International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Nekkanti D et al. Int J Reprod Contracept Obstet Gynecol. 2023 Dec;12(12):3498-3502
www.ijrcog.org
pISSN 2320-1770 | eISSN 2320-1789

DOI: https://dx.doi.org/10.18203/2320-1770.ijrcog20233624

Original Research Article

The study of thyroid dysfunction in patients with abnormal uterine bleeding

Dhanusha Nekkanti, Vasantha Kumar S.*

Department of Obstetrics and Gynecology, Sri Devaraj Urs Academy of Higher Education and Research, Tamaka, Karnataka, India

Received: 26 May 2023
Accepted: 04 November 2023

***Correspondence:**
Dr. Vasantha Kumar S.,
E-mail: nekkantivijayanand@gmail.com

ABSTRACT

Background: Abnormal uterine bleeding (AUB) is the most common gynecological condition observed during many women's reproductive period. AUB affects the quality of life, causing distress. Most of the cases are undiagnosed or not properly diagnosed. Multiple reasons are causing AUB, one of them is thyroid dysfunction. Nowadays, thyroid testing is readily available, which helps in diagnosis and better management of AUB.
Methods: A prospective observational study was conducted with 124 AUB cases using simple random sampling after approval from the ethics committee.
Results: Total thyroid dysfunction was noted in 32.26% of cases, and 70.16% were multiparous. About 34.1% of cases of menorrhagia and 54.2% of cases of oligomenorrhea had thyroid abnormalities.
Conclusions: For appropriate management of AUB, testing of thyroid levels is necessary.

Keywords: Abnormal uterine bleeding, Menorrhagia, Metrorrhagia, Thyroid dysfunction

INTRODUCTION

The term “abnormal uterine bleeding” refers to a wide range of anomalies in the menstrual cycle, including flow volume, length, and frequency variations that don't occur during pregnancy. Though mortality from abnormal uterine bleeding is rare, it has a profound effect on the quality of life of a woman. Epidemiological data indicate that around 10 to 30% of women of reproductive age are affected by heavy menstrual bleeding called menorrhagia.[1] Assessment of menstrual bleeding is done using six parameters, namely frequency, length, periodicity, quantity, intermenstrual bleeding, and unexpected bleeding.[2]

Either uterine structural defects or unrelated conditions can be the cause of AUB, according to its aetiologies. With the acronym “PALM- COEIN”- “polyp, adenomyosis, leiomyoma, malignancy and hyperplasia, coagulopathy, ovulatory dysfunction, endometrial, iatrogenic”, and not otherwise defined, they are grouped.[3] Appropriate and effective management of abnormal uterine bleeding (AUB) can be achieved only with an accurate diagnosis of AUB aetiology. AUB is a symptom of an underlying disease, not a disease itself. It can strike at any age and manifest itself in various ways.[3]

The prevalence of overt hypothyroidism in developed countries is 4 to 5%, while subclinical hypothyroidism is 4 to 15%.[4] Hypothyroidism among women of reproductive age causes menstrual irregularities, polycystic ovaries, miscarriages and infertility. The physiology of the hypothalamus-pituitary thyroid axis depends on thyroid hormone levels. AUB can occur before the onset of overt hypo or hyperthyroidism.[4] Thyroid disorders have increased rapidly in India in recent years. Thyroid disorders are also found to be the causative factor for AUB in the majority of cases.

Thyroid disorders are easy to diagnose and treat. There has been widespread availability of thyroid function testing in

recent years. When the association between thyroid dysfunction and AUB is strongly established, many clinicians will opt for thyroid testing for women consulting for AUB. Hence this study was conducted to estimate the association between thyroid dysfunction with AUB.

Aims and objectives

To detect and evaluate thyroid disorders in patients with AUB. To observe the association of different menstrual patterns with thyroid dysfunction.

METHODS

Study site

The study was conducted at department of obstetrics and gynecology, R. L. Jalappa and Research Center attached to Sri Devaraj Urs Medical College, affiliated to Sri Devaraj Urs Academy of Higher Education and Research Tamaka, Kolar.

Study population

The study included women with AUB.

Study design

It was a prospective observational study.

Sampling method

Simple random sampling was employed.

Study period

The study took place from January 2021 to August 2022.

Inclusion criteria

All the AUB cases of 20-45 years were included in the study.

Exclusion criteria

Patients who use IUCDs, use medications or hormones, have known thyroid problems, or have a history of bleeding difficulties, PID, postmenopausal women, patients not willing to give consent.

