



Thyroid Status in Patients with Menstrual Abnormalities: A Prospective Study

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Abstract

Introduction: Menstrual abnormalities are one of the common causes of consultations in obstetrics and gynecology outpatient department. Abnormalities of thyroid function has been found to be associated with various menstrual abnormalities including amenorrhea, oligomenorrhoea, hypomenorrhea, menorrhagia, polymenorrhagia and metrorrhagia. for proper treatment of these patients it is important to diagnose abnormalities of thyroid function in these patients and since even subclinical hypothyroidism may cause menstrual abnormalities it is essential that every woman presenting with menstrual abnormalities (with no other obvious cause of such an abnormality) must undergo thyroid function test and appropriately managed.

Materials and Methods: This was a prospective study consisting of 250 women in reproductive age group presenting with menstrual abnormalities. They were included in this study on the basis of a predefined inclusion and exclusion criteria. Detailed history was taken and a thorough clinical examination was done in all the cases. Clinical examination including general and systemic examination was done in all the cases. Routine blood investigations such as complete blood count, bleeding time, clotting time, prothrombin time and ESR was done in all the cases. Ultrasound of abdomen and pelvis was done in all the cases. Pap smear, radioimmunoassay for infections was done in selected cases in whom cervical pathology or pelvic inflammatory disease was suspected. Thyroid function tests (T3, T4 and TSH) were done in all the cases. Data was analyzed using SSPE 20.0 software.

Results: Out of 250 studied cases 78% patients were euthyroid while subclinical hypothyroidism and clinical hypothyroidism was seen in 22 (8.80%) and 20 (8%) patients respectively. Hyperthyroidism was found in 12 patients. hypothyroidism was most commonly seen in the age group of 31-35 years (3.60%) while subclinical hypothyroidism was more common in the age group of 26-30 years (3.20%).

The most common menstrual abnormality in the studied cases was found to be menorrhagia which was seen in 94 (37.60%) patients followed by Polymenorrhea (18%). Most common menstrual abnormality in euthyroid (25.60%), subclinical hypothyroid (6.40%), hypothyroid (4.00%) as well as hyperthyroid patients (1.60%) patients was found to be menorrhagia. Common associated other than menstrual irregularities were found to be fatigue and constipation.

Conclusion: Abnormalities of thyroid functions are common in women with menstrual abnormalities. All patients presenting with menstrual abnormalities must undergo thyroid function tests if no other obvious cause of menstrual abnormalities is found.

Keywords: Menstrual abnormalities, Thyroid function tests, Subclinical Hypothyroidism, Fatigue.

Introduction

Menstrual abnormalities are common during adolescence and reproductive age group and is one of the important complaints for which obstetrics and gynecology consultations are made. The abnormalities of menstrual blood flow may include absence of bleeding (amenorrhea), irregular bleeding (metrorrhagia), Abnormally heavy bleeding (menorrhagia) and bleeding in between periods¹. Euthyroid state is not only essential for normal menstrual cycles but also essential for timely menarche, proper pubertal growth and normal fertility. Its also essential for proper maintenance of pregnancy and growth of the fetus. Maternal hypothyroidism is associated with intrauterine growth retardation, premature delivery and even intrauterine fetal demise².

The etiology of various menstrual abnormalities may be variable and may consist of disorders such as polycystic ovarian syndrome, hyperandrogenism, hypothyroidism, hyperprolactinemia, and functional hypothalamic dysfunction³. The bleeding disorders such as Von Willebrand disease and qualitative (Glanzmann's thrombasthenia) and quantitative platelet deficiency (thrombocytopenia) may also cause heavy menstrual bleeding. Sexually active females (especially adolescent girls) may acquire infections such as Chlamydia trachomatis, Trichomonas vaginalis, herpes simplex virus (HSV), human papillomavirus (HPV), and Neisseria gonorrhoeae. All these infections may cause pelvic inflammatory disease and may be responsible for menstrual abnormalities. It is essential that any sexually active female if presenting with amenorrhea then pregnancy (including possibility of ectopic pregnancy) must be ruled out before proceeding to other investigations⁴.

