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Original Research Article

Evaluation of thyroid profile status in women with abnormal uterine bleeding in north Indian population

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Abstract

Background: Abnormal Uterine Bleeding is a common complication occurs in 9 – 14% of women from Menarche to Menopause. Women are more prone to thyroid disorder and cause abnormal sexual development, menstrual irregularity, infertility and premature menopause. Our objective of study is to evaluate the thyroid function tests in women with abnormal uterine bleeding in north Indian population.

Methods: After selecting the women, informed consent was obtained. The case history and clinical examination of them were done, requested to do thyroid functioning test in fasting status in early morning and the results were evaluated. Thyroid function tests were estimated by Chemiluminescence Immuno Assay (C.L.I.A) method using reagent Monobind I N C with the help of fully automatic Elecsys 2010 machine made by ROCHE.

Results: There were 150 women who were included in the study. Out of all the types of commonest symptoms were menorrhagia around 47%. Patients with oligomennorrhoea 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.

Conclusions: As there is high incidence of thyroid diseases in a north Indian population, women with abnormal uterine bleeding. This would also avoid unnecessary hormonal treatment and surgical intervention in these patients.

Keywords: Abnormal uterine bleeding, Menorrhagia, Oligomenorrhoea, Hypothyroidism, Hyperthyroidism.

1. Introduction

Thyroid disorders are an important complication in women than in men and cause abnormal sexual development, menstrual irregularity, infertility and premature menopause [1]. In gynaecology, more than 20% of women present with dysfunctional uterine bleeding. Physicians are often unable to identify the cause of abnormal bleeding even after a thorough history and physical examination. Abnormal uterine bleeding includes both dysfunctional uterine bleeding and bleeding from structural causes. While activity of the thyroid is closely linked with the process of ovarian maturation, the thyroid gland is itself dependent on direct and indirect stimuli from the ovary to discharge its own function [2].

It is recognized universally that menstrual disturbances may accompany and even may precede thyroid dysfunction .In the present study thyroid status of patients presenting with abnormal uterine bleeding was assessed by TSH, T3, and T4 assay. Both hypothyroidism and hyperthyroidism may result in menstrual disturbances. Hyperthyroidism reduces menstruation and hypothyroidism causes menorrhagia. Hyperthyroidism in contrast is associated with a menorrhagia and oligomenorrhoea and the

decrease in flow is proportional to the severity of the thyrotoxicosis [3].

Severe hypothyroidism is commonly associated with ovulatory dysfunction due to numerous interactions of thyroid hormones with the female reproductive system. Both hyperprolactinaemia, due to increased TRH production, and altered GnRH pulsatile secretion, leading to a delay in LH response and inadequate corpus luteum, have been reported [4-6].

Hence aim of this study is to evaluate the thyroid function in patients having abnormal menstrual bleeding from puberty to premenopausal age groups which is interesting and justifiable and will help in further management of dysfunctional uterine bleeding.

2. Materials and Methods

100 women in the age group of 15 to 50 with Abnormal Uterine Bleeding were evaluated during the period March 2014 to October 2015.50 Normal healthy females without having any menstrual disturbances were considered as a control.

2.1 Study Design: A prospective study

2.2 Inclusion criteria:

All cases provisionally diagnosed to have Dysfunctional uterine bleeding from puberty to premenopausal age groups. All patient having major complaint of menstrual disturbances e.g., menorrhagia, polymenorrhoea, polymenorrhagia, metropathia hemorrhagica, metrorrhagia, Oligo and hypomenorrhoea.

2.3 Exclusion criteria:

Patients who were on drug or hormones, IUCD users, with overt clinical symptoms of thyroid dysfunction, history of bleeding disorder were excluded.

Patients with goitre, Ca thyroid, Patients with organic disease of the genital tract and demonstrable extragenital cause.

2.4 Methods:

The blood was allowed to clot and serum was separated within half an hour by centrifugation at 3000 rpm for 10 minutes. This was followed by biochemical analysis of serum Triiodothyronine (T3), Thyroxine (T4) and Thyroid Stimulating Hormone (TSH) either on the same day of collection or stored at 2-8 ^{0}C until further analysis. Thyroid profile was estimated by Chemiluminescence Immuno Assay (C.L.I.A) method using reagent Monobind I N C with the help of fully automatic Elecsys 2010 machine made by ROCHE.

Serum T3: Normal value=0.52-1.85ng/ml

Serum T4: Normal value=4.8-11.6mcg/dl

Serum TSH: Normal value=0.39-6.16mIU/ml

(These normal reference values are given as in the test kit used for the test).

