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# Relationship between Thyroid Disorder and Abnormal Menstrual Bleeding

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## ABSTRACT

**Introduction:** Menstrual disorders pose a huge burden on gynaecology OPD, accounting for approximately 20 % of attendance of OPD. Thyroid disorders are prevalent globally, and thyroid conditions are 10 times more prevalent in women than in men. Thyroid dysfunction can prompt menstrual problems and infertility. Thyroid autoimmunity is associated with different forms of thyroid dysfunction.

**Objective:** To assess the relationship between thyroid disorder and abnormal menstrual bleeding.

**Methods:** Study was conducted in 100 women (age 15-45 years) suffering with menstrual disorders. Women with complaints other than menstrual disorders were in the control category. Following demographic characteristics, general physical examination and pelvic examination were performed with special reference to thyroid dysfunction. Patients were subjected to routine investigations (to rule out coagulation defects) such as Hb, BT, CT and platelets. All patients were subjected to Electro Chemiluminescence assay for T3, T4 and TSH estimation in their serum.

**Results:** Of all the kinds of menstrual irregularities, woman with amenorrhea, menorrhagia, oligomenorrhea, polymenorrhea and metrorrhagia were recorded. 55% of the cases in the study group were euthyroid while 45% of the cases were diagnosed with having thyroid disorder. In study group out of 45 cases having thyroid disorder of which 18 (18%) were overt hypothyroid and 11 (11%) were subclinical hypothyroid. Overt Hyperthyroid were 11 (11%) and subclinical hyperthyroid were 5% in the study group. Of the total 3 amenorrhea cases 2 (2%) were euthyroid while 1 case was hypothyroid. Out of 52 menorrhagia cases, 28 were euthyroid, 14(14%) were hypothyroid and 10 (10%) were hyperthyroid. 19 were oligomenorrhea cases of which 7 (7%) each were euthyroid and hypothyroidism while one case was hyperthyroid.

**Conclusion:** Strong correlation of thyroid dysfunction with menstrual disorders has been observed. Morbidity due to thyroid dysfunction in women can be reduced if diagnosed timely and treated accordingly and unnecessary hormonal treatment and surgery can be avoided.

**Key Words:** Pelvic, Menstrual irregularities, Oligomenorrhea, Polymenorrhea, Metrorrhagia

## INTRODUCTION

Menstruation is a natural phenomenon regarding the discharge of blood from the uterus through the vagina, taking place at extra or less regular monthly durations during the reproductive age of females.<sup>1</sup> Menstrual disorders pose a huge burden on gynaecology OPD, accounting for approximately 20 % of attendance.<sup>2</sup> It has been described clinically in different ways, such as menorrhagia, metrorrhagia, menometrorrhagia, polymenorrhea, polymenorrhagia and oligomenorrhea.<sup>3</sup> Normal cyclic period results from the arranged connection between the endometrium and its managing fac-

tors. Changes in both of these oftentimes bring about strange bleeding. It influences up to 33% of ladies of childbearing age.<sup>4</sup>

Thyroid hormones assume a significant part in reproductive physiology through direct impacts on the ovaries and by implication by communicating with sex hormone-binding globulin. Thyroid dysfunction can prompt menstrual problems and infertility.<sup>5</sup> The onset of thyroid disorders is growing with age, and 26% of premenopausal and menopausal women are reported to be diagnosed with thyroid disease.<sup>6</sup> Thyroid disorders are prevalent globally, and thyroid

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conditions are 10 times more prevalent in women than in men.<sup>7</sup> Since the 1950s, the effect of hypothyroidism on the menstrual cycle has been recognised, leading to changes in cycle length and blood flow.<sup>8</sup> Menorrhagia is commonly observed in women with hypothyroidism. On the other hand, hyperthyroidism is associated with amenorrhea and oligomenorrhea, and the drop in flow is proportional to the magnitude of thyrotoxicosis.<sup>9</sup>

