Journal of Population Therapeutics & Clinical Pharmacology

RESEARCH ARTICLE
DOI: 10.53555/5ezetx94

AN OBSERVATIONAL STUDY TO EVALUATE THYROID DYSFUNCTION IN WOMEN WITH MENSTRUAL DISORDERS

Dr. Tasneem Backer P[1], Dr. Saley Daniel[2]*

[1]Pg Student In Ms Obstetrics & Gynaecology Jubilee Mission Medical College & Research Institute, Thrissur , Kerala , 680001, Tasneembacker@Gmail.Com
[2*]Assistant Professor Department Of Obstetrics & Gynaecology Jubilee Mission Medical College Research Institute , Thrissur , Kerala , 680001, Saleydaniel@Gmail.Com

***Corresponding Author** - Dr. Saley Daniel
*Assistant Professor Department Of Obstetrics & Gynaecology Jubilee Mission Medical College Research Institute , Thrissur , Kerala , 680001, Saleydaniel@Gmail.Com

ABSTRACT

OBJECTIVE: Menstrual disorders are one of the main reasons why women attend the gynecology outpatient department. The present study was aimed at finding the occurrence of thyroid dysfunction in women with menstrual abnormalities in the age group of 15- 50 years.

METHODS: The present hospital-based cross-sectional study was conducted among women with menstrual disorders in the age group of 15- 50 years, attending outpatient departments or admitted. Pregnant women, history of bleeding disorders, premalignant and malignant lesions of the cervix and uterus were excluded from the study. A detailed history was taken. After obtaining data, patients were grouped into different categories based on their pattern of bleeding and their thyroid status. All patient data were collected on Microsoft windows excel sheet, and statistical analysis was performed on the SPSS v21 on windows 10. The p-value of <0.05 was considered statistically significant.

RESULTS: In the present study total of 122 patients fulfilling inclusion criteria were included with a mean age of 34.17±9.755yrs of age. the majority had heavy menstrual bleeding. There was a higher incidence of heavy menstrual bleeding among the patients with hypothyroidism and subclinical hypothyroidism. Irregular cycles were more common among subclinical hypothyroidism. (p<0.05)

CONCLUSION: Present study documented a significant relationship between thyroid dysfunction with abnormal uterine bleeding Thus it is better to assess thyroid status in all the patients with menstrual abnormality.

KEYWORDS: Abnormal uterine bleeding, thyroid, hypothyroidism, menstrual disorders, hyperthyroidism

INTRODUCTION

Menstrual disorders are one of the main reasons why women attend the gynecology outpatient department and it accounts for about 20% of total attendance.(1) Abnormal uterine bleeding is of several patterns. Normally women menstruate every 28+/- 7 days and blood loss doesn't exceed 80 ml. Abnormal Uterine Bleeding (AUB) means any type of bleeding that doesn't fall within the normal range for amount, frequency, duration, or cyclicity.

Menses lasting longer than 7 days or exceeding 80 mL of blood loss is called heavy menstrual bleeding. Frequent bleeding is menses with less than 24 days intervening. Infrequent bleeding is

menses with more than 38 days intervening. Absence of menstrual bleeding in a 90-day period is defined as amenorrhoea. Intermenstrual bleeding is bleeding usually brief, that occurs between fairly normal menses.(2) The International Federation of Gynaecology and Obstetrics (FIGO) introduced a classification for abnormal uterine bleeding in nonpregnant reproductive age women in 2011 which is referred to by the acronym PALM-COEIN -polyp, adenomyosis, leiomyoma, malignancy, coagulopathy, ovulatory dysfunction, endometrial, iatrogenic and not yet classified.(3) Thyroid disorders cause abnormal sexual development, menstrual irregularity, infertility and premature menopause. Thyroid disorders may cause altered Thyroid Stimulating Hormone (TSH) response, TRH induced prolactin level increase, variation in luteneizing hormone (LH) response, peripheral conversion of androgens to oestrogens, alterations in Sex Hormone Binding Globulin (SHBG) and effects on coagulation profile.(4)In hyperthyroidism the more frequent complaints are infrequent and light menstrual flow. In hypothyroidism, TRH induced hyperprolactinemia alter the GnRH pulsatile secretion leading to faulty or delay in LH response leading to luteal phase defect and anovulation. In hypothyroidism there is heavy menstrual bleeding. The responsivity of ovaries to thyroid hormones may be due to the presence of thyroid hormone receptors in human oocyte.(5)

