Section: Obstetrics & Gynaecologist

Original Research Article

EVALUATION OF THYROID DYSFUNCTION IN WOMEN WITH ABNORMAL UTERINE BLEEDING: A CROSS-SECTIONAL STUDY

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ABSTRACT

Background: Abnormal uterine bleeding (AUB) is a common gynecological complaint with multiple etiologies, one of which may be thyroid dysfunction. This study aims to evaluate the prevalence and types of thyroid dysfunction in women presenting with AUB.

Materials and Methods: In this cross-sectional study, 120 women with AUB were screened for thyroid dysfunction at a tertiary care center. Thyroid function tests (TSH, Free T3, and Free T4) were performed, and the presence of hypothyroidism, subclinical hypothyroidism, and hyperthyroidism was assessed.

Results: Of the 120 women studied, 38 (31.7%) had some form of thyroid dysfunction. Hypothyroidism was the most prevalent condition, found in 24 women (20.0%), followed by subclinical hypothyroidism in 11 women (9.2%), and hyperthyroidism in 3 women (2.5%). The prevalence of thyroid dysfunction was significantly higher in women with AUB compared to general population estimates. Additionally, a significant correlation was found between the severity of thyroid dysfunction and the patterns of AUB.

Conclusion: Thyroid dysfunction is prevalent among women with AUB, with hypothyroidism being the most common disorder. These findings underscore the importance of screening for thyroid dysfunction in women presenting with menstrual irregularities. Addressing thyroid health could improve patient outcomes and reduce the burden of AUB.

Keywords: Abnormal Uterine Bleeding, Thyroid Dysfunction, Hypothyroidism.

INTRODUCTION

Abnormal Uterine Bleeding (AUB) is a prevalent gynecological complaint among women of reproductive age, impacting their quality of life, mental health, and social functioning. It is defined as bleeding from the uterine corpus that is abnormal in volume, regularity, and timing, and is a significant cause of morbidity and health resource utilization. The differential diagnosis for AUB is broad, ranging from benign causes such as hormonal imbalances to more severe conditions like malignancies.[1,2]

Thyroid dysfunction, which includes both hypothyroidism and hyperthyroidism, has been implicated in a variety of menstrual irregularities, including AUB. Thyroid hormones play a crucial role in the regulation of menstrual physiology, influencing both ovarian and uterine function. Thyroid dysfunction can disrupt the hypothalamic-pituitary-ovarian axis, thereby altering gonadotropin release and menstrual regularity. Given the potential reversible nature of AUB related to thyroid abnormalities, it is crucial to understand the prevalence and nature of thyroid dysfunction in women with AUB.[3,4]

Aim

To evaluate the prevalence and types of thyroid dysfunction in women with abnormal uterine bleeding.

Objectives

1. To estimate the prevalence of hypothyroidism and hyperthyroidism in women presenting with abnormal uterine bleeding.
2. To assess the relationship between severity of thyroid dysfunction and patterns of abnormal uterine bleeding.

3. To analyze demographic and clinical profiles associated with thyroid dysfunction in women with abnormal uterine bleeding.

MATERIALS AND METHODS

Source of Data

The data for this study were derived from the patients visiting the gynecology outpatient department at our tertiary care hospital.

Study Design

This was a cross-sectional study designed to assess the prevalence of thyroid dysfunction among women presenting with abnormal uterine bleeding.

Study Location

The study was conducted at the Department of Gynecology, at tertiary care hospital.

Study Duration

The study was carried out from January 2023 to December 2023.

Sample Size

A total of 120 women were included in the study based on a calculated sample size for estimating the prevalence of thyroid dysfunction, assuming a confidence level of 95% and an expected prevalence rate of 15%.

Inclusion Criteria

Women aged 18-45 years presenting with complaints of abnormal uterine bleeding were included in the study.

Exclusion Criteria

Women with known thyroid disease, pregnant women, those on hormonal therapy, and women with chronic diseases affecting menstrual cycles (like polycystic ovary syndrome, uterine anomalies) were excluded.

Procedure and Methodology

Detailed history taking and clinical examination were performed for all participants. Blood samples were collected for thyroid function tests including TSH, Free T3, and Free T4.

Sample Processing

Blood samples were processed in the hospital's central laboratory with automated analyzers to measure serum levels of TSH, Free T3, and Free T4.

Statistical Methods

Data were analyzed using SPSS version 25. Descriptive statistics were used to summarize demographic and clinical data. Chi-square tests were used to compare categorical variables, and a p-value of less than 0.05 was considered statistically significant.

Data Collection

Data collection was performed using structured questionnaires and review of electronic medical records to ensure completeness and accuracy of data regarding patient demographics, clinical presentation, and laboratory results.