Patients were then grouped into 4 categories:

1. Euthyroid
2. Subclinical hypothyroid
3. Hypothyroid
4. Hyperthyroid

Thyroid dysfunction criteria are as follows:

Euthyroid: Thyroid function was considered normal when subjects presented with normal T3, T4 and TSH.

Abnormal thyroid function was further categorized as;

Hyperthyroid: Increased T3, T4 and decreased TSH

Subclinical Hyperthyroid: Increased T3, T4 and normal TSH.

Hypothyroidism: Decreased T3, T4 and increased TSH

Subclinical Hypothyroidism: Decreased T3, T4 and normal TSH

3. Results

There were 150 women who were included in the study. The age groups of all the patients are mentioned in Table 1. The maximum number of patients in the study belongs to the age group 31-40 years, 40 cases which accounted to 40%.

Table 1: Distribution of Age in control and study groups

Age Group	Cases		Controls	
	No.	Percentage	No.	Percentage
< 20 Years	10	10%	200%	4%
21-30 Years	15	15%	2100%	42%
31-40 Years	40	40%	2200%	44%
> 40 Years	35	35%	500%	10%
Total	100	100.00%	50	100.00%
Range	15-50		18-52	
Mean± SD	40±35.88		20± 19.06	

The range was from 15 to 50 years and 18 to 52 years in cases and controls respectively. Most of the patients were in the age group of 31 to 40 years in both cases and controls. Mean age was 40 years in cases and 20 years in controls. The patients who came with the complaint of different bleeding pattern (Table 2).

Table 2: Distribution of patients according to symptoms

Type of bleeding	No. of cases	Percentage
Acylical (MPH)	10	10%
Hypomenorrhoea	5	5%
Menorrhagia	47	47%
Metrorrhagia	9	9%
Oligomenorrhoea	12	12%
Polymenorrhagia	10	10%
Polymenorrhoea	7	7%
Total	100	100%

Commonest symptoms were menorrhagia, around 47%. Among others 10% of cases presented with Acyclical (MPH), 12% with Oligomenorrhoea, 10% had polymenorrhagia, 7% had polymenorrhoea, 5% had Hypomenorrhoea, 9% had metrorrhagia. Maximum patients were seen with complaint of menorrhagia, following which oligomenorrhoea was seen. Among the cases belonging to 21-30 years, 12 cases were euthyroid and 3 had hypothyroidism. Among the age group of 31-40 years, 33 patients were euthyroid, 2 had hypothyroidism and 5 had subclinical hypothyroidism. (Table 3)

Table 3: Distribution of Patients According to age and thyroid disorder

Age	No. of cases	Euthyroid	HypoThyroid	Subhypothyroid	HyperThyroid	Total Thyroid Dysfunction
< 20 Years	10	8	0	2	0	2
21-30 Years	15	12	3	0	0	3
31-40 Years	40	33	2	5	0	7
> 40 Years	35	29	0	4	2	6
Total		**82**	**5**	**11**	**2**	**18**

Among the cases belonging to 21-30 years, 12 cases were euthyroid and 3 had hypothyroidism. Among the age group of 31-40 years, 33 patients were euthyroid, 2 had hypothyroidism and 5 had subclinical hypothyroidism. Above the age of 40 years, 4 patients had sub clinical hypothyroidism and 2 had hyperthyroidism.

Table 4: Bleeding pattern and Thyroid dysfunction

Types of Bleeding	No. of cases	Euthyroid	Hypothyroid	Sub hypothyroid	Hyper thyroid	Total T.D.F.	Percentage
Acylical (MPH)	10	6	2	2	0	4	40.00%
Hypomenorrhoea	5	5	0	0	0	0	0.00%
Menorrhagia	47	41	2	4	0	6	12.77%
Metrorrhagia	9	9	0	0	0	0	0.00%
Oligomenorrhoca	12	8	1	1	2	4	33.33%
Polymenorrhagia	10	9	0	1	0	1	10.00%
Polymenorrhoea	7	4	0	3	0	3	42.86%
Total	100	82	5	11	2	18	100

Thyroid dysfunction was commonest in patients with polymenorrhoea 42.86%, next common in patients with acyclicalmetropathia 40% followed with in patients with oligomenorrhoea 33.33%. Patients with menorrhagia had thyroid dysfunction in 12.77% of cases (table 4). Thyroid dysfunction was least common in patients with polymenorrhagia (10%) and absent in patients with metrorrhagia.