Therefore, it is important to timely detect thyroid dysfunction in abnormal uterine bleeding to avoid needless surgical interventions.(6)

Subclinical hypothyroidism is defined as a serum thyroid-stimulating hormone (TSH) level above the upper limit of normal despite normal levels of serum thyroxine. Hypothyroidism is a condition where thyroid doesn't produce enough thyroid hormones, there is elevated TSH, decrease in level of t3 and t4. Subclinical hyperthyroidism is defined as decreased or undetectable TSH and normal T4. Hyperthyroidism is when there is decrease in level of TSH and elevation in t3 and t4.(7)

This study aims at finding out the occurrence of thyroid dysfunction in women with menstrual disorders such as heavy menstrual bleeding, irregular bleeding, intermenstrual bleeding, infrequent, amenorrhoea etc attending OPD or admitted.

Treating thyroid dysfunction can reverse menstrual abnormalities and also improve fertility

MATERIALS AND METHODS

STUDY DESIGN: This was a hospital based cross sectional study.

STUDY POPULATION: Women in the age group 15- 50 years, attending OPD or admitted.

STUDY DURATION: 18 months

SAMPLE SIZE

Based on the proportion of thyroid dysfunction observed in an earlier publication "Role of Thyroid Dysfunction in Patients with Menstrual Disorders in Tertiary Care Center of Walled City of Delhi" by Nangia Sangita et al.,6 with 95% confidence level and 20% relative allowable error, minimum sample size comes to 122

$$n = \frac{(z1-\alpha/2)2p\ q}{d2}$$

p=estimated prevalence

q=1-p

d=allowable error

α=probability of type I error

n=sample size

INCLUSION CRITERIA

All patients having complaint of menstrual disturbances like heavy menstrual bleeding, irregular bleeding, intermenstrual bleeding and amenorrhoea in the age group of 15-50 years not coming under the exclusion criteria.

EXCLUSION CRITERIA

- Pregnant women.
- Patients with history of bleeding disorders (haemophilia, von Willebrands disease etc)

- Premalignant and malignant lesions of cervix and uterus, diagnosed cases of polyps, adenomyosis, fibroids, uterine AV malformations, isthmocele etc
- Women on oral contraceptive pills, IUCD in situ
- Women on anticoagulants, women with hepatic function derangement.
- Patient not consenting to join the study.

SAMPLING PROCEDURE

Every woman meeting the criteria were included in the study

METHOD OF DATA COLLECTION

Women attending Department of Obstetrics and Gynaecology OPD with menstrual disturbances. Written informed consent signed by the participant was taken. Detailed history taking regarding age, bleeding pattern, onset, duration, quantity of bleeding was taken. History regarding symptoms of hypothyroidism like tiredness, weakness, cold intolerance, weight gain, hoarseness of voice and symptoms of hyperthyroidism irritability, heat intolerance, palpitation and weight loss was taken. General physical examination including examination of neck, masses moving with deglutition, skin changes, lid lag, exophthalmos etc systemic and gynaecologic examinations was carried out.

All these patients were subjected to routine investigations like blood routine. Ultrasound abdomen and pelvis was done. Then all these patients were subjected for T3, T4 and TSH estimation in serum. T3 and T4 will be assayed by competitive chemiluminescent immunoassay.

Reference range: TSH – 0.38-5.33 μIU/ml ; T3- 0.87-1.78 ng/ml; T4 -5.1-14.1 μg/dl

OUTCOME MEASUREMENT

After obtaining the relevant data, women with menstrual disorders were grouped into different categories based on the pattern of bleeding into heavy menstrual bleeding, infrequent bleeding, light menstrual bleeding, intermenstrual bleeding, amenorrhoea, irregular bleeding etc, and then these patients was grouped into categories based on their thyroid status as Euthyroid, subclinical hypothyroid, hypothyroid, subclinical hyperthyroid and hyperthyroid. Those patients who are already on treatment for thyroid disorders but are noncompliant or not properly corrected having menstrual disorders were grouped separately. The results obtained were analysed.

STATISTICAL ANALYSIS

All the patient data was collected on Microsoft windows excel sheet, and the statistical analysis was performed on the SPSS v21 operating on windows 10. The descriptive data were summarised as mean, median and proportion, frequency. The summarised data were represented using the tables and figures. The mean difference between the continuous variables were assessed using the student-test and for categorical data chi-square test was used. The p-value of <0.05 was considered statistically significant.