Data collection

After receiving informed consent from the patient and approval from the ethics committee (DMC/KLR/IEC/623/2022-23), data were gathered using a pre-made proforma that matched the study's objectives through personal interviews with the subject. According to the aforementioned criteria, the patient was chosen. The patient underwent a physical examination after obtaining a thorough menstruation history and asking about the indications and symptoms of hyperthyroid and hypothyroid.

Routine tests were performed on all patients, including hemoglobin count, the time required for bleeding and bridging to rule out coagulation problems and abdominal pelvic ultrasound. Then all patients were subjected to T3, T4 and TSH estimation; the morning sample in the fasting state, 5 ml of venous blood, was drawn into a dry, plain glass container without the use of any anticoagulants for the TSH test and T3, T4 estimate.

Following that, the patients were divided into four categories: subclinical hypothyroid, euthyroid, hyperthyroid, hypothyroid

Sample size

The sample size formula: $Z\alpha^2Pq/d^2 = (1.96)^2 \times 32.4 \times 67.6/(7.5)^2 = 124$.

P=prevalence of thyroid disorder as per Thakur et al.[5]

Q=1-P

With prevalence of thyroid disorder was 32.4% at 95% CI with an alpha error of 7.5.

Statistical analysis

Microsoft Excel and SPSS version 25.0 were used for analysis. Results were expressed in terms of mean and standard deviation. The Chi-square test was used to study the association between variables. A p value of <0.05 was considered statistically significant.

RESULTS

Among the study population, 2 (1.61%) participants aged ≤20 years, 51 (41.13%) aged between 21 to 30 years, 66 (53.23%) participants aged between 31 to 40 years and 5 (4.03%) aged >41 years. The mean age was 31.23±5.58 years (Figure 1).

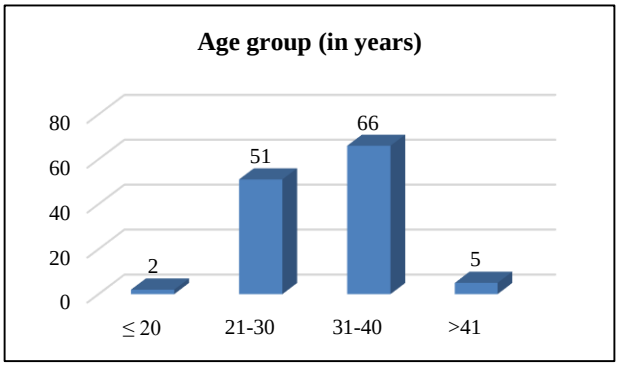

Table 1: Relative risk of abnormal Doppler indices with adverse perinatal outcome.

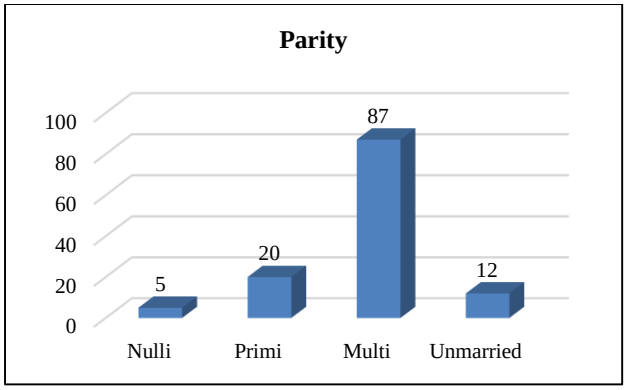

Figure 2: Parity of the study population (N=124).

Among the study population, 5 (4.03%) were nulli, 20 (16.13%) were primi, 87 (70.16%) were multi, and 12 (9.68%) were unmarried (Figure 2).

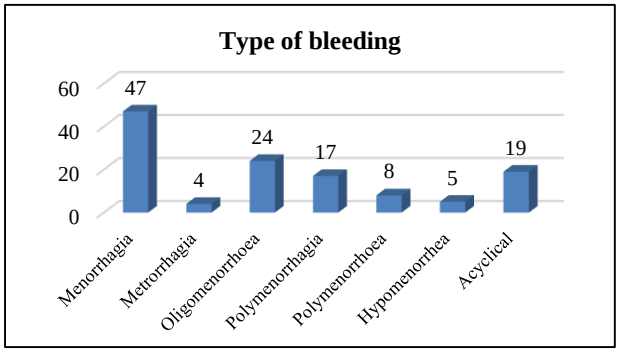

Figure 3: Type of bleeding in the study population (N=124).

