 DOI: 10.18231/2394-2754.2017.0038

Thyroid Disorder and Menstrual Disorders - A tertiary care hospital based cross sectional study in Silk city Kancheepuram, South India

Wills G. Sheela[1,*], Vijayalakshmi P[2], Mohanambal[3], Chellatamizh M.[4]

[1]Associate Professor, [2,4]Assistant Professor, [3]Professor & HOD, Dept. of Obstetrics & Gynecology, Shri Satya Sai Medical College & Research Institute, Kancheepuram

***Corresponding Author:**
Email: drgwillssheelaa@yahoo.in

Abstract
Aim: 1. To estimate prevalence of thyroid dysfunction in reproductive women in rural area. 2. To correlate thyroid dysfunction with menstrual irregularity and nonresponding menorrhagia.
Study Design: Cross sectional hospital based observational study.
Material: 50 women in the age group of 15 to 45 years who presented with menstrual dysfunction in gynec OPD of SSSMC and RI, Ammapettai were enrolled study subjects, patients without menstrual dysfunction with similar parameters as study subjects were enrolled as control group.
Method: Detailed menstrual history, height, weight, BMI, USG pelvis, thyroid profile and endometrial sample were taken and compared.
Result: Commonest menstrual disorder was DUB(58%) with menorrhagia. 82% were obese, 26% had occult PCOD and 14% overt PCOD, hypothyroidism in 52% and hyperlipidemia in 12%. Proliferative endometrium was seen in 50% hypothyroid women and atrophic endometrium 2% in hyperthyroid women. 10 women had subclinical hypothyroidism.
Conclusion: Prevalence on thyroid disorder with menstrual dysfunction in our study was 64%. Prevalence of hypothyroidism was 52% and subclinical hypothyroidism 10% higher than the national average. Our center is within 40km radius of nuclear reactor at kalpakkam and surrounded by mountains. Non responsive occult menorrhagia was seen in 10% women with subclinical hypothyroidism. In control group 16% women had hypothyroidism and 72% were thyroid. To conclude thyroid dysfunction is associated with menstrual disorder's. Prevalence of hypothyroid is more than hyperthyroid.

Keywords: Subclinical Hypothyroidism, Menorrhagia, Overt hypothyroidism, DUB, PCOD

Date of Acceptance: 17th March, 2017 **Date of Manuscript Receipt:** 15th November, 2016

Introduction
Thyroid hormones play an important role in reproductive physiology through direct effects on ovarian and on menstrual function by indirect effect on sex binding globulin. Impact of hypothyroidism on menstrual cycle is been identified since 1950. In India hypothyroidism is catogorised under iodine deficiency disorder. Altered menstrual pattern, change in frequency, duration and amount of blood loss occur with thyroid dysfunction in all age groups. Thyroid hormone has a role to play in PCOD and ovulation. Hypothyroidism cause menorrhagia and dysfunctional uterine bleeding. Hyperthyroidism is associated with delayed menarche, menorrhagia, oligomenorrhia and premature ovarian failure. Subclinical hypothyroidism is associated with occult non responding menorrhagia, occult PCOD and infertility. These irregularities in thyroid function is often diagnosed incidentally while investigating for DUB, infertility, premature menopause and nonresponding menorrhagia. Present study was undertaken to evaluate the thyroid function in rural women presenting with menstrual irregularities.

Material and Methods
50 women in the age group of 25-45 years attending gynaec op of SSSMCH, Ammapettai village in silk city of Kancheepuram, South India with complaints of menstrual irregularity over a period of one year (2014-2015) were selected as study subjects. 50 women from the same rural area with matching age, socioeconomic class and occupation with complaints other than menstrual problems were selected as control women. Women with fibroid, adenomyosis, adenexal mass and malignancy were excluded from the study.

Subjects were considered euthyroid if TSH levels is 0.39-6.16 mic/ml. Free t3 1.4-4.2 pg/ml and free t4 0.8-2 pg/ml. When TSH was high and free t3, t4 within normal range, they were labeled subclinical hypothyroidism. Overt hypothyroidism was diagnosed with high TSH and low t3 and t4 levels. Hyperthyroidism was diagnosed when TSH is low and t3 t4 levels high.

Detailed menstrual history taken, clinical and pelvic examination done. BMI calculated. Free t3, t4 and TSH levels, ultrasonogram for endometrial thickness, uterine and ovarian morphology was done. Endometrial sampling was done in all study subjects. Results analysed for prevalence and effect of thyroid dysfunction on menstrual irregularity.

Results

Table 1: Thyroid profile in study and control group

Thyroid Function	No. of case Study	%	No. of Controls	%
Euthyroid	12	16	36	72
Subclinical hypothyroid	10	20	4	8
Overt hypothyroid	22	52	8	16
Hyperthyroid	6	12	2	4

Overt Hypothyroidism: 7 from age group 20-25. 19 from age group 25-30. Prevalence of hypothyroid in study group 52%. Prevalence of hypothyroid in control group 80%.

