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Assessment of thyroid disorders and menstrual disorders in reproductive age group

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Abstract
Background: Hypothyroidism is associated with a wide spectrum of reproductive disorders ranging from abnormal sexual development, menstrual irregularities, and infertility. The present study was conducted to assess thyroid disorders and menstrual disorders in reproductive age group.
Materials & Methods: 84 women in reproductive age group 15-45 years were divided patients into 2 groups of 42 each. Group I was with menstrual disorders and group II with other than menstrual disorders. Parameters such as parity, age of menarche, general physical examination along with pelvic examination was carried out in women with menstrual complaints. Routine investigation like Hb, Platelet count, TLC, DLC, ESR, ABO-Rh, and thyroid profile that includes T3, T4, TSH etc. was recorded.
Results: Age group 15-25 years had 22, 25-35 years had 36 and 35-45 years had 26 patients. Thyroid status was euthyroid seen in 58% in group I and 78% in group II, subclinical hypothyroid in 18% in group I and 10% in group II, overt hypothyroid seen in 16% in group I and 7% in group II, subclinical hyperthyroid in 4% in group I and 1% in group II and overt hyperthyroid in 8% in group I and 4% in group II respectively. There were 2 cases of Amenorrhea, 8 of Hypo/ Oligomenorrhea, 7 of Metrorrhagia, 22 of Menorrhagia and 3 of Polymenorrhea. Among 2 Amenorrhea patients, each had subclinical hypothyroid and overt hypothyroid. Among 8 cases of Hypo/ Oligomenorrhea, euthyroid, subclinical hypothyroid, overt hypothyroid and subclinical hyperthyroid were seen in 3, 2, 2 and 1 respectively. Among 7 of Metrorrhagia, 2 had euthyroid, 1 had overt hypothyroid, 1 had subclinical hyperthyroid and 2 had overt hyperthyroid. Among 22 cases of Menorrhagia, euthyroid, subclinical hypothyroid, overt hypothyroid, subclinical hyperthyroid and overt hyperthyroid was seen in 18,3,1, 0 and 1 respectively. Among 3 cases of Polymenorrhea, euthyroid, subclinical hypothyroid, overt hypothyroid was seen in 1, 1 and 1 respectively.
Conclusion: There was a strong correlation of thyroid dysfunction with menstrual disorders.

Keywords: menstrual disorders, thyroid dysfunction, women

Introduction
Menstrual disorders pose a huge burden, accounting for approximately 20% of attendance. Thyroid hormones play an important role in normal reproductive physiology through direct effects on the ovaries and indirectly by interacting with sex hormone-binding globulin [1]. Thyroid dysfunction can lead to menstrual irregularities and infertility. In India, thyroid disorders are among the most common endocrine diseases [2].
Hypothyroidism is associated with a wide spectrum of reproductive disorders ranging from abnormal sexual development, menstrual irregularities, and infertility. The impact of hypothyroidism on the menstrual cycle has been identified since the 1950s and leads to changes in cycle length and blood flow. Subclinical hypothyroidism has been associated with occult menorrhagia before becoming symptomatic [3]. The prevalence of subclinical hypothyroidism is as high as 9.5% in women. Onset of thyroid disorders increases with age, and it is estimated that 26% of premenopausal and menopausal women are diagnosed with thyroid disease. Thyroid disorders are more common in women than in men and in older adults compared with younger age groups [4].
Thyroid hormone plays an important role in normal reproductive physiology through direct effects on the ovaries and indirectly by interfering with sex hormone binding globulin. Alterations in production and activity of the thyroid hormones thyroxine (T4) and tri-iodothyronine (T3) may result in menstrual abnormality that is both hyperthyroidism and

hypothyroidism may result in menstrual disturbances [5]. The present study was conducted to assess thyroid disorders and menstrual disorders in reproductive age group.

Materials and Methods

The present study comprised of 84 women in reproductive age group 15-45 years. The consent was obtained from all enrolled patients.

