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Original Research Article

Association of thyroid dysfunction with abnormal uterine bleeding

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ABSTRACT

Background: Abnormal uterine bleeding is a common complaint for women being referred to the gynaecologist and is associated with an array of symptoms. The objective of this study was to detect association of thyroid dysfunction in patients with menstrual irregularities

Methods: This non-interventional prospective study was done over a period of one and half years in a private medical college in Mangalore. All patients in age group of 15-55 years who presented with history of menstrual disturbances were enrolled and evaluated in the study. Patients with structural causes of AUB or using IUCDs or hormonal steroids were excluded. Total of 85 patients were hence evaluated. These 85 patients were subjected to routine investigations like Hb, BT, CT and platelets (to rule out coagulation defects) along with TSH, T3, T4 estimation. Ultrasound abdomen and pelvis with endometrial thickness was done to rule out structural causes.

Results: The most common menstrual disturbance was menorrhagia (47 patients: 55.3%). Thyroid abnormalities were found in 29 of the 85 patients with AUB (34.11%). Of the 29 patients with thyroid dysfunction, 24 were hypothyroid and 5 patients were found to be hyperthyroid.

Conclusions: Thyroid abnormalities are frequently associated with menstrual irregularities. Hence Thyroid Function Tests are extremely valuable in patients with provisional diagnosis of AUB and should be made mandatory to avoid unnecessary hormonal or surgical treatment in such patients.

Keywords: Abnormal uterine bleeding, Hyperthyroidism, Hypothyroidism, Thyroid dysfunction

INTRODUCTION

Abnormal uterine bleeding is a common complaint for women being referred to the gynaecologist and is associated with an array of symptoms. 20-30% patients present to OPD with this complaint in India. Any disruption in the normal physiology or anatomy of the endometrium results in abnormal uterine bleeding.¹ After 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.²

PALM (structural causes): Polyp, Adenomyosis, Leiomyoma, Malignancy and hyperplasia, COEIN: (Non-structural causes) - Coagulopathy, Ovulatory disorders, Endometrial causes, Iatrogenic, Not classified.

In the category of ovulatory disorders, thyroid dysfunction contributes to a significant amount. Thyroid disorders occur in 9-14% of women between menarche and menopause, significantly impacting quality of life and imposing financial burden.³ In a study, prevalence of hypothyroidism and sub clinical hypothyroidism was higher in females than males.⁴

Women with hypothyroidism usually present with menorrhagia (Goldsmith et al, 1952). Hyperthyroidism, on the other hand, is associated with amenorrhea, oligomenorrhea and the decrease in flow is proportional to the severity of thyrotoxicosis (Benson and Dailey, 1955)

Hypothyroidism even in sub clinical form may result in excessive menstrual bleeding and severe blood loss. The exact mechanism of menorrhagia in hypothyroidism is not well understood. TRH causes increase in prolactin which thereby inhibits the LH surge. This leads to anovulatory cycle finally causing breakthrough bleeding associated with menorrhagia.⁵ Hypothyroidism alters the peripheral metabolism of oestrogen; thereby decreasing sex hormone binding globulin (SHBG) production. Both the pathways may lead to abnormal feedback at the level of the pituitary gland. Independent of the hormonal mechanisms, hypothyroidism can cause menorrhagia by altered production of coagulation factors (decreased levels of factor 7, 8, 9, 11)

Hyperthyroidism-etiology of menstrual dysfunction is not known, whether it is primary effect of thyroid on ovary or uterus or mediated by pituitary dysfunction. The disturbances are probably a result of the effect of hypersecretion of thyroid hormones on the hypothalamic-pituitary axis with changes in gonadotrophin secretion, or on circulating SHBG, the levels of which are increased in thyrotoxicosis.

Thus, thyroid dysfunction is one very important cause of menstrual disturbances experienced by women. Its recognition is valuable as specific and reliable therapy is available.

METHODS

This non-interventional prospective study was done over a period of one and half years in a private medical college in Mangalore. 85 patients were included in the study. Detailed history was obtained with special relevance to age, bleeding pattern, onset, duration and amount of bleeding.

Inclusion criteria

- Patients belonging to any age group (15-50 years) complaining of irregular bleeding P/V (abnormality in frequency, amount or duration)
- No detectable disease in the genital tract.

Exclusion criteria

Patients suffering from the following conditions

- Endometrial polyp
- Uterine fibroid
- Adenomyosis

- Endometrial or cervical cancer
- Pelvic infections including endometritis
- Endometriosis, PCOD
- Ovarian cyst, tumour
- Patient using intrauterine contraceptive device.

A thorough clinical examination including general physical examination, gynaecological and systemic examination was carried out with special reference to thyroid dysfunction; in cases with a provisional diagnosis of AUB.

