



STUDY OF SERUM THYROID PROFILE LEVELS AND ABNORMAL UTERINE BLEEDING IN REPRODUCTIVE AGE GROUP WOMEN

Dr Shallu Gupta	Associate Professor, Department of Biochemistry, SMS Medical College, Jaipur.
Dr Debasmita Bhowmik	Junior Resident, Department of Biochemistry, SMS Medical College, Jaipur.
Dr Monika Gupta*	Assistant Professor, Department of Biochemistry, SMS Medical College, Jaipur. *Corresponding Author
Dr Faisal Khan	Junior Resident, Department of Biochemistry, SMS Medical College, Jaipur

ABSTRACT **Background:** Abnormal uterine bleeding (AUB) is defined as any bleeding pattern that differs in the regularity, frequency, duration and amount from a pattern observed during a normal menstrual cycle or menopause. Menstrual cycle function is determined by a complex endocrine axis that controls the ovaries and endometrium, which is closely related to hypothalamic-pituitary-thyroid axis which controls the thyroid function and is determined by TSH levels. Hence, we evaluated the association of Abnormal uterine bleeding (AUB) and thyroid disorders in women of reproductive age group. The present study was conducted to find out the association between thyroid function with patterns of abnormal uterine bleeding in reproductive age group women. **Methodology:** This study was conducted in 156 patients with abnormal uterine bleeding at Biochemistry department of Sawai Man Singh Medical College and associated Hospitals. **Results:** Maximum patients in AUB belonged to the age group of 21-25 years. The most common bleeding patterns were HMB (51.92%) and least common bleeding pattern (1.2%) was acyclic. 83.34% of patients had euthyroid status. 16.66% of patients had thyroid dysfunction out of which subclinical hypothyroidism (10.25%) was more common followed by hypo-thyroidism (3.85%). Less common was hyperthyroidism (2.56%). Subclinical hypothyroidism was the most predominant thyroid dysfunction. **Conclusion:** Hence TSH appears to be the most sensitive test to evaluate thyroid function and is advocated to screen for thyroid abnormality in women who present with AUB especially with non-structural causes of AUB as correction of thyroid abnormalities also relieves AUB.

KEYWORDS : Euthyroid, thyroid dysfunction, hypothyroid, Abnormal uterine bleeding, TSH.

INTRODUCTION

Abnormal uterine bleeding (AUB) is defined as any bleeding pattern that differs in the regularity, frequency, duration and amount from a pattern observed during a normal menstrual cycle or menopause. Menstrual disorders pose a huge burden on gynaecology OPD, accounting for approximately 10-30% of attendance. 2-4 Women in pre and postmenopausal age groups are affected by AUB. It is presented in many forms like heavy menstrual bleeding, frequent menstrual bleeding, infrequent menstrual bleeding, and amenorrhea (1). Abnormal uterine bleeding that occurs from adolescence through perimenopause can be broadly divided into two categories: anovulatory and ovulatory. Anovulatory bleeding is characterized by irregular or infrequent periods, with flow ranging from light to excessively heavy terms commonly associated with anovulatory bleeding include heavy menstrual bleeding (HMB-periodical bleeding which has either increased blood loss or prolonged duration of bleeding days), heavy & prolonged menstrual bleeding (HPMB- AUB in which there is increased amount of blood loss & also increased bleeding days), inter menstrual bleeding (IMB- regular cycles with normal bleeding & bleeding in between cycles) amenorrhea (absence of periods for more than three cycles), oligomenorrhea (menses occurring at intervals of more than 35 days). In contrast to anovulatory patterns, ovulatory abnormal uterine bleeding occurs at regular intervals (every 24 to 35 days), but with excessive volume or duration of more than seven days. Excessive menstrual bleeding is defined as the need to change menstrual products every one to two hours, passage of clots greater than 1 inch (2.54cm) and/or —very heavy periods as reported by the patient (2).