Table 5: Bleeding patterns in Hypothyroidism and Hyperthyroidism

Types of Bleeding	No. of cases	Eu thyroid	% of Eu thyroid	Hypo thyroid	% of Hypo	Subhypo thyroid	% of SubHypo	Hyper thyroid	% of Hyper
Acylical (MPH)	10	6	60.0%	2	20.0%	2	20.0%	0	0.0%
Hypomenorrhoea	5	5	100.0%	0	0.0%	0	0.0%	0	0.0%
Menorrhagia	47	41	87.2%	2	4.3%	4	8.5%	0	0.0%
Metrorrhagia	9	9	100.0%	0	0.0%	0	0.0%	0	0.0%
Oligomenorrhoca	12	8	66.7%	1	8.3%	1	8.3%	2	16.7%
Polymenorrhagia	10	9	90.0%	0	0.0%	1	10.0%	0	0.0%
Polymenorrhoea	7	4	57.1%	0	0.0%	3	42.9%	0	0.0%

The Table 5 shows the relationship of hypothyroidism, subclinical hypothyroidism and hyperthyroidism to the different types of clinically diagnosed cases of DUB. In acyclical MPH, patients were hypothyroid in 20% of cases and 20% of patients had subclinical hypothyroidism. Whereas in patients with menorrhagia only 4.3% of patients had hypothyroidism and 8.5% of patients had subclinical hypothyroidism. Patients with oligomennorrhoea 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. So, patients who

were subclinically hypothyroid were maximally presenting as polymenorrhoea (42.9%) and Polymenorrhagia (10.0%) and only 8.3% of patients had oligomenorrhoea. Patient who were hypothyroid were predominantly having acyclicalmetropathia (MPH) 20% and 8.3% of patients were having oligomenorrhoea. On the other hand, patients who were hyperthyroid were exclusively presenting as oligomenorrhoea. Subclinical hypothyroid patients have polymenorrhoea and acyclicalmetropathia (MPH) as their commonest bleeding pattern.

Table 6: Comparison of Different parameters in control and study groups

Study Variables	Cases	Controls	P Value	Remarks
T3	1.07±0.52	1.13±0.38	<0.5	Not Significant
T4	7.55±2.18	7.79±1.6	<0.5	Not Significant
TSH	5.1±7.01	2.42±1.57	<0.01	Significant

Mean of T3 among all 100 cases is 1.07 with standard deviation 0.52 and in controls is 1.13 with standard deviation 0.38(ng/dl) (Table 6). Mean of T4 among all 100 cases is 7.55 with standard deviation 2.18 and in controls is 7.79 with standard deviation 1.6(ng/dl). Mean of TSH among all 100 cases is 5.1 with standard deviation 7.01 and in controls is 2.42 with standard deviation 1.57(ng/dl). P Value is <0.01 which is statistically significant.

4. Discussion

In the present study patients were taken from all age groups which included less than 20 years, (21-30 years), 31-40 years and 40-45 years and maximum number of patients belonged in the age group of 31-40 years. Commonest bleeding pattern was menorrhagia (47%). Thyroid dysfunction was noted in 18% of cases (Subclinical hypothyroidism in 11% Hypothyroidism in 5% and hyperthyroidism in 2 % of cases). Thyroid dysfunction was commonest in cases with polymenorrhoea (42.86%), Metropathia (40%), Oligomenorrhoea (33.3%) and in menorrhagia (12.77%) which is correlating to study done by Padmaleela *et al* [7]. Thyroid dysfunction was commonest in age group (31-40 years). Thyroid dysfunction was commonest in nulliparous women (40%).Predominant thyroid dysfunction was hypothyroidism total was 16% among that subclinical hypothyroidism was in 11% of cases. 2% of cases who were hyperthyroid were oligomenorrhoeic. Subclinical hypothyroidism was maximum among menorrhagic patients 4 cases out of 18 cases of total thyroid dysfunction (22.2%) and followed with in polymenorrhoeic patients 3 out of 18 cases of total thyroid dysfunction (16.67%). In the general population, the prevalence of subclinical hyperthyroidism is approximately 1.5%. All 18% of cases who had thyroid dysfunction showed abnormal TSH levels, 8% of cases with thyroid dysfunction showed abnormal T3 level, 12% of cases with thyroid dysfunction showed abnormal T4 levels.

5. Conclusion

Our study concludes that thyroid dysfunction should be considered as an important etiological factor for menstrual abnormality because in my study 18% of cases had thyroid dysfunction which is a good percentage. These patients with thyroid dysfunction if given medical treatment avoid necessity of hormonal treatment or surgical intervention.

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