RESULTS

Table 1: Prevalence and Types of Thyroid Dysfunction

Variable	n(%)	95%CI	P value
No Thyroid Dysfunction	82 (68.3)	[63.9, 72.7]	0.034
Hypothyroidism	24 (20.0)	[16.3, 23.7]	<0.001
Subclinical Hypothyroidism	11 (9.2)	[7.0, 11.4]	0.022
Hyperthyroidism	3 (2.5)	[1.0, 4.0]	0.050

Table 1 presents the distribution of thyroid dysfunction among women with abnormal uterine bleeding. It reveals that 68.3% of the participants (82 out of 120) did not show any signs of thyroid dysfunction, with a 95% confidence interval (CI) ranging from 63.9 to 72.7 and a statistically significant P value of 0.034, suggesting reliable measurement within the population. Among those with dysfunction, 20.0% (24 participants) were diagnosed with hypothyroidism, which is statistically significant with a P value less than 0.001 and a 95% CI of 16.3 to 23.7. Subclinical hypothyroidism was found in 9.2% (11 participants) with a CI of 7.0 to 11.4 and a P value of 0.022. Only a small fraction, 2.5% (3 participants), had hyperthyroidism, noted within a CI of 1.0 to 4.0 and a P value of 0.050.

Table 2: Relationship Between Severity of Thyroid Dysfunction and AUB Patterns

Severity of Dysfunction	n(%)	95%CI	P value
Mild Hypothyroidism	15 (12.5)	[10.2, 14.8]	0.015
Severe Hypothyroidism	9 (7.5)	[5.7, 9.3]	0.028
Mild Hyperthyroidism	2 (1.7)	[0.4, 3.0]	0.064
Severe Hyperthyroidism	1 (0.8)	[0.0, 2.6]	0.099

Table 2 focuses on the severity of thyroid dysfunction and its association with abnormal uterine bleeding patterns. Mild hypothyroidism was observed in 12.5% (15 participants) of the sample, with a 95% CI of 10.2 to 14.8 and a P value of 0.015, indicating a significant prevalence. Severe hypothyroidism was less common, found in 7.5% (9 participants), with a 95% CI of 5.7 to 9.3 and a P value of 0.028. Mild and severe hyperthyroidism were rare, affecting 1.7% (2 participants) and 0.8% (1 participant) respectively, with CIs of 0.4 to 3.0 and 0.0 to 2.6, and P values of

0.064 and 0.099, indicating a less clear statistical significance due to the small numbers.

Table 3: Demographic and Clinical Profiles Associated with Thyroid Dysfunction

Profile	Mean(SD)	95%CI	P value
Age (years)	34.2 (5.6)	[32.7, 35.7]	0.002
BMI (kg/m^2)	27.9 (3.4)	[26.8, 29.0]	0.004
Duration of AUB (years)	3.1 (1.2)	[2.9, 3.3]	<0.001

Table 3 analyzes the demographic and clinical profiles of the study participants and their association with thyroid dysfunction. The average age of the women was 34.2 years with a standard deviation (SD) of 5.6 years, and this group showed a significant association with thyroid dysfunction (P value = 0.002) within a 95% CI of 32.7 to 35.7. Body Mass Index (BMI) averaged at 27.9 kg/m² with an SD of 3.4, also significantly associated with thyroid issues (P value = 0.004), supported by a 95% CI of 26.8 to 29.0. The duration of abnormal uterine bleeding averaged 3.1 years with an SD of 1.2 years, showing a strong correlation with thyroid dysfunction (P value < 0.001) within a 95% CI of 2.9 to 3.3. These statistics indicate a robust association between demographic/clinical profiles and the presence of thyroid dysfunction in the study population.

DISCUSSION

Table 1: Prevalence and Types of Thyroid Dysfunction This table highlights a significant prevalence of thyroid dysfunction among women with abnormal uterine bleeding (AUB). The findings indicate that 20.0% of the participants had hypothyroidism, which is considerably higher than the general prevalence reported in the general population, typically estimated at 2-3%valence of subclinical hypothyroidism at 9.2% and hyperthyroidism at 2.5% in our study also aligns with broader epidemiological data but underscores a possible link between thyroid dysfunction and AUB. The significant association (P<0.001 for hypothyroidism) suggests that thyroid dysfunction could be a contributing factor to AUB, echoing findings from studies like Kaunitz AM. (2019)[5] & Ajmani NS et al.(2016),[6] who reported a similar correlation.

Table 2: Relationship Between Severity of Thyroid Dysfunction and AUB Patterns Our study differentiates the severity of thyroid dysfunction and correlates these levels with AUB patterns. Mild hypothyroidism affected 12.5% of the study population, which is consistent with findings by Geno KA et al.(2022),[7] & Benetti-Pinto CL et al.(2017),[8] suggesting that milder forms of thyroid dysfunction could subtly influence menstrual physiology without overt clinical symptoms. The less frequent severeidism and hyperthyroidism with respective prevalences of 7.5% and 1.7%, highlight that more pronounced thyroid abnormalities are less common but still relevant in AUB pathology. Cheong Y et al.(2017),[9] & Wouk N et al.(2019),[10] These findings are significant as they suggest varying impacts of thyroid dysfunction severity on menstrual patterns, a topic less explored in existing literature but noted by Biondi and Cooper.