Role of thyroid hormone assay in evaluation of menstrual abnormalities is crucial. Thyroid hormones (TH) are important for normal reproductive physiology. TH influence reproductive physiology by direct (effect on ovaries) and indirect (interacting with sex

hormone-binding globulin) methods. One of the common manifestations of thyroid abnormalities in women of reproductive age groups is menstrual abnormalities and infertility⁵. In fact, many of the thyroid abnormalities are diagnosed in women during work up for menstrual abnormalities or infertility. Hypothyroidism as well as hyperthyroidism both are found to have been associated with various menstrual abnormalities. Hypothyroidism is associated with various menstrual abnormalities including menorrhagia, oligomenorrhea and polymenorrhagia. In adolescent girls hypothyroidism may be responsible for delayed puberty and abnormal sexual development while in adult females it may be responsible for menstrual abnormalities and infertility⁶. It is important to understand that even subclinical hypothyroidism may be responsible for menstrual irregularities and infertility and hence it is important to screen all the patients presenting with menstrual abnormalities by thyroid function tests⁷.

Hyperthyroidism is commonly associated with menstrual abnormalities such as oligomenorrhea and amenorrhea. It causes menstrual abnormalities indirectly by increasing sex hormone-binding globulin (SHBG). In addition to menstrual abnormalities it may also cause infertility and unfavorable pregnancy outcome and the risk and incidence of miscarriage is increased in patients with hyperthyroidism in comparison with healthy females⁸.

Timely detection of hypothyroidism as well as hyperthyroidism is important from the point of view of management of patients with menstrual abnormalities. Delay in the diagnosis and appropriate management may increase the morbidity and chances of radical measures such as hysterectomy for control of severe bleeding⁹. This study was done to find out presence of abnormalities of thyroid function in women of reproductive age group who attended our department for the primary complaint of menstrual abnormalities.

Materials and Methods

This was a prospective study done to find out the abnormalities of thyroid function in patients attending outpatient department of obstetrics and gynecology in a tertiary care hospital. The patients were enrolled in the study on the basis of a predefined inclusion and exclusion criteria. A total of 250 patients were included in this study after obtaining written informed consent. Complete history with regard to age, parity, menstrual complaints, amount of menstrual flow and duration of menstrual flow, history of associated complains and past obstetric history was taken in detail. Clinical examination including general and systemic examination was done in all the cases. Routine blood investigations such as complete blood count, bleeding time, clotting time, prothrombin time and ESR was done in all the cases. Ultrasound of abdomen and pelvis was done in all the cases. PAP smear, radioimmunoassay for infections was done in selected cases in whom cervical pathology or pelvic inflammatory disease was suspected. Further imaging (i.e. computerized tomography and magnetic resonance imaging was done in selected cases). Thyroid function tests (T3, T4 and TSH) were done in all the cases. Patients with TSH value of more than 5U/mL were considered as hypothyroid while TSH value of less than 0.5U/mL was considered as a cutoff value for

hyperthyroidism. Based on these values, patients were categorized into hypothyroid, euthyroid and hyperthyroid patients. Thyroid imaging was advised in cases where thyroid function was found to be abnormal. The data was analyzed using SSPE 20.0 software. Microsoft office was used to prepare charts and graphs.

Inclusion Criteria

1. Women below 45 years presenting with menstrual abnormalities.
2. Those who gave informed consent to be part of the study.

Exclusion Criteria

1. Women more than 40 years of age.
2. Those who refused consent.
3. Patients on oral contraceptive pills.
4. Patients having hematological disorders.
5. Patients having genitourinary malignancies.
6. Patients with h/o autoimmune disorders affecting the coagulation such as SLE, autoimmune thrombocytopenia etc.

Results

Out of the 250 patients studied majority of the patients (78%) were euthyroid while subclinical hypothyroidism and clinical hypothyroidism was seen in 22 (8.80%) and 20 (8%) patients respectively. Hyperthyroidism was found in 12 patients.