Patients were subjected to routine investigations like Hb, BT, CT and platelets (to rule out coagulation defects). All patients were subjected to T3, T4 and TSH estimation in their sera by Electro Chemiluminescence Labelled Antibody Immunoassay by Cobas e 411 machine. Normal serum concentration taken for standard references

- T3 - 0.85 - 2.02 ng/ml
- T4 - 5.14 - 14.1 µg/dl
- TSH - 0.27 - 4.2 µIU/ml

Ultrasonography (USG - Abdomen and Pelvis with endometrial thickness) was done to rule out the structural causes associated with menstrual irregularities.

Statistical analysis

Frequency distribution tables were made. Based on thyroid dysfunction, the cases were categorised to 3 groups - hypothyroid, euthyroid and hyperthyroid.

Ethical considerations

The following ethical issues were considered for the study

- There was no physical harm for the participants as there was no intervention
- Written informed consent was obtained from all the participants.

Ethical clearance approval obtained from the institutions ethical committee.

RESULTS

Abnormal uterine bleeding is one of the most commonly encountered conditions in gynaecological practice.

Various parameters analyzed were

- Age
- Parity
- Menstrual irregularities
- Thyroid status
- Association of menstrual irregularities with thyroid dysfunction.

Majority patients belonged to age group between 41-50 years (45.9%) followed by age group of 31-40 years (34.1%). 12 patients belonged to age group 21-30 years. Least common age group was 15-20 years (5.9%).

Table 1: Distribution of patients according to age (N = 85).

Age	Valid Percent
15-20	5.9
21-30	14.1
31-40	34.1
41-50	45.9
Total	100

65.9% patients belonged to parity between 2 to 4 making it the most common parity group. 15.2% were nulliparous and 12 patients (14.6%) belonged to parity 1.

Table 2: Distribution of patients according to the parity (N = 85).

Parity	Valid percent
Nullipara	15.2
P1	14.6
P2-4	65.9
P>4	7.3
Total	100

55.3% patients presented with menorrhagia making it the most prevalent complaint in this study. Next most common complaint being oligomenorrhea accounts for 16.5% of cases. Polymenorrhagia and polymenorrhagia

were seen in 7 patients each. 10 patients had irregular bleeding pattern in the present study.

Table 3: Distribution of patients according to menstrual irregularities.

Menstrual irregularity	Valid percent
Menorrhagia	55.3
Oligomenorrhagia	16.5
Polymenorrhagia	8.2
Polymenorrhagia	8.2
Irregular	11.8
Total	100

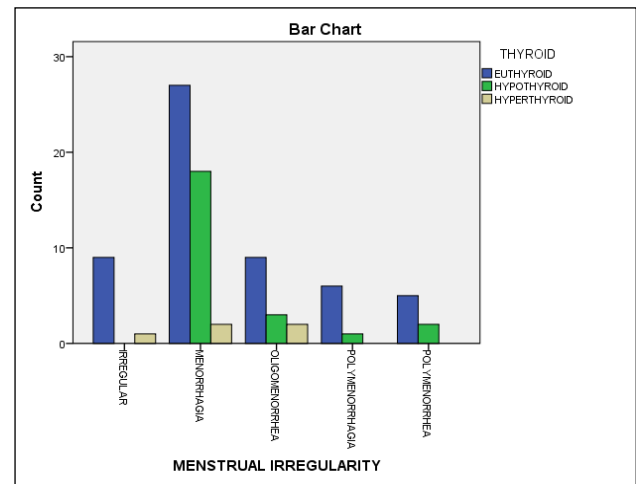


Figure 1: Bleeding patterns in thyroid abnormalities.

Table 5: Distribution of patients according to thyroid status in relation to bleeding pattern.

Crosstab		Thyroid			Total	
		Euthyroid	Hypothyroid	Hyperthyroid		
Menstrual irregularity	Irregular	Count	9	0	1	10
		% within thyroid	16.1%	0.0%	20.0%	11.8%
	Menorrhagia	Count	27	18	2	47
		% within thyroid	48.2%	75.0%	40.0%	55.3%
	Oligomenorrhagia	Count	9	3	2	14
		% within thyroid	16.1%	12.5%	40.0%	16.5%
	Polymenorrhagia	Count	6	1	0	7
		% within thyroid	10.7%	4.2%	0.0%	8.2%
	Polymenorrhagia	Count	5	2	0	7
		% within thyroid	8.9%	8.3%	0.0%	8.2%
Total	Count	56	24	5	85	
	% within thyroid	100.0%	100.0%	100.0%	100.0%	

Of the 85 patients studied with menstrual irregularities, 56 were euthyroid, 24 were hypothyroid and 5 were hyperthyroid. 29 out of 85 patients (34.11%) hence had

thyroid abnormalities. Out of 24 hypothyroid patients, 18 (75%) were found to have menorrhagia making it the most common menstrual irregularity with

hypothyroidism. Hyperthyroidism – 2 patients had menorrhagia, 2 had oligomenorrhea and 1 patient had irregular bleeding pattern. Among 56 euthyroid patients, 27 patients had menorrhagia, 9 had oligomenorrhea, 6 patients had polymenorrhagia and 5 patients presented with polymenorrhagia.