RESULTS

In present study total of 122 patients fulfilling inclusion criteria are included with mean age of 34.17±9.755yrs of age. (Table 1) Among menstrual complaints, 40.2% were with heavy menstrual bleeding, followed with 21.3% with irregular cycles, 9% with frequent cycles and infrequent cycles, 8.2% with prolonged cycles, 7.4% with amenorrhea and 4.9% with light menstrual cycles. (Table 2)

The final outcome was found to be with 18.9% showing hypothyroidism, 8.2% with subclinical hypothyroidism, 3.3% with hyperthyroid and 0.8% with subclinical hyperthyroid. 68.9% were in euthyroid state. (Table 3)

Only 4.9% were already on treatment for the thyroid illness. Out of the women with heavy menstrual bleeding 22.4% had hypothyroidism, 6.1% had subclinical hypothyroidism, 2% had hyperthyroidism and rest were euthyroid. Out of the women with light menstrual bleeding 33.3% had hypothyroidism ,16.6% had subclinical hyperthyroidism and 50% were euthyroid. Out of the women with frequent cycles 27.2% were hypothyroid, 18.2% subclinical hypothyroidism and rest euthyroid. In women

with infrequent cycles 18.2% had hypothyroidism, 9.1% hyperthyroidism and rest were euthyroid. In women who came with prolonged cycles 20% had hypothyroidism, 10% had hyperthyroidism,10% subclinical hypothyroidism, rest were euthyroid. In women with irregular cycles, 15.3 % had subclinical hypothyroidism,3.8% had hypothyroidism, rest were euthyroid. out of the women with amenorrhea 22.2% had hypothyroidism, 11.1% had hyperthyroidism, rest were euthyroid. On comparison of menstrual complaints with thyroid function, p value was found to be 0.04 which was significant. (Table 4) On comparison of the menstrual bleeding pattern with the thyroid gland status there is significant relation. There was higher incidence of heavy menstrual bleeding among the patients with hypothyroidism and subclinical hypothyroidism followed with the hyperthyroidism. Amenorrhea was significantly higher among the patients with hyperthyroidism in the study. Irregular cycles were more common among the subclinical hypothyroidism. (Figure 1)

DISCUSSION

The present study brought into focus that thyroid dysfunction is common in women with menstrual disorders, hence should be considered as an important etiological factor for menstrual abnormalities. Among menstrual complaints, 40.2% were with heavy menstrual bleeding, followed with 21.3% with irregular cycles, 9% with frequent cycles and infrequent cycles, 8.2% with prolonged cycles, 7.4% with amenorrhea and 4.9% with light menstrual cycles. The final outcome was found to be with 18.9% showing hypothyroidism, 8.2% with subclinical hypothyroidism, 3.3% with hyperthyroid and 0.8% with subclinical hyperthyroid. 68.9% were in euthyroid state. The present study documented higher incidence of heavy menstrual bleeding among the patients with hypothyroidism and subclinical hypothyroidism followed with the hyperthyroidism. Amenorrhea was significantly higher among the patients with hyperthyroidism in the study (25%). Irregular cycles were more common among the subclinical hypothyroidism and among the patients with hyperthyroidism prolonged cycles, infrequent cycles and amenorrhea were more common. The subclinical hypothyroidism were more among the patients in age group of 16-35yrs and the overt hypothyroidism among the age group of 36-50yrs of age. In a study by Kundoor R et al., documented 2.5% of patients developed hyperthyroidism. Patients with subclinical hypothyroidism exhibited the most polymenorrhoea (50%) and menorrhagia (12.1%), with just 6.27% having oligomenorrhoea. Patients with hypothyroidism exhibited a higher prevalence of polymenorrhagia (83.3%) and oligomenorrhagia (62.5%). To detect thyroid dysfunction, biochemical assessment of thyroid function should be made essential in all tentatively diagnosed cases with AUB.(8) In study by Khatiwada S et al., documented most common thyroid dysfunction was subclinical hypothyroidism (14.2%, n=33) followed by subclinical hyperthyroidism (6.9%, n=16), overt hyperthyroidism (3%, n=7) and overt hypothyroidism (1.7%, n=4). Thyroid dysfunction, particularly subclinical hypothyroidism, is shown to be frequent in women with menstruation difficulties, according to the study. (9) Another study by Nangia A et al., on women with menstrual disorders documented 44 % had thyroid disorders in which subclinical hypothyroidism was prevalent in 20 %, overt hypothyroidism in 14 %, and overt hyperthyroidism in 8 %of the women(6)

Menstrual abnormalities were reported to be prevalent in 30.62% and 7.5% of hypothyroid and hyperthyroid individuals, respectively in study by Koyyada A et al. Similarly, the most common menstrual disruption in hypothyroid individuals was irregular periods, whereas menorrhagia was the most common in hyperthyroid patients.(10) Hence correcting the thyroid abnormality would avoid unnecessary hormonal treatment and surgical interventions in patients. Thus it is better to assess thyroid status in all the patients with menstrual abnormality.

