Section: Obstertics and Gynaecology

Original Research Article

THYROID DYSFUNCTION IN ABNORMAL UTERINE BLEEDING: PREVALENCE AND BLEEDING PATTERN ASSOCIATIONS

T.M. Sangeetha[1], Divya[1], S. Tamilarasi[1]

[1]Assistant Professor, Department of Obstertics and Gynaecology, Government Medical College & Hospital, Pudukkottai, Tamilnadu, India

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Corresponding Author:
Dr. S. Tamilarasi,
Email: doc.tamil2015@gmail com

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Abstract

Background: Abnormal uterine bleeding (AUB) is a common gynaecological disorder affecting women of reproductive age and is often associated with hormonal imbalances, including thyroid dysfunction. Thyroid hormones play an important role in female reproductive health, influencing ovarian, uterine, and placental function. This study aimed to assess thyroid hormone levels in patients with AUB. **Materials and Methods:** This prospective study included 62 women with AUB who underwent hysteroscopy. Patients underwent a comprehensive clinical assessment, including physical, gynaecological, and thyroid examinations. Thyroid dysfunction-related symptoms were recorded. To evaluate thyroid function, a complete thyroid profile, including T3, T4, and TSH levels, was conducted. Bleeding patterns were classified, and the prevalence of thyroid abnormalities was determined. The data were analysed and presented as frequency and percentage distributions. **Result:** Among 62 patients, 53.2% were aged 31-40 years, 22.6% were 21-30 years, 14.5% were under 20 years, and 9.7% were above 40 years. Primiparous women comprised 54.8% of the sample, while 22.6% were Euthyroid patients constituted 61.3%, followed by subclinical hypothyroidism (19.4%), hypothyroidism (16.1%), and hyperthyroidism (3.2%). Menorrhagia was the most common bleeding pattern (54.8%), predominantly in euthyroid (63.2%) and hypothyroid (40%) cases. Hyperthyroidism was associated with oligomenorrhea and amenorrhoea (50% each). Subclinical hypothyroidism primarily presented as menorrhagia (50%) or polymenorrhea (25%). Thyroid dysfunction significantly influences bleeding patterns in patients with AUB. **Conclusion:** Thyroid dysfunction is prevalent among patients with AUB, with subclinical hypothyroidism being the most common. Routine thyroid function screening in patients with AUB can aid in early diagnosis and targeted management, potentially preventing unnecessary interventions and improving patient outcomes.

INTRODUCTION

Abnormal uterine bleeding (AUB) is uterine corpus bleeding that is abnormal in regularity, volume, frequency, or duration.[1,2] AUB affects women of reproductive age and impacts their health as well as may cause complications such as anaemia and infertility.[1,2] The International Federation of Gynaecology and Obstetrics (FIGO) developed standardized nomenclature and classification for AUB, for example, PALM-COEIN, where causes are categorized into structural and non-structural causes.[3,4]

AUB is a frequent condition that affects 10-30% of women of reproductive age and has a huge impact on their quality of life-related to health.[5] Diagnostic tools used include transvaginal ultrasound, saline infusion sonohysterography, and hysteroscopy with biopsy.[1] Antifibrinolytic medications and hormonal therapies or surgery can be treatment options depending on the aetiology.1 Step-wise workup of AUB including patient history, imaging, and lab tests is crucial in making an accurate diagnosis and appropriate management.[4]

The thyroid gland, a vital endocrine organ, produces thyroxine (T4) and triiodothyronine (T3) hormones, which regulate metabolism, growth, and development.[6] The hypothalamus-pituitary-thyroid axis controls thyroid function through thyrotropin-releasing hormone (TRH) and thyroid-stimulating hormone (TSH).[7] T3 and T4 exert their effects primarily through nuclear thyroid hormone receptors, influencing gene expression.[8] T4 to T3 local activation by deiodinase enzymes is required for metabolic control in several tissues.[8] Thyroid hormones are crucial for the development of the