November 2010 the International federation of gynaecology and obstetrics formally accepted a new classification system for causes of AUB in reproductive years. The system is based on acronym PALM-COEIN. PALM (structural causes) → polyps, adenomyosis, leiomyoma, malignancy and hyperplasia. COEIN (non-structural causes) → coagulopathy, ovulatory disorders, endometrial causes, iatrogenic, not classified. Out of all the etiologies, age variations and clinical presentations - thyroid dysfunction (subclinical or overt) has been found to have a significant correlation with non-structural causes of AUB (3).

In 2018 FIGO has updated the recommendations for both the systems and slightly modified the PALM COEIN system (2). Any disorder, in the endometrium or hormonal imbalance of pituitary gland, thyroid gland, ovaries or hypothalamus result in the disrupted menstruation

and lead the AUB. A normal cycle starts when pituitary follicle stimulating hormone induces ovarian follicles to produce estrogen. Estrogen stimulates proliferation of the endometrium. A luteinizing hormone surge prompts ovulation, the resultant corpus luteum produces progesterone, inducing a secretory endometrium. Any disruption in the normal physiology or anatomic changes in the endometrium results in abnormal uterine bleeding (3). Thyroid hormones play a vital role in the reproductive physiology of females, therefore, any kind of thyroid abnormalities including both hyperthyroidism and hypothyroidism significantly affect the normal menstruation and consequently AUB in all age group females. In early thyrotoxicosis, the reproductive associations are polymenorrhea and menorrhagia, while, in later and chronic stages amenorrhea develop in thyroid associated problems. In case of hyperthyroidism, the amenorrhea and hypomenorrhea are more frequently evidenced, while 5% of the patients complain for menorrhagia. In contrary to this, in case of hypothyroidism, most often maladies are amenorrhea or anovulation (4).

Thyroid disorders have profound effect on female reproductive system in terms of delayed puberty, AUB, infertility, RPL, premature menopause. Thyroid disorders are 10 times more common in females than males (5). Hypothyroidism and hyperthyroidism can both depress ovarian and menstrual function. With hyperthyroidism, hypomenorrhea and amenorrhea are more frequent complaints, and HMB is noted in approximately 5 percent. With hypothyroidism, women commonly present with HMB (30%), HPMB, and AUB-O (2). The present study was conducted to study the association between thyroid function with patterns of abnormal uterine bleeding in reproductive age group women. Objectives of the present study are: 1. To determine thyroid dysfunction among reproductive age group women having abnormal uterine bleeding. 2. To determine the correlation between thyroid profile levels (TSH, FT3, FT4) with pattern of abnormal uterine bleeding in women.

MATERIALS AND METHODS

This study was conducted in 156 patients with abnormal uterine bleeding at Biochemistry department of Sawai Man Singh Medical College and associated Hospitals. Reproductive age group women (21-45 year) from opd and ipd of department of obstetrics and gynaecology willing to participate has been taken.

Inclusion Criteria:

Patients attending obstetrics and gynaecology opd with complain of abnormal uterine bleeding (21 to 45 years of age). Ultrasound showing normal uterus and adnexa. Women who are willing to participate in the study giving written informed consent and are not a part of any other study.

Exclusion Criteria:

Diagnosed cases of Ovarian cyst, palpable uterine fibroid, polyp, adenomyosis, endometriosis, malignant tumor (endometrial and cervical). Patients with goiter and carcinoma thyroid. Patients who were on drugs or hormones, IUCD users, H/O bleeding disorder (Hemophilia and von willebrand's disease etc.). Pelvic infections including endometritis.

A detailed history of onset, duration, interval, quantity of bleeding, complaints related to thyroid dysfunction were obtained from patients. A thorough clinical examination including general physical examination, neck examination (thyroid gland), systemic and gynaecologic examination was done. All patients were subjected to routine investigation like complete blood count, bleeding time and clotting time to rule out coagulation defect and ultrasonography to rule out uterine and ovarian pathologies. Special investigation serum FT3, serum FT4, serum TSH estimation was done by ADVIA Centaur XP system, The ADVIA Centaur assay competitive immunoassay using direct chemiluminescent technology.

RESULTS

A total of 156 patients with AUB were included in the study. Among 156 patients 92 belonged to 21-25 years of age (58.97%), 49 belongs to 26-30 years of age (31.41%) and 15 patients belongs to above 30 years of age (9.6%) (Table 1).

