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Original Research Article

Gynecological correlation of thyroid disorders in women

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ABSTRACT

Background: Thyroid dysfunctions are a common cause of abnormal uterine bleeding (AUB). They affect menstrual function and reproductive health. The common presenting complaints are weight gain, menstrual irregularities, PCOS, infertility, fatigue, constipation and body aches.
In this study we recommended that any woman presenting with undiagnosed fatigue, weight gain, infertility and menstrual disorders should be subjected to Thyroid profile screening. Thus, there is a need to explore this aspect in the earlier stages so as to prevent long term consequences with reproduction and quality of life.
Methods: Current study is a retrospective study. The present study was conducted in the department of obstetrics and gynecology, Cama and Albess hospital, Mumbai, Maharashtra, India, from a period of January 2021 to December 2021, 300 women of reproductive age group between menarche to menopause. Quantitative determination of Serum T3, T4 and TSH by CLIA estimated in autoanalyser.
Results: The most common age group studied was between 32-40 years. Hyperthyroidism was more common in multipara and hypothyroidism was more common in P2L2. The most common type of menstrual disturbance was menorrhagia. (40.33%) Menorrhagia has been seen to have significant association with thyroid dysfunction. Prevalence of obesity in the study population is 4% and overweight is 23.66%. About 11.33 % of overweight women and 2% of obese women are hypothyroid. 2% of hyperthyroid women are underweight (BMI<18). About 6.33% of women with hypothyroidism had PCOS, most commonly associated with menstrual complaints such as amenorrhoea and oligomenorrhoea. 14% of women with hypothyroidism had clinical findings of anaemia and/or thyromegaly on clinical examination. 14% of women had severe anaemia in the study group, out of which 6.7% of hypothyroid women had severe anaemia. 3.66% women presented with infertility.
Conclusions: Biochemical evaluation of thyroid function tests should be compulsory in all patients with menstrual irregularities, PCOS, infertility, fatigue, body aches, anaemia, thyromegaly, weight gain, constipation to detect thyroid dysfunction.

Keywords: Menstrual irregularities, Thyroid function, PCOS, Obesity, Infertility

INTRODUCTION

Thyroid dysfunctions are a common cause of Abnormal uterine bleeding (AUB). They affect menstrual function and reproductive health The common presenting complaints being fatigue, body aches, weight gain, constipation, menstrual irregularities, and infertility.[1] Menstrual irregularities are sometimes the first sign of thyroid dysfunction.[2] The thyroid gland disorders are among the most abundant disorders worldwide second only to diabetes.[2] So in this ,study we recommended that any woman presenting with fatigue, weight gain and

menstrual disorders should be subjected to TSH screening. Thus, there is a need to explore this aspect in the earlier stages so as to prevent long term consequences with reproduction and quality of life. In the patients with menstrual dysfunction, if thyroid disorders are timely diagnosed and treated, the menstrual irregularities settle, and unnecessary intervention like hormonal treatment and surgery can be avoided. The menstrual abnormalities most commonly seen are menorrhagia followed by hypomenorrhea, oligomenorrhea, amenorrhoea and polymenorrhea. Anaemia and thyroid dysfunction usually occurs simultaneously. Thyroid hormones stimulate the proliferation of erythroid precursors both directly as well as through erythropoietin production whereas iron deficiency anaemia negatively influences thyroid hormone levels. Normocytic normochromic anaemia is the most common but microcytic and macrocytic anaemia can also occur. Causes of anaemia in hypothyroidism include: bone marrow suppression thereby leading to impaired haemoglobin synthesis, decreased erythropoietin production, iron and folic acid deficiency (decreased intestinal absorption), increased menstrual blood loss, vitamin B12 deficiency leading to pernicious anaemia, pernicious anaemia is common in autoimmune thyroid disorders. Diabetes mellitus and adrenal insufficiency are the two other conditions associated with pernicious anaemia.

Obesity and hypothyroidism are the two common conditions that are linked together closely. Thyroid hormones play an important role in regulating basal metabolism, thermogenesis, lipid and glucose metabolism. Hypothyroidism is associated with decreased thermogenesis, decreased basal metabolic rate and obesity and vice versa i.e. hyperthyroidism is associated with increased basal metabolic rate and lean patients. At present there is no indication for using levothyroxine in inducing weight loss in obese patients except for those with hypothyroidism. Marzullo et al suggested that obesity is a risk factor for thyroid autoimmunity. Further large randomised control trials are necessary to study the association between leptin, thyroid autoimmunity and the subsequent development of hypothyroidism. Polycystic ovary syndrome (PCOS) is a common heterogeneous endocrine disorder which nearly affect 8-20% of reproductive aged women worldwide .women with PCOS have insulin resistance, metabolic syndrome ,hypertension, dyslipidemia, glucose tolerance, diabetes .Nearly 40 % of women with PCOS are infertile. It is the most common cause of anovulatory infertility. Thyroid disorders are more common in women with PCOS. Most common thyroid dysfunction associated with PCOS is subclinical hypothyroidism.