ETHICAL APPROVAL

This study was approved by the institution’s Scientific and Ethical Committee.

PATIENT CONSENT

Written informed consent was obtained from the patients for recruitment in the study.

FUNDING INFORMATION
All funds were met by the institution.

REFERENCES

1. Albers JR, Hull SK, Wesley RM. Abnormal uterine bleeding. Am Fam Physician. 2004 Apr 15;69(8):1915–26.
2. Cunningham FG, Leveno KJ, Bloom SL, Spong CY, Dashe JS. Williams obstetrics, 24e. Mcgraw-hill New York, NY, USA; 2014.
3. Seshadri L. Essentials of gynaecology. Wolters kluwer India Pvt Ltd; 2016.
4. Byna P, Siddula S, Kolli S, Shaik M. Thyroid abnormality in perimenopausal women with abnormal uterine bleeding. Int J Res Med Sci. 2015;3250–3.
5. Gowri M, Radhika BH, V H, Ramaiaha R. Role of thyroid function tests in women with abnormal uterine bleeding. Int J Reprod Contracept Obstet Gynecol. 2016 Dec 24;3(1):54–7.
6. Ajmani NS, Sarbhai V, Yadav N, Paul M, Ahmad A, Ajmani AK. Role of Thyroid Dysfunction in Patients with Menstrual Disorders in Tertiary Care Center of Walled City of Delhi. J Obstet Gynaecol India. 2016 Apr;66(2):115–9.
7. Melmed S, Polonsky KS, Larsen PR, Kronenberg HM, editors. Index. In: Williams Textbook of Endocrinology (Thirteenth Edition) [Internet]. Philadelphia: Elsevier; 2016 [cited 2021 Jan 20]. p. 1855–916. Available from: http://www.sciencedirect.com/science/article/pii/B9780323297387000447
8. Kundoor R, Rani BS. Thyroid function in abnormal uterine bleeding. Int J Reprod Contracept Obstet Gynecol. 2019 May 28;8(6):2270.
9. Khatiwada S, Gautam S, Kc R, Singh S, Shrestha S, Jha P, et al. Pattern of Thyroid Dysfunction in Women with Menstrual Disorders. Ann Clin Chem Lab Med. 2016 May 3;2(1):3–6.
10. Koyyada A. CLINICAL STUDY ON INTERPRETATION OF HYPO AND HYPERTHYROID DISORDERS WITH VARIOUS MENSTRUAL DISTURBANCES. Curr Med Res Pract. 2020 Jul;S2352081720300866.

TABLES

Table 1: Mean age of patients

	N	Minimum	Maximum	Mean	SD
Age	122	16	50	34.17	9.755

Table 2: Showing the Menstrual Complaints of patients

		Frequency	Percent
Menstrual Complaints	Heavy menstrual bleeding	49	40.2
	Light menstrual bleeding	6	4.9
	Frequent cycles	11	9.0
	Infrequent cycles	11	9.0
	Prolonged cycles	10	8.2
	Irregular cycles	26	21.3
	Amenorrhea	9	7.4
	Total	122	100.0

Table 3: Showing the thyroid function status among patients

		Frequency	Percent
Thyroid function status	Euthyroid	84	68.9
	Hypothyroid	23	18.9
	Hyperthyroid	4	3.3
	Subclinical hypothyroid	10	8.2
	Subclinical hyperthyroid	1	.8
	Total	122	100.0

Table 4: Comparison of the menstrual complaints with thyroid function among patients

Menstrual Complaints	Thyroid function status										
	Euthyroid		Hypothyroid		Hyperthyroid		Subclinical hypothyroid		Subclinical hyperthyroid		Chi-square (p-value)
	Count	N %	Count	N %	Count	N %	Count	N %	Count	N %	
Heavy menstrual bleeding	34	69.3%	11	22.4%	1	2%	3	6.1%	0	0.0%	36.47 (P Value =0.04)
Light menstrual bleeding	3	50%	2	33.3%	0	0.0%	0	0.0%	1	16.6%	
Frequent cycles	6	54.5%	3	27.2%	0	0.0%	2	18.2%	0	0.0%	
Infrequent cycles	8	72.7%	2	18.2%	1	9.1%	0	0.0%	0	0.0%	
Prolonged cycles	6	60%	2	20%	1	10%	1	10%	0	0.0%	
Irregular cycles	21	80.7%	1	3.8%	0	0.0%	4	15.3%	0	0.0%	
Amenorrhea	6	66.6%	2	22.2%	1	11.1%	0	0.0%	0	0.0%	