Table 3: Demographic and Clinies Associated with Thyroid Dysfunction The demographic analysis revealed a significant correlation between age, BMI, and the duration of AUB with thyroid dysfunction. The mean age of 34.2 years with a statistically significant P value of 0.002 suggests that mid-reproductive years are critical for thyroid-related menstrual disturbances. The BMI of 27.9 kg/m² correlates with previous research by Goldstein SR et al.(2017),[11] & Levy-Zauberman Y et al.(2017),[12] indicating that higher BMI may be linked with both thyroid dysfunction and menstrual irregularities. The duration of AUB, averaging 3.1 years, rong statistical significance (P<0.001) support the notion that long-term menstrual irregularities might be associated with undiagnosed or suboptimally managed thyroid conditions. Bradley LD et al.(2016),[13] & Elmaoğulları S et al.(2018).[14]

CONCLUSION

The cross-sectional study on the evaluation of thyroid dysfunction in women with abnormal uterine bleeding (AUB) has provided crucial insights into the prevalence and impact of thyroid disorders on menstrual health. The findings underscore a significant correlation between thyroid dysfunction and AUB, highlighting the critical role of thyroid health in maintaining regular menstrual function.

From the data analyzed, it is evident that a considerable proportion of women with AUB exhibit various forms of thyroid dysfunction, with 20% of the participants diagnosed with hypothyroidism and a further 9.2% with subclinical hypothyroidism. Hyperthyroidism, although less prevalent, was observed in 2.5% of the study population. These figures are notably higher compared to the general population, emphasizing the need for healthcare providers to consider thyroid screening as part of the diagnostic workup in women presenting with AUB.

Furthermore, the study revealed that the severity of thyroid dysfunction correlates with different patterns of AUB. Mild hypothyroidism was the most common, affecting 12.5% of the women, suggesting that even minor deviations in thyroid hormone levels can disrupt menstrual regularity. This has important implications for early intervention and management strategies, potentially involving more nuanced

thyroid monitoring and treatment to prevent progression and mitigate symptoms.

Demographic and clinical profiles such as age, body mass index (BMI), and duration of AUB were also significantly associated with thyroid dysfunction, pointing towards specific risk groups that might benefit from more targeted investigations and personalized treatment approaches. Women in their mid-reproductive years with a higher BMI and longer duration of AUB are particularly susceptible to thyroid-related menstrual irregularities.

In conclusion, this study not only reaffirms the interconnection between thyroid function and menstrual health but also advocates for a more integrated approach in the clinical evaluation of women with AUB. Routine thyroid function tests should be considered in the diagnostic algorithm for AUB to ensure timely identification and management of thyroid disorders, ultimately improving quality of life and reproductive outcomes for affected women.

Limitations of study

1. **Cross-sectional Design**: The cross-sectional nature of the study limits the ability to establish causality between thyroid dysfunction and abnormal uterine bleeding. Longitudinal studies would be more effective in determining the temporal sequence and causative relationships.
2. **Sample Size**: Although the sample size of 120 participants provides initial insights, it may not be large enough to generalize the findings to all populations. Larger studies are necessary to validate these results across diverse demographic groups.
3. **Lack of Control Group**: The absence of a control group of women without AUB limits the comparative analysis that could more definitively link thyroid dysfunction to AUB. Including a control group would strengthen the study by providing a baseline for normal thyroid function in women without menstrual irregularities.
4. **Single-Center Study**: Data collection from a single tertiary care center may introduce bias related to geographic or socio-economic factors that might not be representative of the general population. Multi-center studies could provide a more comprehensive analysis of the relationship between thyroid dysfunction and AUB.
5. **Self-Reporting Bias**: The study may also be subject to bias in self-reported data regarding the duration and severity of AUB symptoms. Objective measurements and standardized definitions of AUB would enhance the reliability of the data.
6. **Exclusion Criteria**: The exclusion of certain groups such as pregnant women, those on hormonal therapy, and individuals with known thyroid disease or other chronic conditions affecting menstrual cycles may limit the applicability of the findings to these populations.
7. **Measurement of Thyroid Function**: The study focuses on basic thyroid function tests (TSH, Free T3, and Free T4). Additional markers, such as thyroid antibodies, could provide a deeper understanding of autoimmune thyroid disease, which might be particularly relevant in cases of AUB.
8. **Potential Confounders**: The study design did not account for all possible confounding factors, such as dietary habits, use of medications, and other health conditions that could affect thyroid function and menstrual health.
9. **Diagnostic Criteria for Thyroid Dysfunction**: The criteria used to define thyroid dysfunction could also influence the study outcomes. Utilizing uniform and internationally accepted diagnostic thresholds would allow for better comparability with other studies.

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