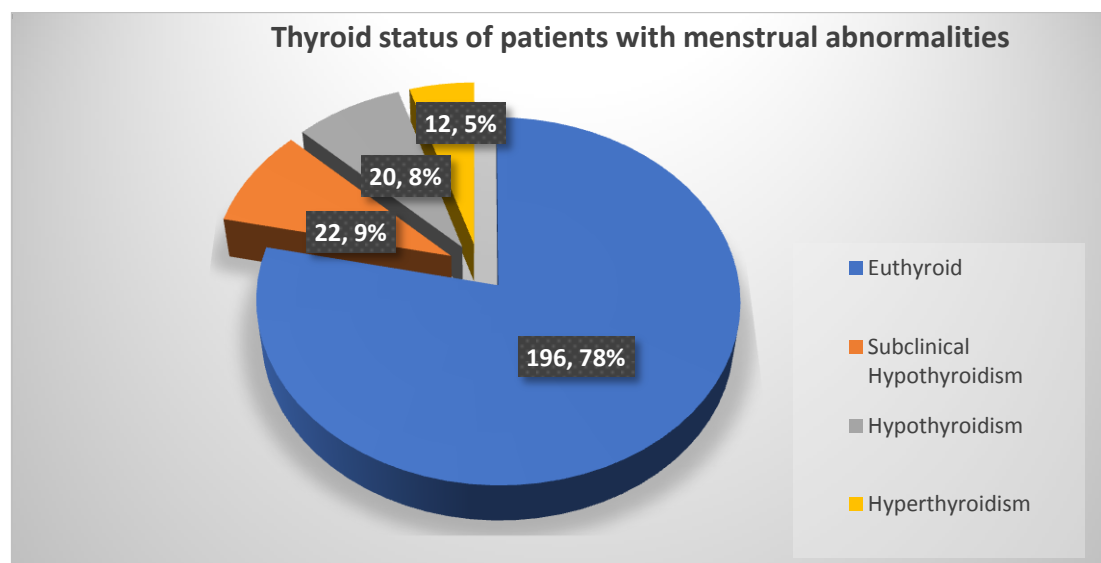


Figure 1: Thyroid status of the studied cases

The analysis of the patients on the basis of age groups showed that hypothyroidism was most commonly seen in the age group of 31-35 years (3.60%) while subclinical hypothyroidism was more common in the age group of 26-30 years

(3.20%). Hyperthyroidism was most commonly seen in the patients of age group of 31-35 years (1.60%). The overall patients presenting with menstrual abnormalities belonged to 31-35 years comprising of 29.60% of all the patients.

