

Correlation of Thyroid Disorders with Abnormal Uterine Bleeding (AUB)

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Abstract: *Introduction:* AUB is a common and complicated clinical entity. Thyroid disorders are the most common endocrine disorders in India with a prevalence of 26% in women and its incidence increases with age. Menstrual disturbances may accompany or may even precede thyroid disorders. We wanted to study the correlation between thyroid disorders and abnormal uterine bleeding in women of reproductive age group. *Methods:* This is cross-sectional study conducted on 165 subjects attending the gynecology OPD at PES Institute who fulfilled the eligibility criteria with AUB patterns, for a period of 2 years. Thorough clinical examination, ultrasonography and thyroid function tests of the patients was done. *Results:* In this study, maximum number of patients were in the age group of 21 - 30 years. Regarding bleeding patterns, maximum patients had complaints of menorrhagia (46.06%). 77.58% of patients were euthyroid, 12.12% were subclinical hypothyroid, 17.88% were overt hypothyroid and 2.42% patients were hyperthyroid. Among both subclinical and overt hypothyroid patients, the most common menstrual irregularity was menorrhagia in 55% followed by polymenorrhagia, acyclical bleeding, polymenorrhoea, oligomenorrhoea and metrorrhagia. Among hyperthyroidism, the most common menstrual irregularity was oligomenorrhoea in 75% followed by hypomenorrhoea in 25%. *Conclusion:* Our study concludes that the work up of any patient with AUB should essentially consist of T3 and T4 levels along with TSH levels as a mandatory part otherwise cases of subclinical hypothyroidism may be missed if only TSH levels are measured.

Keywords: Thyroid Disorders, Abnormal Uterine Bleeding

1. Introduction

Abnormal uterine bleeding is a common but a complicated entity accounting for at least 20% patients attending the outpatient department. Dysfunctional uterine bleeding is a commonly used term which refers to 'abnormal uterine bleeding with no demonstrable pelvic disease, pregnancy or systemic disease'¹. It is a diagnosis of exclusion. A broad spectrum of reproductive illnesses ranging from menstrual irregularities and abnormal sexual development to infertility and premature menopause can be seen associated with thyroid abnormalities. Thyroid disorders² are around ten times more common in females than males possibly due to autoimmune nature of thyroid disorders³.

As universally recognized, menstrual disturbances may accompany or may even precede thyroid disorders and currently, subclinical thyroid disorders are on the rising trend as compared to overt thyroid disorders. Since patients with Sub-clinical thyroid disorders do not exhibit clinically overt physical symptoms and signs, therefore go unnoticed by unwary clinicians. This most of the times leads to avoidable surgical interference and its associated complications. With modern techniques, the estimation of various hormones in blood⁴ is possible in reliable and rapid manner thereby making the diagnosis of various endocrine disorders easy and medical treatment being instituted promptly. This has very gratifying results, as patient is virtually asymptomatic on adequate treatment. Hence the aim of this study is to evaluate the thyroid function in patients of reproductive age group having abnormal uterine

bleeding in our area. It is comparatively cost effective than other investigations. As most of our study population is from rural background with financial constraint, unnecessary steroidal hormone treatment and surgery can be avoided by a simple investigation like thyroid levels, thereby reducing patient morbidity and their financial burden.

Aim:

To study the correlation between thyroid disorders and abnormal uterine bleeding in women of reproductive age group.

Objectives

- To assess the frequency of Thyroid disorders in women with abnormal uterine bleeding.
- To assess the type of menstrual patterns in women with Hypothyroidism (overt and subclinical types) having Abnormal uterine bleeding.
- To assess the type of menstrual patterns in women with Hyperthyroidism having abnormal uterine bleeding.

2. Materials and Methods

Study design: Cross-sectional study

Study location: Department of Obstetrics and Gynaecology, P. E. S. Institute of Medical Sciences and Research, Kuppam. A tertiary referral centre.

Study duration: 26 months, from January 2020 to March 2022.