Table 1: Distribution Of AUB Based On Age

AGE	NO.OF PATIENTS	Percentage (%)
21-25	92	58.97
26-30	49	31.41
>30	15	9.62

Table 2: Distribution Of Patients Based On Uterine Bleeding Pattern

Bleeding pattern in AUB	No.of Patients	Percentage (%)
Acyclic	2	1.30
Amenorrhoea	5	3.20
HMB	81	51.92
HPMB	28	17.94
IMB	40	25.64
Total	156	100

Table 2 shows bleeding pattern in AUB – ACYCLIC(1.3%), AMENORRHEA(3.2%), HMB(51.92%), HPMB(17.94%), IMB(25.64%).

Table 3: Distribution Of Patients According To Age And Bleeding Pattern

Age	Acyclic	Amenorrhoea	HMB	HPMB	IMB
21-25	0	0	62	13	17
26-30	0	5	15	7	22
>30	2	0	4	8	1

Table 3 shows patients with age group of 21-25 years, most common bleeding pattern was HMB(67.39%) followed by HPMB(14.13%) and then IMB(18.48%). Whereas in 26-30 years of age group shows IMB(44.89%) as the commonest pattern and in more than 30 years age group HPMB(53.33%) was the commonest bleeding pattern.

Table 4: Distribution Of Patients According To Age And Thyroid Disorder

Age	Hypothyroid	Sub-clinical Hypothyroid	Hyperthyroid
21-25	2	4	0
26-30	4	6	0
>30	0	6	4

Table 4 shows 21-25 years of age group having 4 (66.67%) patients of subclinical hypothyroidism and 2 (33.33%) patients of hypothyroidism. Whereas in 26-30 years of age group had 4 (40%) patients with hypothyroidism and 6 (60%) patients with subclinical hypothyroidism and in more than 30 years of age group, 6 (60%) patients with subclinical hypothyroidism and 4(40%) patients with hyperthyroidism.

Table 5: Distribution Of Pattern Of Bleeding In Thyroid Disorder

AUB	Hypo-thyroid	Sub-clinical Hypo-thyroid	Hyperthyroid	P Value
Acyclic	0	0	2	<0.001**
HMB	1	13	1	
HPMB	0	0	1	
IMB	5	3	0	

P Value <0.05 is statistically significant; **<0.001 is statistically highly significant.

Table 5 shows most common abnormal uterine bleeding is HMB in subclinical hypothyroidism, IMB in hypothyroidism and hyperthyroidism is common in acyclic bleeding.

DISCUSSION

In a study by Pujari et al, 236 women with AUB, the most common bleeding patterns were HMB (69%) and least common bleeding pattern (1.3%) was amenorrhea. 89% of patients had euthyroid status. 11% of patients had thyroid dysfunction out of which subclinical hypothyroidism(6.8%) was more common followed by hypothyroidism(2.5%), hyperthyroidism(1.7%) (2).

Our study also stated similar findings, Maximum patients in AUB belonged to the age group of 21-25 years. The most common bleeding patterns were HMB (51.92%) and least common bleeding pattern (1.2%) was acyclic. 83.34% of patients had euthyroid status. 16.66% of patients had thyroid dysfunction out of which subclinical hypothyroidism (10.25%) was more common followed by hypothyroidism(3.85%), hyperthyroidism(2.56%). Subclinical hypothyroidism was the most predominant thyroid dysfunction. In a study by Shawl AS et al, reported that the most common AUB was menorrhagia (45%) followed by polymenorrhagia (17%). Patients who presented with metrorrhagia have a prevalence of 20% of thyroid dysfunction(6). Tamilarasi S et al, reported significant association between abnormal uterine bleeding and thyroid disorder (10%)(7).

Koirala et al, in this study patients with AUB belonged to the category of hypothyroidism (27%) and 8.1% of cases had hyperthyroidism, 29 (39.1%) patients had proliferative endometrium, followed by secretory pattern in 21 (28.4%) patients. Hormone induced changes was seen in 3 (4.1%) patients (8).