Among the study population, 47 (37.90%) participants had menorrhagia, 4 (3.23%) participants had metrorrhagia, 24 (19.35%) had oligomenorrhoea, 17 (13.71%) had polymenorrhagia, 8 (6.45%) had polymenorrhoea, 5 (4.03%) had hypomenorrhea and 19 (15.32%) were acyclical (Figure 3).

Table 1: Thyroid dysfunction in the study population (N=124).

Thyroid dysfunction	Frequency	Percentage
Hypothyroid	13	10.48
Euthyroid	84	67.74
Subclinical hypothyroid	20	16.13
Hyperthyroid	7	5.65

Among the study population, 13 (10.48%) had hypothyroid, 84 (67.74%) had Euthyroid, 20 (16.13%) had subclinical hypothyroid, and 7 (5.65%) had hyperthyroid (Table 1).

Among menorrhagia, 4 (8.51%) had hypothyroid, 31 (65.96%) had euthyroid, 11 (23.40%) had subclinical hypothyroid, and 1 (2.13%) had hyperthyroid. Among metrorrhagia, 4 (100%) had euthyroid. Among oligomenorrhoea, 5 (20.83%) had hypothyroid, 11 (45.83%) had euthyroid, and 1 (5.88%). Among polymenorrhea, 5 (62.50%) had euthyroid, and 3 (37.50%) had subclinical hypothyroid. Among hypomenorrhea, 5 (100%) had euthyroid. Among acyclical, 3 (15.79%) had hypothyroid, 13 (68.42%) had euthyroid, and 3 (15.79%) had subclinical hypothyroid (Table 2).

Table 2: Comparison of thyroid dysfunction with type of bleeding (N=124).

Type of bleeding	Thyroid dysfunction			
	Hypothyroid	**Euthyroid**	**Sub clinical hypothyroid**	**Hyperthyroid**
Menorrhagia (N=47)	4 (8.51%)	31 (65.96%)	11 (23.40%)	1 (2.13%)
Metrorrhagia (N=4)	0 (0%)	4 (100%)	0 (0%)	0 (0%)
Oligomenorrhea (N=24)	5 (20.83%)	11 (45.83%)	2 (8.33%)	6 (25%)
Polymenorrhagia (N=17)	1 (5.88%)	15 (88.24%)	1 (5.88%)	0 (0%)
Polymenorrhea (N=8)	0 (0%)	5 (62.50%)	3 (37.50%)	0 (0%)
Hypomenorrhea (N=5)	0 (0%)	5 (100%)	0 (0%)	0 (0%)
Acyclical (N=19)	3 (15.79%)	13 (68.42%)	3 (15.79%)	0 (0%)

DISCUSSION

As per estimates, AUB affects nearly 1/3 of women, with a global estimated prevalence of 3 to 30%.[6] AUB causes poor health-related quality of life for women affecting their social, emotional and mental health. About 41% of women believe that no treatment options are available for AUB and do not seek medical care.[6] Most of the time, women do not seek medical consultation, thinking it is a waste of time or fearing that surgical intervention is the only treatment option available. Many also do not seek medical care fearing social embarrassment. The cause of AUB is most of the time misdiagnosed, adding to the agony of women.[7] Thyroid hormones affect the menstrual cycle by directly acting on ovaries or indirectly acting on sex hormone-binding globulin, prolactin and gonadotrophin-releasing hormones.[8] Many studies have established an association between thyroid dysfunction and AUB. Detecting and treating thyroid function shows improvement in AUB cases.

Prevalence of thyroid dysfunction

In this study, a total of 32.26% had thyroid dysfunction, which was similar to Singh et al (27.9%) but higher than Thakur et al (15.1%).[5,9]

Age pattern in menstrual disturbances

The mean age was 31.23±5.58 years. The majority (53.23%) of participants were aged between 31 to 40 years. AUB was found to be more common in the early 40s and late 30s which correlated with this observation.[3] Similar finding was observed in the study by Narula et al (32.8%) and another study by Pahwa et al (42%) and another study by Chaitra et al. (42.5%).[10-12] While majority of cases were seen in age group 41 to 50 years in study by Verma et al (42.50%), and Bhavani et al. (40%).[13,14]