Sample size: 165

Inclusion criteria:

- 1) Women in reproductive age group of 18 - 45 years.
- 2) Women with any of the following menstrual disturbances -
 - Acyclical bleeding,
 - Menorrhagia,
 - Metrorrhagia,
 - Oligomenorrhoea,
 - Hypomenorrhoea,
 - Polymenorrhoea,
 - Polymenorrhagia
- 3) Women with signs and symptoms of thyroid disorders

Exclusion criteria:

- 1) Women with presence of pelvic pathology – Fibroids, Polyp, Cervical growth. etc.
- 2) Women with history of Bleeding diathesis and clotting abnormalities.
- 3) Women on drugs like Aspirin, Heparin, Anti - Thyroid agents, Thyroxin and other Hormonal treatment.
- 4) Women who were known cases of Diabetes Mellitus and Systemic Hypertension.
- 5) Women who were Pregnant.
- 6) Women with Intrauterine contraceptive device (IUCD) in situ.
- 7) Women who were already diagnosed cases of Thyroid disorders.

3. Methodology

A questionnaire was designed to collect information regarding demographics, menstrual complaints, history of medical illnesses and history of any drug intake. Women of reproductive age group attending the OPD and admitted in Department of Obstetrics and Gynaecology and fulfilling the inclusion criteria were taken up for this questionnaire. Informed written consent of the patients was taken in their mother tongue. Participants were interviewed in the local language. Clinical examination and Ultrasonography of all the patients was done. Blood samples of all the patients were sent for Serum T3, T4, TSH levels. The biochemical parameters were measured by standard laboratory technique.

Approximately 3ml venous blood sample was collected in a yellow capped plain vial, from antecubital vein under strict aseptic conditions following the universal precautions. Centrifugation was done at 3000rpm for 10 minutes and separated serum was stored at - 20°C until analysis. Serum triiodothyronine (T3), Thyroxine (T4) and thyroid stimulating hormone (TSH) level were measured by chemiluminescence assay on autoanalyzer. Normal range for T3, T4 and TSH was respectively 2.5 - 4.16pg/ml, 0.89 -

1.76ng/dl and 0.34 - 5.12IU/ml and thyroid function was interpreted as:

Findings	Interpretation
All T3, T4 and TSH within normal Range	Euthyroid
T3 <2.5pg/ml, T4 <0.89ng/dl and TSH >5.12IU/ml	Hypothyroid
T3 and T4 within normal range and TSH >5.12IU/ml	Subclinical hypothyroid
T3 >4.16pg/ml, T4 >1.76ng/dl and TSH < 0.34 IU/ml	Hyperthyroid
T3 and T4 within normal range and TSH <0.34IU/ml	Subclinical Hyperthyroid

Statistical Analysis

All Statistical analysis was done by using SPSS (statistical package of social science) 20.0 version. The data was presented as mean for continuous variables or absolute number (%) for categorical variable unless otherwise specified. p - value <0.005 was considered statistically significant. Categorical data was compared using chi square test and independent t - test.

4. Results

Age - wise distribution of cases

The mean age among the Euthyroid patients was 29.29±7.40 yrs. The mean age among the Thyroid disorder patients was 32.38 ± 7.66 yrs.

Socio economic status

42.97% in the Euthyroid group and 45.95% in the Thyroid disorder group were from upper lower SES. Most of the Euthyroid patients (96.09%) were from rural background while only 3.91% were from urban population. Most of the Thyroid disorder patients (91.89%) were from rural background while only 8.11% were from urban population. Most of the patients, 46.87% in the Euthyroid group and 43.24% in the Thyroid disorder group were Para 2. Thyroid swelling was present only in 3.13% of Euthyroid patients and in 35.14% of Thyroid disorder patients. Symptoms and signs of thyroid abnormality were present only in 30.47% of Euthyroid patients and in 54.05% of Thyroid disorder patients.