FIGURES

FIGURE 1

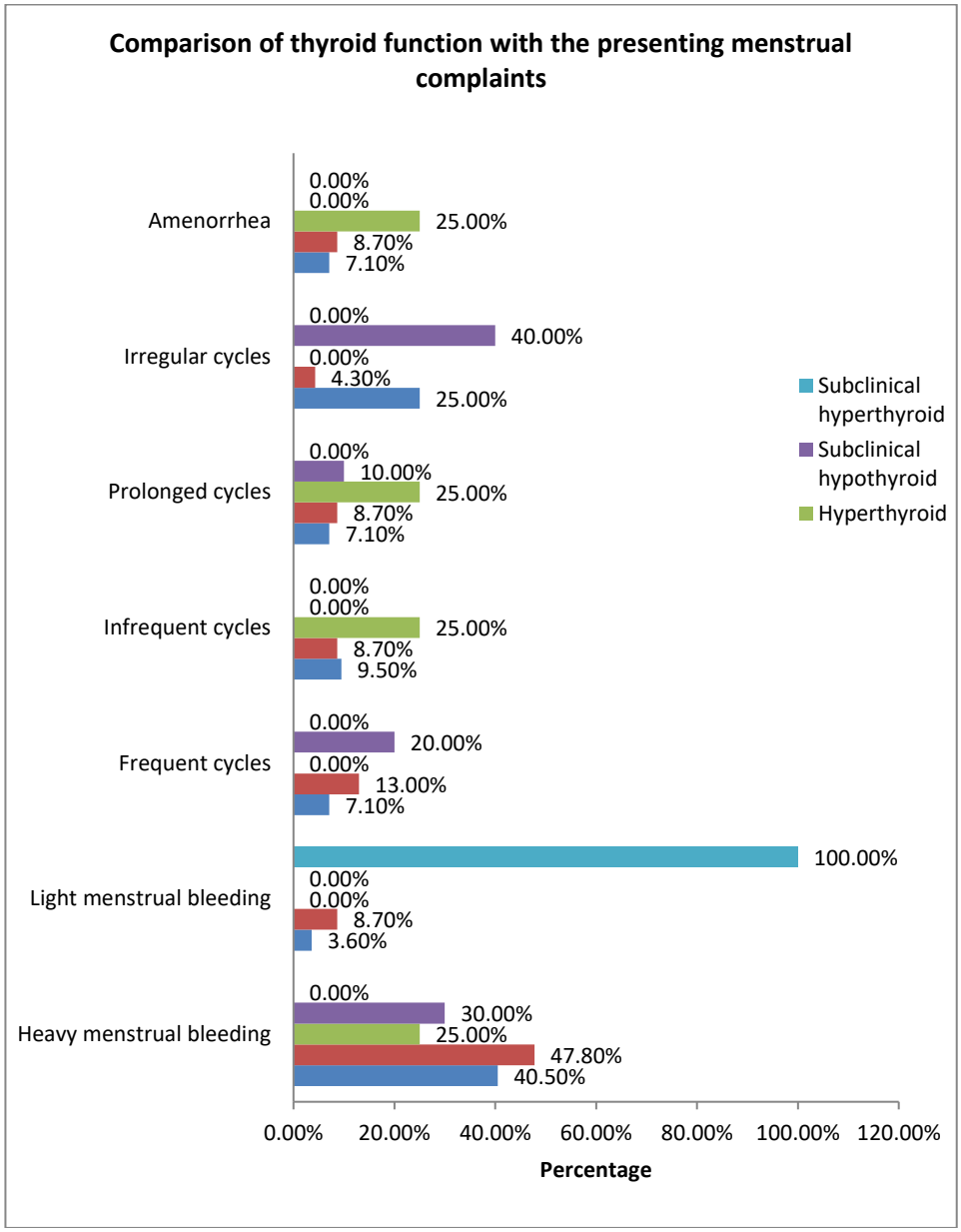

Figure showing menstrual complaints of women with subclinical hypothyroidism, subclinical hyperthyroidism, hyperthyroidism and hypothyroidism. Menstrual complaints are expressed in percentage.