Parity in menstrual disturbances

AUB is usually found in women having three or more children. Among study participants the majority (70.16%) were multiparous. This observation was similar to a study by Singh et al, Thakur et al, and Gowri et al.[5,15,16] Among the study population, 37.90% participants had menorrhagia. This observation of menorrhagia being reported in majority of participants was similar to studies by Chaitra et al, Thakur et al, Verma et al, and Deshmukh et al.[5,12,13,17]

Thyroid abnormalities

In the present study, euthyroid was seen in 67.74% of cases, which was similar to Gowri et al (77.6%), Kumar et al (81%), and Thakur et al (84.9%).[5,16,18] Hypothyroidism was seen in 10.48% of cases of this study, which was in accordance with Thakur et al (13.9%), Kaur et al (14%), Kumar et al (16.5%), and Gowri et al (17.6%).[5,16,18,19] Hyperthyroidism was seen in 5.65% of cases of this study, which was in concordance with Gowri et al (4.7%), Kumar et al (2.5%) and Thakur et al (1.3%).[5,16,18] Subclinical hypothyroidism was seen in 16.18% of cases of this study, which was in line with Kumar et al (10.5%), Thakur et al (8.8%), and Joshi et al (26.66%).[5,18,20]

Thyroid dysfunction with the type of bleeding

In this study, among menorrhagia, 4 (8.51%) had hypothyroid, which was in concordance with study by Patil et al (9.6%), but lesser than Singh et al (93.75%).[9,21] In this study, 65.96% of had euthyroid, less than Patil et al (79.1%), but higher than Singh et al (28%).[9,21] In this study, 11 (23.40%) had subclinical hypothyroid, higher than Patil et al (12.9%).[21] In this study, 4 (100%) cases had euthyroid among metrorrhagia, which was in accordance with Patil et al, but higher than study by Singh et al (42.9%).[9,21]

Among oligomenorrhoea, 5 (20.83%) had hypothyroid in this study, that was higher than Singh et al (0%), 11 (45.83%) had euthyroid, which was lesser than Patil A et al.[9,21] (84.6%), but higher than Singh et al (25%), 6 (25%) had hyperthyroid, which was higher than Patil et al.[9,21] (15.4%), but lesser than Singh et al (75%), 1 (5.88%) had subclinical hypothyroid, that was similar to Singh et al (3.7%).[9,21]

Among polymenorrhagia, 1 (5.88%) had hypothyroid in this study, that was higher than Singh et al (0%), 15 (88.24%) had euthyroid, which was similar to Patil et al (92.3%), but higher than Singh et al (34.7%), none of the cases had hyperthyroidism, which was similar to Singh et al (0%), 1 (5.88%) had subclinical hypothyroidism that was similar to Singh et al (3.7%), and Patil et al (3.7%).[9,21]

Among polymenorrhoea, none of the cases had hypothyroid in this study, which was similar to Singh et al (0%), 5 (62.50%) had euthyroid, which was lesser than Patil et al (82.3%), but higher than Singh et al (5.4%), none of the cases had hyperthyroidism, which was similar to Singh et al (0%), 3 (37.50%) had subclinical hypothyroid, that was higher than Singh et al (20%), and Patil et al (7.7%).[9,21]

Among hypomenorrhoea, 5 (100%) had euthyroid, which was in accordance with Singh et al (100%).[9]

Among acyclical, 3 (15.79%) had hypothyroid in this study, which was higher than Singh et al (0%), 13 (68.42%) had euthyroid, which was lesser than Singh et al (95%), and Patil et al (100%), none of the cases had hyperthyroidism, which was similar to Singh et al (0%), 3 (15.79%) had subclinical hypothyroid, that was higher than Singh et al (5%).[9,21]

Small sample is the limitation of the study.

CONCLUSION

In this study, 32.26% had total thyroid dysfunction, most of which were multiparous. Among thyroid abnormalities, most had subclinical hypothyroidism followed by hypothyroidism and hyperthyroidism. Thyroid dysfunction was most common in cases with oligomenorrhoea, followed by polymenorrhoea, menorrhagia, acyclical bleeding, and polymenorrhagia. Thus, a thyroid screening test can be done for thyroid dysfunction in women with AUB as it is cheap and easy to perform and helps diagnose AUB aetiology correctly.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee (DMC/KLR/IEC/623/2022-23)