18 of the 47 patients with menorrhagia were found to be hypothyroid. Patients with hyperthyroidism - 2 had menorrhagia, 2 had oligomenorrhea and 1 patient had irregular bleeding pattern.

DISCUSSION

Thyroid disorders in general and hypothyroidism in particular is more commonly seen in women. Menarche, pubertal growth and development, menstrual cycles, fertility and fetal development, reproductive years and menopausal years are significantly influenced by the thyroid status of the women. Although hormonal and other biochemical aberrations are different in hypo and hyperthyroidism, both are associated with menstrual disturbances. In the present study, the most common age group with menstrual irregularities was 41-50 years with 45.9% of the cases. The next most common age group was 31-40 years with 34.1% of patients. The youngest patient was 15 years old in the study and the eldest 50

years old. Dass A, Chugh S in their study also had the most common age pattern as 41-50 years.⁶

Table 6: Age pattern in menstrual disturbances.

Author	20-30 years	31-40 years	41-50 years	>50 years
Dass and Chugh	20.5%	28.2%	32.5%	4.3%
Devi and Sutaria	43.4%		33.6%	
Narula	25.5%	32.8%	29.1%	7.0%
Present study	14.1%	34.1%	45.9%	00%

Similar results were obtained in various other studies also. The most common parity group in our study was found to be P2-P4 with 65.9% of the patients. Second most common group was P1L1 with 14.6% of the patients. The commonest menstrual irregularity in the study was menorrhagia with 47 patients (55.3%). 14 patients (16.5%) came to the OPD with complaints of oligomenorrhea. 7 patients (8.2%) came with complaints of polymenorrhea and 7 (8.2%) with menorrhagia. 10 patients (11.8%) of patients had irregular bleeding pattern.

Nearly similar results were obtained in other studies also- Shapely in his study found 41% patients to have menorrhagia and 36% presented with polymenorrhea.⁷

Table 7: Menstrual disturbances in different studies.

Authors	Menorrhagia	Oligomenorrhea	Polymenorrhagia
Prasad et al	40%	15%	4%
Ajmani sangita	50%	20%	16%
Shapely	41%	-	36%
Moghal	54%	-	36%
Present study	55.3%	16.5%	8.2%

28.2% of the patients were found to be hypothyroid, 5.9% hyperthyroid and 65.9% were euthyroid after biochemical evaluation.^{8,9}

Table 8: Thyroid disorders in different studies.

Study	Hypothyroid	Hyperthyroid
Kaur T et al	14%	1%
Sharma N et al	19%	2%
Padmaleela et al	18.1%	8.4%
Jasmine et al	22%	2%
Present study	28.2%	5.9%

Analysing the correlation of bleeding pattern with thyroid dysfunction, 18 of the 47 (38.3%) patients with menorrhagia had hypothyroidism.

2 patients with hyperthyroidism had menorrhagia as the chief complaint. Hence 42 (55%) of patients with

menorrhagia had thyroid dysfunction. However, in the study conducted in Sindh Hyderabad, Pakistan, Simone found that the most common menstrual disturbance detected in thyroid patients was menorrhagia (40%).

Table 9: Menorrhagia in hypothyroidism-different studies.

Authors	Menorrhagia (percentage)
Singh et al	44.4%
Doifode et al	63.3%
Simone et al	40%
Goldsmith et al	50%
Cecil et al	45%
Present study	38.3%

Menorrhagia and metrorrhagia, alone or combined, constituted the abnormal menstrual pattern in 75% of the patients in a study conducted by Scott and Mussey. Cecil

reported an incidence of menorrhagia of 45% in patients with myxoedema.

In the present study, 2 (40%) of the hyperthyroid patients had oligomenorrhea, 2 (40%) had menorrhagia and 1 (10%) patient with irregular bleeding pattern.

Table 10: Oligomenorrhea in hyperthyroidism- different studies.¹⁰

Study	Oligomennorhea (percentage)
Deshmukh PY et al	66.6%
Present study	40%

Discussing the treatment modalities, in a study conducted by Rosenfeld, menorrhagia was cured and did not recur in all patients with early hypothyroidism to whom L-thyroxine was given, with decline in TSH levels and rise in T3, T4 levels.

CONCLUSION

Prevalence of hypothyroidism was more common than hyperthyroidism in AUB cases. Thyroid dysfunction is associated with menstrual disturbances which can get relieved with normalization of thyroid status, so thyroid assessment should be performed in all patients with menstrual irregularities. The menstrual abnormalities most commonly seen are menorrhagia, oligomenorrhea, polymenorrhoea and in majority of the cases menstrual irregularity precedes the occurrence of other clinical symptoms of thyroid dysfunction. Therefore, we summarize that any type of menstrual disorder should be considered as a possible presenting symptom of thyroid dysfunction and it may even indicate subclinical abnormality. These patients with thyroid abnormalities, if given medical line of management, it is possible to avoid unnecessary hormonal treatment and costly surgical interventions.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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