Clinical symptoms and signs of thyroid disorders[3]

Hypothyroidism: weight gain, hypertension, constipation, coarse skin, cold intolerance, bradycardia, voice change, lethargy, palpitation.

Hyperthyroidism: weight loss, proptosis, diarrhoea, lid lag, heat intolerance, tachycardia, anxiety, warm and moist skin, fatigue, tremors.

Objectives

Objective of current study was that in the patients with menstrual dysfunction, if thyroid disorders are timely diagnosed and treated, the menstrual irregularities settle, and unnecessary intervention like hormonal treatment and surgery can be avoided

METHODS

The present study is a type of research article with study design retrospective study was conducted in the department of obstetrics and gynaecology, Cama hospital, Mumbai, from January 2021 to December 2021, 300 women of reproductive age, menarche to menopause attending OPD were selected

Selection criteria

Women of reproductive age group and non pregnant women were selected in the current study.

Procedure

After taking detailed history regarding age, parity, marital status, menstrual history, general physical examination including height, weight, BMI was carried out. Complete blood count, T3, T4 and TSH, FBS, PPBS, blood group was investigated. Special investigations were done in necessary cases such as USG (abdomen+pelvis), USG local neck

Statistical analysis

Statistical analysis was done by SPSS software and difference with a $p<0.05$ was considered statistically significant.

RESULTS

There were 300 women included in the study. The most common age group studied were between 32-40 years (Table 2). Hyperthyroidism were more common in multipara followed by P2L2 and hypothyroidism were more common in P2L2 followed by P1L1 ($p=0.00001$). The most common type of menstrual disturbance are menorrhagia (Table 1). (40.33%) menorrhagia got significant association with thyroid dysfunction. Hypothyroidism presents in 19.33%, subclinical hypothyroidism in 6% and hyperthyroidism in 3.33% and subclinical hyperthyroidism in 1%, clinical hypo-thyroidism in 13.33%, clinical hyperthyroidism in 2.33% of the study population.

Table 1: Type of menstrual disorders.

Menstrual disorders	N	%
Menorrhagia	121	40.33
Polymenorrhea	29	9.66
Polymenorrhagia	27	9
Oligomenorrhea	38	12.66
Amenorrhea	70	23.33
Hypomenorrhea	15	5

Prevalence of obesity (Table 3) in the study population is 4 % and overweight is 23.66%. About 11.33% of overweight women and 2% of obese women are hypothyroid.2 % of hyperthyroid women are underweight (BMI<18). About 6.33 % of women with hypothyroidism had PCOS (Table 5), most commonly associated with menstrual complaints such as amenorrhoea and oligomenorrhoea. 14 % of women with hypothyroidism had clinical findings of anaemia and or thyromegaly (Table 4) on clinical examination (p=0.03). 14% of women are severe anaemic in the study group. 6.7% of hypothyroid women are severe anaemic (p=0.04). 3.66% women with thyroid disorders are infertile. Menorrhagia is most common menstrual disturbance occurring in about 40.33% of women followed by amenorrhea (23.33%).

The thyroid disorders are more common in the age group of 32-40 years followed by the age group of 24-31 years. 68.33% of women have normal BMI where as 4% have low BMI and 27.66% have high BMI. Higher BMI is seen in women with hypothyroidism. About 34.67% had abnormal findings on clinical examination. 65.33% had normal findings. About 6.33% of women with hypothyroidism had PCOS, most commonly associated with menstrual complaints such as amenorrhoea and oligomenorrhoea.

Table 2: Age distribution.

Parameters	Normal		Hyperthyroidism		Hypothyroidism		P value
Age group (years)	**N**	**%**	**N**	**%**	**N**	**%**	
Menarche less than 23	48	16	01	0.3	10	3.3	
24-31	63	21	00	00	14	4.7	0.016252
32-40	69	23	02	0.7	12	4	
>40	52	17.3	04	1.3	25	8.3	

Table 3: BMI and thyroid disorder.