REFERENCES

1. Liu Z, Doan QV, Blumenthal P, Dubois RW. A systematic review evaluating health-related quality of

life, work impairment, and health-care costs and utilization in abnormal uterine bleeding. Value Health. 2007;10(3):183-94.
2. Munro MG, Critchley HOD, Broder MS, Fraser IS. FIGO classification system (PALM-COEIN) for causes of abnormal uterine bleeding in nongravid women of reproductive age. Int J Gynecol Obstet. 2011;113(1):3-13.
3. Shah JV, Pandya MJ, Prajapati PB, Senta DB, Patel MK. An analytical study of abnormal uterine bleeding in women of child bearing age group. Int J Reprod Contracept Obstet Gynecol. 2021;10(8):3-8.
4. Kumar S, Kotur P. Effects of hypothyroidism in Indian women of reproductive age group- a review. Indian J Obstet Gynecol Res. 2020;7(1):1-6.
5. Thakur M, Maharjan M, Tuladhar H, Dwa Y, Bhandari S, Maskey S, et al. Thyroid dysfunction in patients with abnormal uterine bleeding in a tertiary care hospital: a descriptive cross-sectional study. J Nepal Med Assoc. 2020;58(225):333-7.
6. Subedi S, Banerjee B, Chhetry M. Thyroid disorders in women with dysfunctional uterine bleeding. J Pathol Nepal. 2016;6(1):10-8.
7. Henry C, Ekeroma A, Filoche S. Barriers to seeking consultation for abnormal uterine bleeding: systematic review of qualitative research. BMC Womens Health. 2020;20(1):123.
8. Dittrich R, Beckmann MW, Oppelt PG, Hoffmann I, Lotz L, Kuwert T, et al. Thyroid hormone receptors and reproduction. J Reprod Immunol. 2011;90(1):58-66.
9. Singh S, Sahoo S, Das PC. A study of thyroid dysfunction in dysfunctional uterine bleeding. Int J Reprod Contracept Obstet Gynecol. 2018;7:1002-6.
10. Narula ER. Menstrual irregularities. J Obstet Gynecol India. 1967;17:164.
11. Pahwa S, Shailja G, Jasmine K. Thyroid dysfunction in dysfunctional uterine bleeding. J Adv Res Bio Sci. 2013;5(1):78-83.
12. Chaitra M, Anitha GS, Savitha C. A prospective study of thyroid dysfunction in dysfunctional uterine bleeding. Int J Reprod Contracept Obstet Gynecol. 2019;8(11):4387-91.
13. Verma SK, Pal A, Jaswal S. A study of thyroid dysfunction in dysfunctional uterine bleeding. Int J Reprod Contracept Obstet Gynecol. 2017;6(5):5-11.
14. Bhavani N, Sathineedi A, Giri A, Chippa S, Reddy VSP. A study of correlation between abnormal uterine bleeding and thyroid dysfunction. Int J Recent Trends Sci Tech. 2015;14(1):131-5.
15. Singh P, Dubey P, Yadav S, Yadav SS. Thyroid abnormality in abnormal uterine bleeding: an observational study from Medical College in Western UP, India. Int J Reprod Contracept Obstet Gynecol. 2018;7(1):308-12.
16. Gowri M, Radhika BH, Harshini V, Ramaiaha R. Role of thyroid function tests in women with abnormal uterine bleeding. Int J Reprod Contracept Obstet Gynecol. 2014;3(1):54-7.
17. Deshmukh PY, Boricha BG, Pandey A. The association of thyroid disorders with abnormal uterine bleeding. Int J Reprod Contracept Obstet Gynecol. 2015;4(3):12-8.
18. Kumar AHS, Saravanan S. A study of prevalence of thyroid disorders in patients with abnormal uterine bleeding. Int J Reprod Contracept Obstet Gynecol. 2017;6(3):1036-40.
19. Kaur T, Aseeja V, Sharma S. Thyroid dysfunction in dysfunctional uterine bleeding. Obstet Gynecol. 2011;4(3):2-8.
20. Joshi BR, Rizal S, Subedi S. Thyroid dysfunction in patient with abnormal uterine bleeding in a tertiary hospital of eastern Nepal: a descriptive cross-sectional study. J Nepal Med Assoc. 2021;59(239):635-9.
21. Patil A, Shiragur SS, Gobbur V, Mudanur S, Bidri S, Yaliwal R, et al. Association of bleeding patterns with thyroid dysfunction in patients with abnormal uterine bleeding: a prospective cross-sectional study. J Clin Diagn Res. 2022;4(1):10-3.

Cite this article as: Nekkanti D, Kumar VS. The study of thyroid dysfunction in patients with abnormal uterine bleeding. Int J Reprod Contracept Obstet Gynecol 2023;12:3498-502.