Table 1: Distribution of Study Subjects According to Their Thyroid Status (Total Number of Patients having AUB, n=165)

Thyroid status	No of patients (n)	Percentage (%)
Euthyroid	128	77.5
Subclinical hypothyroidism	20	12.12
Overt hypothyroidism	13	7.88
hyperthyroidism	4	2.42
total	165	100

Table 2: Distribution of Study Subjects According to Types of AUB Pattern (Total Number of Patients Having AUB, n=165)

AUB patterns	Euthyroid		Subclinical hypothyroidism		Overt hypothyroidism		hyperthyroidism	
	n	%	N	%	n	%	n	%
Acyclical bleeding	28	21.88	2	10	2	15.38	0	0
Hypomenorrhoea	7	5.47	0	0	0	0	1	25
Menorrhagia	56	43.75	11	55	9	69.24	0	0
Metrorrhagia	6	4.69	1	5	0	0	0	0
Oligomenorrhoea	10	7.81	1	5	1	7.69	3	75

Polymenorrhoea	8	6.24	2	10	0	0	0	0
Polymenorrhagia	13	10.16	3	15	1	7.69	0	0
Total	128	100	20	100	13	100	4	100

Out of the total 165 patients (100%), most of the patients 128 (77.58%) were Euthyroid, 20 (12.12%) were Subclinical Hypothyroid, 13 (7.88%) were Overt Hypothyroid and 4 (2.42%) patients were Hyperthyroid. (Table 1). The most common type of abnormal uterine bleeding present in Euthyroid patients was Menorrhagia in 43.75% followed by Acyclical bleeding in 21.88%, Polymenorrhagia in 10.16%, Oligomenorrhoea in 7.81%, Polymenorrhoea in 6.24%, Hypomenorrhoea in 5.47% and Metrorrhagia in 4.69%. The most common type of abnormal uterine bleeding pattern present in Subclinical Hypothyroid patients was Menorrhagia in 55% followed by Polymenorrhagia in 15%, Acyclical bleeding in 10%, Polymenorrhoea in 10%, Oligomenorrhoea in 5% and Metrorrhagia in 5%. The most common type of abnormal uterine bleeding pattern present in overt Hypothyroid patients was Menorrhagia in 69.24% followed by Acyclical bleeding in 15.38%, Oligomenorrhoea in 7.69% and Polymenorrhagia in 7.69%. The most common type of abnormal uterine bleeding pattern present in hyperthyroid patients was Oligomenorrhoea in 75% followed by Hypomenorrhoea in 25%. (Table 2).

5. Discussion

This study had been carried out in a hospital of rural setup where most of the people were from the lower side of socio-economic status. Rural population tends to have iodine deficiency due to inadequate iodine intake which in turn might be due to less availability or less affordability of the patients as they are from lower side of socioeconomic status. Thereby they are more prone to develop thyroid disorders. The patients with thyroid disorders have comparatively higher mean BMI than the Euthyroid population due to obesity. Menorrhagia as the most common form of AUB pattern in the total population is supported by almost all the studies - Parveen et al.⁵ Verma et al.⁶ and Divya et al.⁷.

Both subclinical and overt hypothyroidism associated with menorrhagia, acyclical bleeding and polymenorrhagia as the most common AUB patterns is supported by studies conducted by Bhavani et al.⁸ and Sanghamitra et al.⁹ who showed menorrhagia in 73.4% and 62.5% respectively. The cause for Menorrhagia in most of these studies is said to be due multiple factors: Defective or delay in LH response leading to Luteal phase defect and anovulation due to GnRH pulsatile secretion which was due to TRH induced hyperprolactinemia, abnormal feedback at pituitary level due to decreased SHBG production thereby leading to altered peripheral metabolism of oestrogens, altering coagulation factors (decrease in factors VII, VIII, IX, XI) causing menorrhagia.

Oligomenorrhoea and Hypomenorrhoeais the most common AUB pattern in hyperthyroid patients is supported by studies conducted by Jinger et al.¹⁰. and Somani et al.¹¹. who showed oligomenorrhoea as 75% and 55.5% respectively. Studies conducted by Parveen et al.⁵. Priya et al.¹². and Singh et al.¹³. showed that all the patients with hyperthyroidism have only oligomenorrhoea as the AUB pattern. This finding in the

present study shows findings significantly different from a study conducted by Bhavani et al.⁸. which showed that the most common types of AUB patterns in hyperthyroidism were menorrhagia in 33.33%, hypomenorrhoea in 33.33% and polymenorrhoea in 33.33%. The cause for this in most of these studies is said to be due multiple factors: Increased SHBG production, altered oestrogen metabolism and increased peripheral conversion of androgens to oestrogens, elevated baseline gonadotropin concentrations and increased gonadotropin response to GnRH; this affects the haemostatic factors, including the synthesis of factor VII. Despite all these metabolic alterations, there usually is maintenance of ovulation in Hyperthyroid women, supported by the endometrial biopsy reports according to a study conducted by Gowri et al.¹⁴.