Table 2: Thyroid profile in young age group

Age	Euthyroid		Hypothyroid		Hyperthyroid		Subclinical	
	Study	Control	Study	Control	Study	Control	Study	Control
Less than 19	1	9	2	1	3	-	4	-
20-25	5	8	9	3	-	-	6	3
26-35	1	13	15	4	1	-	-	1
More Than 36	6	6	-	-	2	2	-	-

9 women in 20-25 age had hypothyroidism 15 women in 26-30 age had hypothyroidism

Table 3: Thyroid status and menstrual pattern=50

Thyroid status	No.	Menorrhagia	Oligomenorrhia	Polymenorrhia	Amenorrhea
Subclinical	10	4	6	-	-
Euthyroid	8	8	-	-	-
Hypothyroid	26	15	6	4	-
Hyperthroid	6	2	3	1	1

Table 4: BMI, Thyroid status and menstrual pattern

BMI No		Thyroid status			Menstrual pattern			
		Euthyroid	Hypothyroid	Hyperthyroid	Menorrhagia	Oligomenorrhia	Polymenorrhagia	Amenorrhea
Less than 19	9	4	2	3	5	4	-	-
20 -25	21	9	12	-	11	8	2	-
26-35	17	1	15	1	16	1	-	-
>36	3	1	-	2	-	2	-	1

Table 5: USG Pelvis Findings

Ovarian morphology			Uterine morphology		
	Study	Control		Study	Control
Normal	30	40	Normal	-	36
PCOD	7	-	Bulky	41	14
Occult PCOD	13	10	Fibroid	6	
			Adenomyosis	3	

Table 6: Histology in study subjects

Type of endometrium	Hypothyroid	Hyperthyroid
Proliferative	25	3
Hyperplastic	3	-
Secretory	14	1
Cystoglandular hyperplasia	3	1
Atrophy	3	1

Discussion

Hypothyroidism is characterized by broad spectrum of clinical features- many women are asymptomatic or have subclinical hypothyroidism. Adolescent and reproductive age group are adversely affected. Peri and post-menopausal years are influenced by thyroid status of the women. Menstrual disturbance may accompany or even proceed thyroid function. Menorrhagia was the most common complaint among women presenting with irregular periods. Our institution is within 40km radius of nuclear power reactor at kalpakkam and is surrounded by mountains with low source of iodine. This study was conducted to find out the prevalence and effect of thyroid dysfuction on menstruation in 50 women with aub and 50 controls without menstrual irregularity.

Table 1: Shows prevalence of thyroid disorders in women complains of AUB. In our study prevalence was 56%, out of which 44% had hypothyroidism and control group 8% had hypothyroidism. 20% had subclinical hypothyroidism and 24% were euthyroid. Ajmani NS'[1] from New Delhi has reported 44% of women had thyroid dysfunction with menstrual disorders out of which 14% had overt hypothyroidism & 8% had hyperthyroidism and 20% had subclinical hypothyroidism which is similar to our observation. Ajmani NS[1] from Delhi has reported 10% of her controls had hypothyroidism and 4% had hyperthyroidism. In our study 16% of control subjects had hypothyroidism 4% of control subjects had hyperthyroidism. Padmaleela K'[2] to from Andhra Pradesh reported 26.5% women study had thyroid dysfunction and hypothyroidism was seen 18% and hyperthyroidism in 8.4%. N Sharma[3] from Jammu Kashmir had reported 22% of her subjects with disturbed menstruation had hypothyroidism and 62% hyperthyroidism.

Table 2: Age group distribution of thyroid disorder. In our study 15 women with AUB (30%) belonging to 26-35had hypothyroidism. Whereas in Padmaleela K'[2] study 53% women belonging to age group 35-45 had DUB and 31.8% had thyroid dysfunction in this age group. Pahwa S'[4] from Amristar found majority patients were between 31-40 years and 50% had menorrhagia. Sinha U'[5] from East India reported goiter in 27.5% in women and 22.5% had autoimmune thyroid with PCOD and menstrual irregularities.

Table 3: Shows menstrual pattern and thyroid profile in 50 study subjects. 50 control did not have any menstrual problem. Commonly menstrual disorder was menorrhagia. In our study prevalence of thyroid disorder (64%), 2.52% women with hypothyroidism, 30% had menorrhagia, 12% oligomenorrhia and 10% polymenorrhia, 5 in one women had amenorrhea and hyperthyroidism. Aimani NS[1] from Delhi reported 50% of her study subjects (25) had menorrhagia, similar to Padmaleela K[2] and Pahwa S.[4] Pahwa S[4] reported 76% had euthyroidism. In our study 12 women had euthyroid out of 50. We had polymenorrhea in 10% women similar to Pahwa S.[4] We had polymenorrhoea in 10% which is similar to Pahwa S[4] (10.52%) and Ajmani NS[1] (16%). Sinha U[5] in her study from Eastern India reported 27.5% of her study subjects had menstrual disorder associated with PCOD and 22.5% with goiter due autoimmune thyroiditis.