Thyroid autoimmunity is associated with different forms of thyroid dysfunction. Operational intervention such as curettage and hysterectomy may be prevented through early diagnosis of thyroid dysfunction in patients with menstrual disorders and their management.<sup>10</sup>

## MATERIALS AND METHODS

The current research was performed in the Department of Obstetrics and Gynecology. 100 women each from the 15-45-year reproductive age group were chosen in the study as well as in the control group. The research group included women with menstrual disorders such as menorrhagia, oligomenorrhea, polymenorrhea, metrorrhagia, hypomenorrhea and amenorrhea and no detectable disease in the genital tract. Women with complaints other than menstrual disorders were in the control category. The research excluded patients with a menstrual disorder with any known organic pathology, such as uterine fibroid, adenomyosis, tuberculosis, polyps, uterine malignancy, etc., and patients with intrauterine contraceptive device in utero.

Detailed demographic and personal history regarding age, parity, age of menarche, menstrual disorders and dysmenorrhea was taken. In women with menstrual complaints, general physical examination and pelvic examination were performed with special reference to thyroid dysfunction; in cases with a provisional diagnosis of AUB. To rule out the structural causes associated with menstrual irregularities, ultrasonography (USG-Abdomen and Pelvis with endometrial thickness) was performed. Patients were subjected to routine investigations (to rule out coagulation defects) such as Hb, BT, CT and platelets. All patients were subjected to Electro Chemiluminescence assay for T3, T4 and TSH estimation in their serum.

If TSH, T3, and T4 were within the normal range (TSH level = 0.39-6.16  $\mu$ IU/ml, free T3 level = 1.4-4.2 pg/ml, and free T4 level = 0.8-2.0 ng/ml), patients were considered as euthyroid; when TSH was elevated with T3 and T4 below the normal range, they were classified as subclinical hypothyroidism. Overt hypothyroidism was diagnosed with high TSH and low levels of T3 and T4, subclinical hyperthyroidism with low TSH and normal levels of T3 and T4, and overt hyperthyroidism with low levels of TSH and high levels of T3 and T4.

Statistical analysis was done, for qualitative data to measure p-value, Chi-square test and Fisher exact test was used, and unpaired student t-test and non-parametric Wilcoxon-Mann-Whitney test were used to statistically compare the quantitative data between two classes for T3, T4, TSH, and anti-TPO antibody values. The difference was deemed statistically significant with a p-value of < 0.05.

## RESULTS

Various parameters analyzed were

- Age
- Parity
- Menstrual irregularities
- Thyroid status
- Association of menstrual irregularities with thyroid dysfunction.

The study and control groups were comparable in respect of age

Of all the kinds of menstrual irregularities, 3 (3%) had amenorrhea, 52 (52%) had menorrhagia, 19 (19%) had oligomenorrhea, 15 (15%) had polymenorrhea and 11(11%) had metrorrhagia (Table 1).

55% of the cases in the study group were euthyroid while 45% of the cases were diagnosed with having thyroid disorder. While in the control group 85% of the cases were euthyroid while 15% were having a thyroid disorder.

**Table 1: Menstrual Irregularities**

Irregularities	n	%
Amenorrhea	3	3%
Menorrhagia	52	52%
Oligomenorrhea	19	19%
Polymenorrhea	15	15%
Metrorrhagia	11	11%
Total	100	100%

In study group out of 45 cases having thyroid disorder of which 18 (18%) were overt hypothyroid and 11 (11%) were subclinical hypothyroid. Overt Hyperthyroid were 11 (11%) and subclinical hyperthyroid were 5% in the study group. In the control group, one (1%) case was overt hypothyroid and 8 (8%) were subclinical hypothyroid, while 4 (4%) were over hyperthyroid and 2 (2%) were subclinical hyperthyroid.

Thyroid anti-TPO antibodies were present in 25 (25%) of the cases in the study group as compared to 3 (6%) cases in the control group. This difference was statistically significant ( $p < 0.005$ ) (Table 2).