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nervous system, linear growth, energy metabolism, and thermogenesis.[7] They also control hepatic metabolism, fluid homeostasis, and cardiovascular function.[7]

Thyroid hormones play an important role in female reproductive health and influence ovarian, uterine, and placental function.[9] Thyroid disease is associated with various menstrual disorders, including menorrhagia in hypothyroidism and oligomenorrhea in hyperthyroidism.[10] In a study, 41.07% of the women with menstrual disorders had thyroid disease, of which the most prevalent was subclinical hypothyroidism.[11] Menorrhagia was the most frequent menstrual symptom overall and in patients with hypothyroidism in particular.[11] Thyroid diseases may affect fertility and pregnancy outcomes, and they are linked with conditions such as premature ovarian insufficiency and polycystic ovarian syndrome (PCOS).[12]

The relationship between thyroid function and menstrual cycle regulation requires evaluation of thyroid hormone levels in women with AUB. Thyroid dysfunction can affect menstrual regularity and go unnoticed during standard gynaecological assessments. The detection of thyroid dysfunction in women presenting with AUB would enable early diagnosis and directed interventions, potentially eliminating the need for unnecessary procedures. This study aimed to evaluate thyroid hormone levels in women with AUB, identify the prevalence of thyroid dysfunction, and characterise its association with bleeding patterns.

Aim: This study aimed to assess thyroid dysfunction in patients with abnormal uterine bleeding.

MATERIALS AND METHODS

This prospective study included 62 women with AUB. Before initiation, the study was approved by the Institutional Ethics Committee (IEC). Informed consent was obtained from the parents before they participated in the study.

Inclusion criteria

Patients with AUB without haematological disorders, genital or cervical lesions, ongoing hormonal therapy, or contraindications for dilatation and curettage were included.

Exclusion criteria

Patients who were unwilling to participate, had suspected or confirmed pelvic infections or cervical stenosis, were using oral contraceptives, were pregnant, had uncontrolled hypertension or diabetes, or had an intrauterine contraceptive device (IUCD) in place were excluded from the study.

Methods: Patients underwent comprehensive physical, gynaecological, and neck examinations, and symptoms of thyroid dysfunction were recorded. Age, bleeding patterns, and related symptoms were documented, and a complete thyroid profile (TSH, T3, and T4) was performed to assess thyroid dysfunction. Data were presented as frequency and percentage.

RESULTS

In terms of age distribution, most patients (53.2%) were 31-40 years old, followed by 22.6% in the 21-30 years' category, 14.5% were below 20 years, and 9.7% were above 40 years. Regarding parity status, over half (54.8%) were primiparous, 22.6% were unmarried, 14.5% were nulliparous, and 8.1% had a parity of more than two [Table 1].

Table 1: Demographic characteristics.

		N (%)
Age group	<20	9(14.5%)
	21-30	14(22.6%)
	31-40	33(53.2%)
	>40	6(9.7%)
Parity	Unmarried	14(22.6%)
	Nullipara	9(14.5%)
	Primipara	34(54.8%)
	Para >2	5(8.1%)

Regarding thyroid dysfunction, the majority (61.3%) were euthyroid, followed by subclinical hypothyroidism in 19.4% of the patients. Hypothyroidism was observed in 16.1% of patients, whereas hyperthyroidism was the least common condition, affecting only 3.2% of patients.

Menorrhagia was the predominant bleeding pattern, affecting 54.8% of patients, followed by Polymenorrhoea in 16.1%, and oligomenorrhoea in 12.9%. Metrorrhagia was reported in 8.1% of patients, Meno-metrorrhagia in 6.5%, and amenorrhoea was the least common, in only 1.6% of patients [Table 2].

Table 2: Comparison of thyroid function status and bleeding patterns among patients.