Table 4: Shows correlation between BMI, thyroid status and menstrual pattern in study and control groups. In our study 41 women were obese with BMI> 25. Only 2 control were obese. Hypothyroid was seen in 27 obese women. Menorrhagia was present in 16 obese women, oligomenorrhia in 3. El-Hafez HAA[6] from Egypt also has reported high prevalence of hypothyroid in women with increased BMI and obesity. Similar to our observation. Verma I[7] from Punjab has reported 79% of her asymptomatic obese infertile women with subclinical hypothyroidism conceived with treatment for hypothyroid. In our study out of 10 women with subclinical hypothyroid, 7 had PCOD and non-responding occult menorrhea. They responded to thyroid treatment. Ajmani NS[1] report 20% had subclinical hypothyroidism in control 16%. Out of 10 in BMI and subclinical hypothyroid disorder. Women had PCOD and non-responding occult menorrhea in our study who responds to thyroid treatment. Ajmani NS[1] had reported in her study 20% women with menstrual disorders had subclinical hypothyroidism. Verma I[7] from Punjab has reported 23.9% of her asymptomatic obese infertile women with subclinical hypothyroid.

Table 5: USG findings in study group and control group. In the study group ovarian morphology was normal in 30 women and 40 in control. PCOD was seen in 7 and occult PCOD 13 in study group and 10 occult PCOD in control, uterus was bulky in 41 study subjects. Normal in 36, bulky in 14 control associated with insulin resistant. Sinha U[5] from Eastern India has shown prevalence of goiter 27.5% among PCOS in her control group prevalence was 1.25% PCOS patients had high TSH level and autoimmune thyroid than control group. El-Hafez HAA[6] from Egypt had reported PCOS is associated with insulin resistance, obesity and high BMI.

Table 6: Shows histology findings from study group women. Endometrial sampling was not done in controls as they did not have any menstrual complaints. 25% women had proliferative endometrium. Endometrial

hyperplasia in 3 subjects in cystoglandular hyperplasia. In the study by Ajimani NS[1] had proliferative endometrium. The findings in Padmaleela K[2] study was in both hypothyroid and hyperthyroid cases endometrium was proliferative in 60% cases. Cytoglandular hyperplasia was found in 13.3% and secretory endometrium in 26.7% of hypothyroid patient.

Conclusion

Thyroid dysfunction is associated with menstrual dysfunction, PCOD and infertility. Menorrhagia was the commonest menstrual pattern in 58% women who presented with DUB. Subclinical hypothyroidism in 10% women who presented with occult non responding menorrhagia. 40% obese, 26% occult PCOD and 14% overt PCOD. Hyperthyroidism in 12% women with oligomenorrhagia and obesity undetected. Subclinical hypothyroidism and occult PCOD was diagnosed individually. Our institution is within a radius of 40km from nuclear reactor at kalpakkam and surrounded by mountains with low iodine source. Incidence of hypothyroidism is 52% in our study which is higher than the natural average. Routine screening for thyroid profile, USG for occult and overt PCOD in all cases of DUB, menstrual disorder, early ovarian failure and infertility may help in detecting subclinical hypothyroidism and occult PCOD which is associated with menstrual disorder in many women are asymptomatic or have subclinical hypothyroidism.

In our study 16% of control subjects had hypothyroidism and 4% of control subjects had hyperthyroidism.

References

1. 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" Journal Of Obstetrics and Gynecology of India (2016**)** Apr;66(2):115-9.
2. Padmaleela K, Thomas V, Lavanya KM, Kiranmai D, "Thyroid disorders in dysfunctional uterine bleeding among reproductive age group women- a cross sectional study in a tertiary hospital in Andhra Pradesh, India" Int J Med Pharm Sci. 2013;04(01):41-6.
3. N Sharma, A Sharma, "Thyroid profile in dysfunctional uterine bleeding" JK Science Journal of Medical Education and Research. 2012 Jan-Mar;14(1):14-17.
4. Pahwa S, Gupta S, Kumar J, "Thyroid dysfunction in dysfunctional uterine bleeding" J Adv Res Biol Sci. 2013;5(1):78-83.
5. Sinha U, Sinharay K, Saha S, Longkumer T A, Baul SN, Pal SK. Thyroid disorders in polycystic ovarian syndrome subjects: A tertiary hospital based cross-sectional study from Eastern India. Indian J Endocr Metab 2013;17:304-9.
6. El-Hafez HAA, Elrakhawy MM, El-Aziz SA, El-Eshmawy MM (2013) Thyroid Function and Volume are Associated with Anthropometric Measurements and Insulin Resistance in Egyptian Women with Polycystic Ovary Syndrome. J Diabetes Metab 4: 288. doi:10.4172/2155-6156.1000288.
7. Verma I, Sood R, Juneja S, Kaur S. Prevalence of hypothyroidism in infertile women and evaluation of response of treatment for hypothyroidism on infertility. Int J App Basic Med Res 2012;2;17-9.