hypothyroid (15%), followed by hypothyroid 10% and hyperthyroid 2.5%. In study by Sudha HC et al.⁸ euthyroid constituted 62% patients, hypothyroid 12%, Subclinical hypothyroid in 16% and hyperthyroid in 2% patients. In both study hypothyroid patients are maximum followed by subclinical hypothyroid.

All evidences in literature as well as our findings suggests that subclinical hypothyroid state is an important cause of AUB.

In present study we found 6 types of AUB pattern such as- menorrhagia, oligomenorrhea, amenorrhea, metrorrhagia, polymenorrhea and hypomenorrhea and studied about association of different thyroid disorders with different AUB pattern. Findings suggests a strong association between thyroid disorder and AUB.(p=0.03).

Forty two percent cases presented with menorrhagia as the major complaint in this study, making it the commonest abnormal uterine bleeding. In normal cohort 40.2% and in thyroid dysfunction cohort 50% have menorrhagia as the AUB pattern. If we consider individual thyroid dysfunction, in hypothyroid patients(n=24), fourteen patients(58.3%) had menorrhagia, five patients(20.8%) had oligomenorrhea, three patients(12.5%) had hypomenorrhea & two patients(8.3%) had metrorrhagia. Likewise in Subclinical hypothyroid(n=26), twelve patients(46.15%) had menorrhagia, seven patients(26.92%) had polymenorrhea making menorrhagia as the utmost bleeding pattern in both hypothyroid and subclinical hypothyroid. In hyperthyroid(n=6) majority of patients(50%) had oligomenorrhea and two patients(33.3%) had menorrhagia and one patient(16.6%) had polymenorrhea. Amenorrhea is

the least reported bleeding pattern associated with any type of bleeding pattern.

Sangeeta Pahwa et al.⁶ and Sudha HC et al.⁸ observed similar pattern of menstrual abnormality.

It concludes that thyroid disorder should be considered as an important etiological factor for menstrual abnormality. Thus, thyroid profile test should be mandatory in all AUB cases to detect profound and subclinical thyroid dysfunction.

Due to improved technology in the field of genetic investigations provide us a good information about genetics of thyroid function and autoimmune thyroid disease. Autoimmune thyroid disease commonly runs in families.¹¹

In our study family history of thyroid disorder has a strong association with thyroid disorder ($p=0.000$). Out of 56 thyroid disorder patients 17.9%(n=10) patients have positive family history.

There is a significant association(0.000) between thyroid enlargement and thyroid dysfunction. Out of 56 thyroid disorder patients 25 patients(44.6%) had thyroid enlargement.

Dalia Dauksiene¹² concluded in his study, that female gender, thyroid nodules, BMI and lower levels of TSH are independently can increase the risk of goiter.

6. Conclusion

From our study it was concluded that, there was a significant association between thyroid disorders and abnormal uterine bleeding. It brought into attention that increased incidence of hypothyroidism in menorrhagia and hypomenorrhea and increased incidence of subclinical hypothyroid in menorrhagia and polymenorrhea.

Any type of menstrual disorder should be considered as a potential presenting symptom of thyroid dysfunction and thyroid assessment esteem necessary in these cases, so that we can treat patients at the earliest and prevent morbidities in later life, and also can avoid nonspecific and ineffective diagnostic and therapeutic procedures.

Menstrual abnormality may even precede the occurrence of other clinical signs and symptoms of thyroid dysfunction as 9% of subclinical hypothyroidism was found in our study. The likelihood of progression of subclinical disease to overt hypothyroidism and the cost benefit ratio can play a role to recommend thyroid screening in AUB.

7. Source of Funding

None.

8. Conflict of Interest

None.

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