		N (%)
Thyroid dysfunction	Euthyroid	38(61.3%)
	Hypothyroid	10(16.1%)
	Subclinical Hypothyroidism	12(19.4%)
	Hyperthyroidism	2(3.2%)

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Bleeding pattern	Menorrhagia	34(54.8%)
	Polymenorrhoea	10(16.1%)
	Metrorrhagia	5(8.1%)

In the euthyroid group, the highest proportion (47.4%) was in the 31-40 years' category, followed by 28.9% in the 21-30 years' group, 18.4% under 20 years of age, and 5.3% above 40 years of age. Among the patients with hypothyroidism, half (50%) were aged 31-40 years, while 20% were in the 21-30 years and >40 years' age categories, and only 10% were below 20 years of age.

For subclinical hypothyroidism, the majority (66.7%) were in the 31-40 years' group, followed by 16.7% above 40 years, while 8.3% each were in the <20 and 21-30 years' categories. Hyperthyroidism was observed in the 31-40 age group, with no patients in other age categories [Table 3].

Table 3: Comparison of age across thyroid function categories

		Thyroid dysfunction N (%)			
		Euthyroid (n=38)	**Hypothyroid (n=10)**	**Subclinical Hypothyroidism (n=12)**	**Hyperthyroidism (n=2)**
Age (years)	<20	7(18.4%)	1(10%)	1(8.3%)	0
	21-30	11(28.9%)	2(20%)	1(8.3%)	0
	31-40	18(47.4%)	5(50%)	8(66.7%)	2(100%)
	>40	2(5.3%)	2(20%)	2(16.7%)	0

In the euthyroid group, menorrhagia was the most common bleeding pattern, affecting 63.2% of patients, followed by polymenorrhea and oligomenorrhea in 10.5%. Metrorrhagia and Meno-metrorrhagia were reported in 7.9% of the patients, with no cases of amenorrhoea. Among patients with hypothyroidism, menorrhagia was the most prevalent, affecting 40% of patients. This was followed by polymenorrhea in 30%, metrorrhagia in 20%, and oligomenorrhea in 10% of the patients. No cases of menometrorrhagia or amenorrhoea were reported.

In the subclinical hypothyroidism group, menorrhagia was the most frequent bleeding pattern (50%), followed by polymenorrhea (25%) and oligomenorrhea (16.7%). Meno-metrorrhagia was reported in 8.3%, with no cases of metrorrhagia or amenorrhea. In patients with hyperthyroidism, oligomenorrhea and amenorrhoea were equally prevalent (50% each), with no other bleeding patterns reported [Table 4].

Table 4: Comparison of bleeding patterns across thyroid function categories

		N (%)			
		Euthyroid (n=38)	**Hypothyroid (n=10)**	**Subclinical Hypothyroidism (n=12)**	**Hyperthyroidism (n=2)**
Bleeding pattern	Menorrhagia	24(63.2%)	4(40%)	6(50%)	0
	Polymenorrhoea	4(10.5%)	3(30%)	3(25%)	0
	Metrorrhagia	3(7.9%)	2(20%)	0	0
	Meno-metrorrhagia	3(7.9%)	0	1(8.3%)	0
	Oligomenorrhoea	4(10.5%)	1(10%)	2(16.7%)	1(50%)
	Amenorrhea	0	0	0	1(50%)

DISCUSSION

In our study, most patients were within the reproductive age group, with the highest proportion belonging to the 31-40 years category, followed by those aged 21-30. A smaller proportion of patients were either below 20 or above 40 years of age. Regarding parity, more than half of the patients were primiparous, while others were unmarried, nulliparous, or had more than two pregnancies.

A study by Mishra and Verma found a high prevalence of thyroid disorders, especially hypothyroidism (38%), among women of reproductive age (68% between 21-40 years), with the highest rates in primiparous women (33.3%).[13] A study by Rani et al. found that most patients belonged to the 26-30 years age group (30%) followed by 20-25.[14] A study by Bilwal and Garg reported most were in the age group of 31-40 years (38%).[15] A study by Gujar et al. reported that most of the patients were aged 24 - 32 years i.e.,56.8%, 9.2% of cases were nullipara.[16]

In our study, thyroid function analysis revealed that euthyroid patients constituted the majority, followed by subclinical hypothyroidism, hypothyroidism, and a smaller proportion of hyperthyroid patients. Most thyroid dysfunction cases were observed in the 31-40 years age group, with subclinical hypothyroidism being the most common abnormality. Hyperthyroidism was exclusively found in this age range, whereas other thyroid dysfunctions were distributed across various age groups.