In a study by Musarratparveen et al, 150 women were included in the study. Out of all the types of commonest symptoms were menorrhagia around 47%. Patients with oligomenorrhoea had hyperthyroidism in 16.7% of patients, hypothyroidism in 8.3% of patients and subclinical hypothyroidism in 8.3%. In polymenorrhoea patients 42.9% of cases had subclinical hypothyroidism (9).

Sree VS et al, in their study among 90 patients, 22 patients were diagnosed as hypothyroidism and 9 as hyperthyroidism, women with AUB 59 (65.4%) were euthyroid. Among 31 women with thyroid abnormality, heavy menstrual bleeding was seen in 14 (45.1%) women, 11 (35.4%) had Polymenorrhagia, 6(19.3%) had oligomenorrhoea (10).

CONCLUSION

It can be concluded that there is significant association between AUB and thyroid dysfunction. AUB might be because of structural or non-structural causes but timely evaluation of patients with non-structural cause in reproductive age group women will be helpful as in regional setup, women are not well aware about the abnormal uterine bleeding and its correlation with thyroid disorders which can manage medically. Due to the lack of knowledge women voluntarily go for surgical intervention without proper evaluation to the patient and to avoid unnecessary surgical intervention. Hence TSH appears to be the most sensitive test to evaluate thyroid function and is advocated to screen for thyroid abnormality in women who present with AUB especially with non-structural causes of AUB as correction of thyroid abnormalities also relieves AUB.

REFERENCES

- Jaiswal J, Naik S, Yadav S. Study of thyroid hormone profile in women presenting with abnormal uterine bleeding attending gynaecology out patient department, tertiary care centre Raipur. Int J Reprod Contracept Obstet Gynecol 2022; 11:1109-13.
- Pujari, Priya & Shenoy, Heera & Chellamma. Evaluating Patterns Of Abnormal Uterine Bleeding (AUB) In Thyroid Dysfunction At A Tertiary Care Centre In North Kerala , India. International Journal of Health Research 2021; 4: 66-72.
- Rai, Aditi & Raina, Sapna. A study of prevalence of thyroid dysfunction in abnormal uterine bleeding. International Journal of Reproduction, Contraception, Obstetrics and

- Gynecology 2020; 9: 2905. 10.18203/2320-1770.ijrcog20202731.
4. Chaudhary, Rabia&Aftab, Komal& Iqbal, Ghazala&Moazzam, Summaiya&Chandio, Khushboo&Naveel, Tania. Assessment Clinical Association of Thyroid Function in Women of Reproductive Age Group with Abnormal Uterine Bleeding. Pakistan Journal of Medical and Health Sciences. 2022; 16: 808-812. 10.53350/pjmhs20221611808.
 5. Pooja R, Palve T, Mutyapwar S, Saha P. Review of thyroid profile in patients with heavy menstrual bleeding in a tertiary care hospital. Int J Reprod Contracept Obstet Gynecol 2021;10:4460-3.
 6. Shawl AS, Naz M. Association between thyroid disorders and abnormal uterine bleeding in reproductive ages. Int J Reprod Contracept Obstet Gynecol 2020;9.
 7. Tamilarasi S, Minnalkodi SNS, Prasad G. Thyroid disorders in patients with abnormal uterine bleeding in tertiary care hospital in Chengalpattu district. Int J Reprod Contracept Obstet Gynecol 2020;9.
 8. Koirala, S., Pande, K., & Shrestha, S. Correlation of Abnormal Uterine Bleeding (AUB) with Thyroid Profile and Endometrial Biopsy. Nepal Medical College Journal 2021;23(4):334-339. <https://doi.org/10.3126/nmcj.v23i4.42227>.
 9. Parveen, Musarrat&Kumari, Sweta&Haque, Syed & Kumar, Ravi. International Journal of Biomedical and Advance Research Evaluation of thyroid profile status in women with abnormal uterine bleeding in north Indian population.2017
 10. Sree, Velicheti E, Gomathy. Study of thyroid dysfunction in perimenopausal women with abnormal uterine bleeding. International Journal of Reproduction, Contraception, Obstetrics and Gynecology 2019; 8: 2519. 10.18203/2320- 1770.ijrcog20192460.