6. Conclusion

Patients with hypothyroidism both of overt and subclinical type tend to develop AUB patterns which cause excessive amounts of blood loss like menorrhagia, metrorrhagia, polymenorrhoea, polymenorrhagia and a cyclical bleeding. The patients with hyperthyroidism tend to develop AUB patterns which cause lesser amounts of blood loss like oligomenorrhoea and hypomenorrhoea. Various types of menstrual disorders can be considered as possible presenting symptoms of thyroid disorders and thyroid assessment should be done in all these cases. Unless proper evaluation of thyroid function is done among these patients, we often miss an important aetiology of AUB. Thyroid function tests are low cost, readily available and can detect a potentially curable cause of AUB which would help in forming proper treatment plan for these patients. Thus, the work up of any patient with AUB should essentially consist of T3 and T4 levels along with TSH levels as a mandatory part, otherwise cases of subclinical hypothyroidism could be missed if only TSH levels are measured. Simple treatment with thyroxine in cases of hypothyroidism and with anti-thyroid drugs in cases of hyperthyroidism can avoid unnecessary surgical procedures, thereby reducing patient morbidity and in turn their financial burden.

References

- [1] Nesse RE. Abnormal vaginal bleeding in perimenopausal women. *Am Fam Physician* 1989; 40 (1): 185 - 92.
- [2] Thomas R, Reid RL. Thyroid disease and reproductive dysfunction: a review. *Obstet Gynecol* 1987; 70 (5): 789 - 98.
- [3] Mazzaferri EL. Evaluation and management of common thyroid disorders in women. *Am J Obstet Gynecol* 1997; 176 (3): 507 - 14.
- [4] Akande EO, Hockaday TD. Plasma luteinizing hormone levels in women with thyrotoxicosis. *J Endocrinol* 1972; 53 (1): 173 - 4.
- [5] Parveen M, Kumari S, Haque SS, et al. Evaluation of thyroid profile status in women with abnormal uterine

- bleeding in north Indian population. *Int J Biomed & Adv Res* 2017; 8 (7): 288 - 91.
- [6] Verma SK, Pal A, Jaswal S. A study of thyroid dysfunction in dysfunctional uterine bleeding. *Int J Reprod, Contracept Obstet and Gynec* 2017; 6 (5): 2035 - 9.
- [7] Maria JD, Jayakumari S, Sundaram PS. A prospective study on hypothyroidism in premenopausal women. *Int J Pharm Sci Rev Res* 2016; 39 (1): 183 - 7.
- [8] Bhavani N, Sathineedi A, Giri A, et al. A study of correlation between abnormal uterine bleeding and thyroid dysfunction. *Journal of Recent Trends in Science and Technology* 2015; 14 (1): 131 - 5.
- [9] Mohapatra S, Behera SK. Prevalence of hypothyroidism in patients with provisional diagnosis of dub. *MedPulse – International Journal of Gynaecology* 2017; 3 (1): 23 - 9.
- [10] Jinger SK, Verma A, Dayma I, et al. To study the thyroid profile in menstrual disorder at tertiary care hospital in northern western Rajasthan, India. *International Journal of Research in Medical Sciences* 2017; 5 (5): 2212 - 14.
- [11] Somani SR, Somani SG. Study of thyroid dysfunction in premenopausal women with abnormal uterine bleeding. *Int J Sci & Res* 2015; 4 (7): 487 - 9.
- [12] Paari P, Sindhuja TP, Dhinakaran S. Prevalence and patterns of thyroid dysfunction in women with abnormal uterine bleeding in urban Southern India. *Paripex Indian Journal of Research* 2017; 6 (7): 19 - 20.
- [13] Singh S, Sahoo S, Das PC. A study of thyroid dysfunction in dysfunctional uterine bleeding. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology* 2018; 7 (3): 1002.
- [14] Gowri M, Radhika BH, Ramaiah R. Role of thyroid function tests in women with abnormal uterine bleeding. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology* 2014; 3 (1): 54 - 7.