A study by Bilwal and Garg reported thyroid disorders are common in patients with abnormal

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uterine bleeding, with subclinical hypothyroidism, overt hypothyroidism, and hyperthyroidism detected mostly in the 31-40 age group.15 A study by Rani et al. reported thyroid disorders were prevalent in 22%, hypothyroid in 20% and hyperthyroidism in 2%.14 A study by Gujar et al. reported that 44% of cases have menorrhagia, 32.2% have oligomenorrhea, and 19.6% have amenorrhea.16 A study by Mounika found that thyroid dysfunction was most common, especially in the 31-40 years age group for about 77.5% of cases.[17]

In our study, menorrhagia was the most frequently reported bleeding pattern among all thyroid function groups, particularly in patients with euthyroidism and hypothyroidism. Polymenorrhea was more prevalent in patients with hypothyroidism and subclinical hypothyroidism. Hyperthyroidism was predominantly associated with oligomenorrhea and amenorrhoea, with no cases of menorrhagia reported. A study by Gungor and Hekimsoy reported that hypermenorrhea was significantly more common in patients with overt hypothyroidism (33%), menorrhagia (26%), polymenorrhea (20%), and oligomenorrhea (26%).10 A study by Rani et al. reported menorrhagia as the most common presenting symptom (66%) followed by oligomenorrhoea (21%).14 A study by Bilwal and Garg reported that 44% presented with menorrhagia.[15]

A study by Mounika found that thyroid dysfunction, particularly subclinical hypothyroidism, is common in patients with abnormal uterine bleeding, in cases of polymenorrhagia (42.8%), menorrhagia (33.3%), polymenorrhea (28.5%), and oligomenorrhea.17 A study by Deshmukh et al. reported thyroid dysfunction, particularly subclinical hypothyroidism and hypothyroidism, is associated with abnormal uterine bleeding patterns like menorrhagia and polymenorrhoea.[18] A study by Kothapalli and Kolluru reported that Menorrhagia was the most common bleeding pattern in euthyroid and hypothyroid patients, while hyperthyroidism was associated with oligomenorrhea and amenorrhea.[19]

Limitations

The small sample size limited generalisability and the single-centre design introduced potential selection bias. The cross-sectional nature of this study prevented the assessment of the causality between thyroid dysfunction and abnormal uterine bleeding patterns. Additionally, variability in thyroid hormone levels due to transient or subclinical conditions was not accounted for, which may have influenced the results. Other contributing factors, such as polycystic ovary syndrome (PCOS) and other endocrine disorders, have not been extensively analysed.

CONCLUSION

Our study concluded that a significant proportion of patients showed thyroid abnormalities, predominantly subclinical hypothyroidism. Across thyroid function categories, menorrhagia was the most frequent bleeding pattern, especially in euthyroid and hypothyroid patients, while hyperthyroid cases showed oligomenorrhea and amenorrhoea. Our results underscore the need to evaluate thyroid function in patients with AUB for the early identification and treatment of thyroid-related menstrual disorders and improvement of patient outcomes.