**Table 2: Thyroid disorder in the study and control group**

Thyroid status	Study group		Control group	
	n	%	N	%
Euthyroid,	55	55%	85	85%
Overt Hypothyroid	18	18%	1	1%
Subclinical Hypothyroid	11	11%	8	8%
Overt Hyperthyroid	11	11%	4	4%
Subclinical Hyperthyroid	5	5%	2	2%

Of the total 3 amenorrhea cases 2 (2%) were euthyroid while 1 case was hypothyroid. Out of 52 menorrhagia cases, 28 were euthyroid, 14(14%) were hypothyroid and 10 (10%) were hyperthyroid. 19 were oligomenorrhea cases of which 7 (7%) each were euthyroid and hypothyroidism while one case was hyperthyroid. Out of 11 metrorrhagia cases, 6 (6%) were euthyroid, 4 (4%) were hypothyroid while 1 (1%) case was hyperthyroid ( Table 3).

**Table 3: Thyroid dysfunction and menstrual disorder.**

Irregularities	N	Euthyroid	Hypo-	Hyper-
		N=55	thyroid N=29	thyroid N=16
Amenorrhea	3	2	1	0
Menorrhagia	52	28	14	10
Oligomenorrhea	19	12	3	4
Polymenorrhea	15	7	7	1
Metrorrhagia	11	6	4	1
Total	100	55	29	16

## DISCUSSION

Thyroid problems in general and hypothyroidism in particular is more commonly seen in women of reproductive age.<sup>7,8</sup> Reproductive years and menopausal years are significantly influenced by the thyroid status of the women. Hypo and hyperthyroidism, both are associated with menstrual disturbances although hormonal and other biochemical aberrations are different.<sup>9,10</sup> Thyroid status of the women influences the menarche, pubertal growth and development, fertility and foetal development, menstrual cycles, postpartum period, reproductive years, and postmenopausal years.

In our study, 53% of the cases were observed with menorrhagia which was the most common complaint among the patients with menstrual disorders. Similar observations were seen in other studies of Pahwa et al.<sup>11</sup> (50 %) and Padmaleela et al.<sup>12</sup> (50 %), where menorrhagia was the most common complaint. In the present study, 55% were euthyroid in study group while 85% were euthyroid in the control group. This

shows the commonness of hypothyroidism and hyperthyroidism in patients with menstrual problems is very nearly two times higher than in the control population. Kaur et al.<sup>13</sup> observed that 14% of the cases had hypothyroidism while in the study by Pahwa et al.<sup>11</sup> 22 % cases of hypothyroidism and 76 % of euthyroidism were reported. Gowri et al.<sup>14</sup> observed 17.6 % women with hypothyroidism, 2.7 % with subclinical hypothyroidism, and 4.7 % with hyperthyroidism.

In the present study of the total 3 amenorrhea cases, 2 (2%) were euthyroid while 1 case was hypothyroid. Out of 52 menorrhagia cases, 28 were euthyroid, 14(14%) were hypothyroid and 10 (10%) were hyperthyroid. 19 were oligomenorrhea cases of which 7 (7%) each were euthyroid and hypothyroidism while one case was hyperthyroid. Out of 11 metrorrhagia cases, 6 (6%) were euthyroid, 4 (4%) were hypothyroid while 1 (1%) case was hyperthyroid. Kaur et al.<sup>13</sup> observed that the patient with hyperthyroidism was found to have hypomenorrhea. Pahwa et al.<sup>11</sup> in their study observed that two hyperthyroid patients, both had menorrhagia. While Padmaleela et al.<sup>12</sup> observed that among the hyperthyroid patients, 42.8 % had menorrhagia, 28.6 % had polymenorrhea, and 14.3 % had oligomenorrhea.

## CONCLUSION

In this study, a strong correlation of thyroid dysfunction with menstrual disorders has been observed. Morbidity due to thyroid dysfunction in women can be reduced if diagnosed timely and treated accordingly and unnecessary hormonal treatment and surgery can be avoided.

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