Data such as name, age, gender etc. was recorded. We divided patients into 2 groups of 42 each. Group I was with menstrual disorders and group II with other than menstrual disorders. Parameters such as parity, age of menarche, general physical examination along with pelvic examination was carried out in women with menstrual complaints. Routine investigation like Hb, Platelet count, TLC, DLC, ESR, ABO-Rh, and thyroid profile that includes T3, T4, TSH, and anti-TPO antibody was performed. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

Results

Table I: Distribution of patients

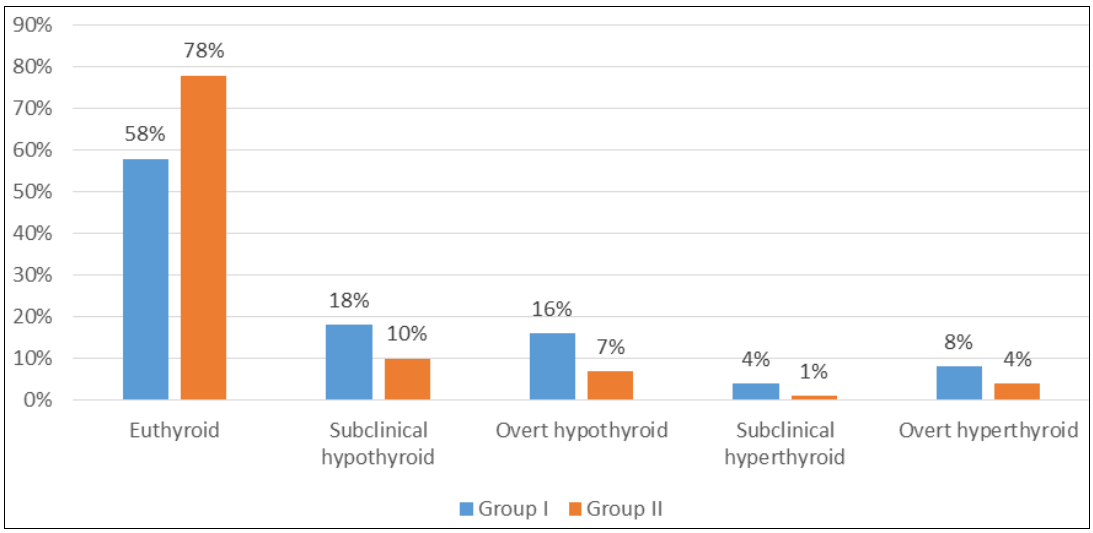
Age group (Years)	Number	P value
15-25	22	0.12
25-35	36	
35-45	26	

Table I shows that age group 15-25 years had 22, 25-35 years had 36 and 35-45 years had 26 patients. The difference was significant (*P*< 0.05).

Table II: Assessment of thyroid disorder

Thyroid status	Group I	Group II	P value
Euthyroid	58%	78%	0.05
Subclinical hypothyroid	18%	10%	0.04
Overt hypothyroid	16%	7%	0.02
Subclinical hyperthyroid	4%	1%	0.05
Overt hyperthyroid	8%	4%	0.04

Table II, graph I shows that thyroid status was euthyroid seen in 58% in group I and 78% in group II, subclinical hypothyroid in 18% in group I and 10% in group II, overt hypothyroid seen in 16% in group I and 7% in group II, subclinical hyperthyroid in 4% in group I and 1% in group II and overt hyperthyroid in 8% in group I and 4% in group II respectively. The difference was significant (P< 0.05).



Graph I: Assessment of thyroid disorder

Table III: Correlation of thyroid dysfunction with menstrual disorders

Menstrual disorders	Euthyroid	Subclinical hypothyroid	Overt hypothyroid	Subclinical hyperthyroid	Overt hyperthyroid
Amenorrhea (2)	0	1	1	0	0
Hypo/ Oligomenorrhea (8)	3	2	2	1	0
Metrorrhagia (7)	2	0	1	1	2
Menorrhagia (22)	18	3	1	0	1
Polymenorrhea (3)	1	1	1	0	0
	24	7	6	2	3

Table III shows that there were 2 cases of Amenorrhea, 8 of Hypo/ Oligomenorrhea, 7 of Metrorrhagia, 22 of Menorrhagia and 3 of Polymenorrhea. Among 2 Amenorrhea patients, each had subclinical hypothyroid and overt hypothyroid. Among 8 cases of Hypo/ Oligomenorrhea, euthyroid, subclinical hypothyroid, overt hypothyroid and subclinical hyperthyroid were seen in 3, 2, 2 and 1 respectively. Among 7 of Metrorrhagia, 2 had euthyroid, 1 had overt hypothyroid, 1 had subclinical hyperthyroid and 2 had overt hyperthyroid. Among 22 cases

of Menorrhagia, euthyroid, subclinical hypothyroid, overt hypothyroid, subclinical hyperthyroid and overt hyperthyroid was seen in 18, 3, 1, 0 and 1 respectively. Among 3 cases of Polymenorrhea, euthyroid, subclinical hypothyroid, overt hypothyroid was seen in 1, 1 and 1 respectively.