REFERENCES

1. Leal CRV, Vannuccini S, Jain V, Dolmans M-M, Di Spiezio Sardo A, Al-Hendy A, et al. Abnormal uterine bleeding: The well-known and the hidden face. J Endometr Uterine Disord 2024; 6:100071. https://doi.org/10.1016/j.jeud.2024.100071.
2. Lata G, Sharma S, Kaur SP, Gulia SP. Histopathological pattern of endometrial biopsy in females with abnormal uterine bleeding: a retrospective study in tertiary care hospital of Haryana. Int J Reprod Contracept Obstet Gynecol 2020; 9:4068. https://doi.org/10.18203/2320-1770.ijrcog20204289.
3. Munro MG. Practical aspects of the two FIGO systems for management of abnormal uterine bleeding in the reproductive years. Best Pract Res Clin Obstet Gynaecol 2017; 40:3–22. https://doi.org/10.1016/j.bpobgyn.2016.09.011.
4. Marnach ML, Laughlin-Tommaso SK. Evaluation, and management of abnormal uterine bleeding. Mayo Clin Proc 2019; 94:326–35. https://doi.org/10.1016/j.mayocp.2018.12.012.
5. Fraser IS, Langham S, Uhl-Hochgraeber K. Health-related quality of life and economic burden of abnormal uterine bleeding. Expert Rev Obstet Gynecol 2009; 4:179–89. https://doi.org/10.1586/17474108.4.2.179.
6. Bhardwaj S, Yadav S. Thyroid Physiology. Endocrine Surgery, Boca Raton: CRC Press; 2021;2–9. https://doi.org/10.1201/9780429197338-2
7. Ortiga-Carvalho TM, Chiamolera MI, Pazos-Moura CC, Wondisford FE. Hypothalamus-pituitary-thyroid axis. Compr Physiol 2016; 6:1387–428. https://doi.org/10.1002/cphy.c150027.
8. Mullur R, Liu Y-Y, Brent GA. Thyroid hormone regulation of metabolism. Physiol Rev 2014; 94:355–82. https://doi.org/10.1152/physrev.00030.2013.
9. Silva JF, Ocarino NM, Serakides R. Thyroid hormones and female reproduction. Biol Reprod 2018; 99:907–21. https://doi.org/10.1093/biolre/ioy115.
10. Güngör Semiz G, Hekimsoy Z. Menstrual cycle characteristics in women with and without thyroid disease. Cureus 2024;16: e62724. https://doi.org/10.7759/cureus.62724.
11. Kumari A, Rohatgi R, Singh A. Evaluation of thyroid dysfunction in patients with menstrual disorders of reproductive age group: a prospective cross-sectional study. Int J Reprod Contracept Obstet Gynecol 2021; 10:642. https://doi.org/10.18203/2320-1770.ijrcog20210320.
12. Brown EDL, Obeng-Gyasi B, Hall JE, Shekhar S. The thyroid hormone axis and female reproduction. Int J Mol Sci 2023; 24:9815. https://doi.org/10.3390/ijms24129815.
13. Mishra DPS, Verma DA. Assessment of thyroid disorders prevalence in women during reproductive age. Int J Clin Obstet Gynaecol 2017; 1:24–5. https://doi.org/10.33545/gynae.2017.v1.i1a.1025.
14. Rani M, Jha K, Jana D. The study of thyroid function in abnormal uterine bleeding. IJSR 2021:9–10. https://doi.org/10.36106/8132210.
15. Bilwal BK, Garg A. Evaluation of thyroid disorders in abnormal uterine bleeding. Int J Reprod Contracept Obstet Gynecol 2019; 8:2236. https://doi.org/10.18203/2320-1770.ijrcog20192162.
16. Gurjar D, Pachori P, Chaudhary S, Singh D. The study of thyroid profile in abnormal uterine bleeding at tertiary care center, Rajasthan, India. Int J Reprod Contracept Obstet Gynecol 2019; 8:2429. https://doi.org/10.18203/2320-1770.ijrcog20192444.

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17. Mounika K. Study on thyroid dysfunction in patients of Dysfunctional Uterine Bleeding. J Pharm Res Int 2021:44–9. https://doi.org/10.9734/jpri/2021/v33i40a32218.
18. Deshmukh P, Boricha B, Pandey A. The association of thyroid disorders with abnormal uterine bleeding. Int J Reprod Contracept Obstet Gynecol 2015:701–8. https://doi.org/10.18203/2320-1770.ijrcog20150077.
19. Kothapalli D, Kolluru K. A prospective descriptive study of evaluation of menstrual disorders in thyroid dysfunction. Int J Reprod Contracept Obstet Gynecol 2021; 10:2759. https://doi.org/10.18203/2320-1770.ijrcog20212664.

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