Parameters	Normal		Hyperthyroidism		Hypothyroidism		P value
BMI	**N**	**%**	**N**	**%**	**N**	**%**	
<18.5	03	01	06	2	03	01	
18.5-24.9	186	62	01	0.3	18	06	
25-29.9	37	12.3	00	00	34	11.3	<0.00001
30-34.9	05	1.7	00	00	05	1.7	
>35	01	0.3	00	00	01	0.3	

Table 4: Clinical findings with thyroid disorders.

Parameters	Normal		Hyperthyroidism		Hypothyroidism		P value
Examination	**N**	**%**	**N**	**%**	**N**	**%**	
Anaemia	55	18.3	07	02.3	33	11	
Anemia+ thyromegaly	00	00	00	00	06	02	0.037913
Normal	177	59	00	00	19	06.3	
Thyromegaly	00	00	00	00	03	01	

Table 5: Thyroid disorder and polycystic ovarian disease.

Parameters	Normal		Hyperthyroidism		Hypothyroidism	
USG	**N**	**%**	**N**	**%**	**N**	**%**
Normal	216	72	10	3.33	36	12
Anemia+ thyromegaly	00	00	00	00	06	02
PCOD	2	0.66	-	-	19	6.33
Thyromegaly	00	00	00	00	03	01

Table 6: Comparison of BMI.

Study	Association
Beckmann habertee et al	Positive association
Knudsen et al	Positive association
Present study	Positive association

DISCUSSION

General examination

Anaemia and thyromegaly (34.67 %) were more common in the thyroid dysfunction cohort compared to other women in the study (10%).

BMI

According to BMI, 68.33% of women had normal BMI, 4% of women had decreased BMI and 27.66% of women had increased BMI. Of 4% of women with decreased BMI, 2% of women belonged to the hyperthyroid group. Of 27.66% of women with increased BMI 13.33% of women belonged to the hypothyroid group. Hence decreased BMI are associated with hyperthyroidism and increased BMI are associated with hypothyroidism. This correlates with the study of Jayakakshmi. Thus obesity has significant association with hypothyroidism.

Hemoglobin

Out of 300 women severe anaemia are observed in 14% of women, moderate anaemia is observed in 16.3% of women and Hb >9g/dl are observed in 68.6% of women. Severe Anaemia (HB<7g/dl) are observed in 7.3% of euthyroid women and 6.7 % of women with hypothyroidism. None were severely anaemic in hyperthyroid. Thus anaemia is more commonly associated with hypothyroidism. This also correlated with the study of Jeyalakshmi.

Polycystic ovary syndrome

About 6.33% of women with hypothyroidism had PCOS, most commonly associated with menstrual complaints such as amenorrhoea and oligomenorrhoea. Padmaleela found that most common age group of 25-34 years have menstrual irregularities. The commonest complaint is menorrhagia in 50% of cases. Hypothyroidism was present in 18.1% of cases, hyperthyroid in 8.4% of women.[4] Croatian 1999 published an article about association between anaemia and hypothyroidism. It stated first sign of hypothyroidism may be anaemia. Hypothyroidism is the etiology in certain cases of anaemia of uncertain etiology.20-60% women are anaemic in hypothyroidism.[5] Ravanboz in 2013 conducted a randomised double blind active controlled trial found the increase in haemoglobin, ferritin and decrease in thyroid stimulating hormone was superior in the levothyroxine+iron salts group compared to the other groups.[6] In the patients with menstrual dysfunction, if thyroid disorders are timely diagnosed and treated, the menstrual irregularities settle, and unnecessary intervention like hormonal treatment and surgery can be avoided.[7] Jovitha et al showed a positive correlation between serum TSH levels and anovulation.[8] Beckmann et al studied a cohort of 337 women suffering from PCOD and conclude women with TSH> 2mIU/ml were younger, had higher BMI and were insulin resistant than women with TSH< 2mIU/ml.[9] Knudsen et al studied a group of 4082 patients about the association between thyroid function and body mass index. It showed a positive association between BMI and TSH level, negative association between BMI and serum T4 and no association between BMI and serum T3 levels. It 14 concluded that there is an association between increased TSH levels and obesity.[10]

Limitations

Cost of thyroid screening tests and awareness among medical profession is one of the limitations of current study along with compliance with follow up and long term medication.

CONCLUSION

From the above study it can be concluded that there is a significant association between Women approached our OPD with complaints of weight gain, infertility, fatigue weight gain and thyroid disorders. Screening for thyroid dysfunction in women with menstrual disorders thereby preventing inappropriate therapeutic and surgical interventions. So, in this study we recommended that any subject presenting with undiagnosed fatigue, weight gain, infertility and menstrual disorders should be subjected to TSH screening. Thus, there is a need to explore this aspect in the earlier stages so as to prevent its later complications.

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

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