Discussion

Many studies suggest any menstrual irregularity in non-pregnant women justifies screening for thyroid disorders [6]. Thus, thyroid dysfunction may have profound effects on the female reproductive system. Both hypothyroidism and hyperthyroidism are associated with a variety of changes in reproductive function, including delayed onset of puberty, anovulatory cycles and abnormally high fetal wastage [7]. TRH induced hyperprolactinemia alter the GnRH pulsatile secretion leading to defective or delay in LH response leading to luteal phase defect and anovulation in women with hypothyroidism. Menorrhagia in these women is due to anovulation and alteration of coagulation factors like decrease in clotting factors [8]. The menstrual changes associated with hyperthyroidism are unpredictable ranging from normal cycles to oligomenorrhoea, amenorrhea which can be due to increase in SHBG, increase in peripheral conversion of androgen to estrogen and effect on synthesis of haemostatic factors [9]. Timely detection of thyroid disorders in patients presenting with menstrual disorder and their management can prevent surgical interventions like curettage, hysteroscopy, hysterectomy etc [10]. The present study was conducted to assess thyroid disorders and menstrual disorders in reproductive age group.

We found that age group 15-25 years had 22, 25-35 years had 36 and 35-45 years had 26 patients. Gandi *et al.* [11] evaluated and detected the thyroid dysfunction in patients presenting with menstrual disorders between 18 to 45 years and correlated between menstrual bleeding pattern and T3, T4, and TSH hormones. Hundred women of reproductive age group between 18-45 years presenting to OPD with menstrual disorders were recruited. 44% out of 100 cases had thyroid dysfunction. Among which 20% had subclinical hypothyroidism and 11% had hypothyroidism. Hyperthyroidism was seen in 5% of the cases and subclinical hyperthyroidism seen in 8%. Menorrhagia was the commonest menstrual disorder seen in hypothyroid patients followed by polymenorrhoea. Oligomenorrhoea followed by amenorrhoea were commonly seen in hyperthyroid patients.

We found that thyroid status was euthyroid seen in 58% in group I and 78% in group II, subclinical hypothyroid in 18% in group I and 10% in group II, overt hypothyroid seen in 16% in group I and 7% in group II, subclinical hyperthyroid in 4% in group I and 1% in group II and overt hyperthyroid in 8% in group I and 4% in group II respectively. Ajmani *et al.* [12] comprised of 100 women aged between 15 and 45 years had 50 patients presented with menstrual complaints. The control group consisted of 50 women of same age group with complaints other than menstrual disorders. Thyroid function tests, anti-TPO antibody estimation, and endometrial sampling were done in all patients. In patients with menstrual disorders, 44% had thyroid disorders in which subclinical hypothyroidism was prevalent in 20%, overt hypothyroidism in 14%, and overt hyperthyroidism in 8% of the women. Autoimmune thyroid antibodies were present in 30% patients of women with menstrual disorders. On endometrial sampling, hypothyroid patients mainly had proliferative endometrium (42.85%) whereas hyperthyroid had atrophic endometrium (60%).

We found that there were 2 cases of Amenorrhea, 8 of Hypo/ Oligomenorrhea, 7 of Metrorrhagia, 22 of Menorrhagia and 3 of Polymenorrhea. Among 2 Amenorrhea patients, each had subclinical hypothyroid and overt hypothyroid. Among 8 cases of Hypo/ Oligomenorrhea, euthyroid, subclinical hypothyroid, overt hypothyroid and subclinical hyperthyroid were seen in 3, 2, 2 and 1 respectively. Among 7 of Metrorrhagia, 2 had euthyroid, 1 had overt hypothyroid, 1 had subclinical hyperthyroid and 2 had overt hyperthyroid. Among 22 cases of Menorrhagia, euthyroid, subclinical hypothyroid, overt hypothyroid, subclinical hyperthyroid and overt hyperthyroid was seen in 18, 3, 1, 0 and 1 respectively. Among 3 cases of Polymenorrhea, euthyroid, subclinical hypothyroid, overt hypothyroid was seen in 1, 1 and 1 respectively. Kattel *et al.* [13] thyroid dysfunction was present in 20% of abnormal uterine bleeding cases out of which 19% had hypothyroidism and 1% had hyperthyroidism. The most common type of abnormal uterine bleeding in this study was menorrhagia followed by metrorrhagia.

Conclusion

Authors found that there was a strong correlation of thyroid dysfunction with menstrual disorders.

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