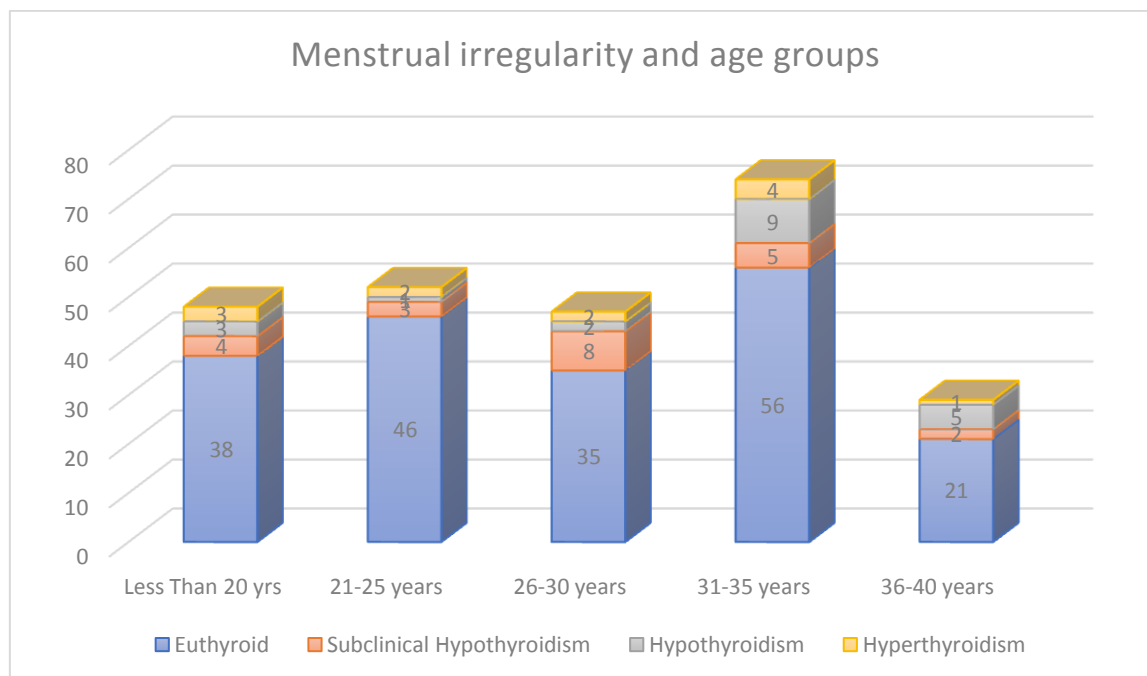


Figure 2: Age groups of the studied cases

The most common menstrual abnormality in the studied cases was found to be menorrhagia which was seen in 94 (37.60%) patients followed by Polymenorrhea (18%), Amenorrhea (14%) and

Polymenorrhagia (13.60%). Polymenorrhagia (8.40%), Oligomenorrhea (5.60%) and hypomenorrhea (2.80%) was seen in relatively a smaller number of patients.

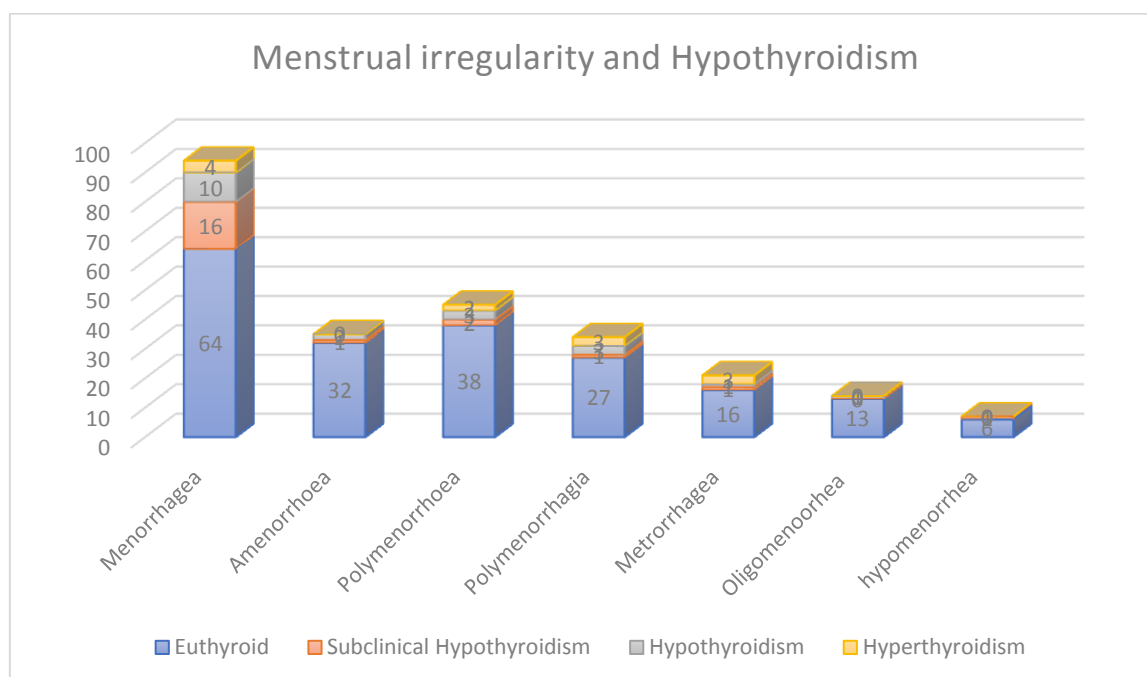


Figure 3: Menstrual abnormalities in studied cases and thyroid status

The analysis of menstrual abnormality and thyroid status showed that the most common menstrual abnormality in euthyroid (25.60%), subclinical hypothyroid (6.40%), hypothyroid (4.00%) as well as hyperthyroid patients (1.60%) patients was found to be menorrhagia. In euthyroid patients other common menstrual abnormalities were polymenorrhea (15.20%) and amenorrhea

(12.80%). In hypothyroidism after menorrhagia common menstrual abnormalities found were polymenorrhea (2%) and Polymenorrhagia (1.60%). While in hyperthyroid patients after menorrhagia the other common menstrual abnormalities found were Polymenorrhagia (1.20%) and Metrorrhagia (1.20%).

Table 1: Thyroid status and associated menstrual abnormalities

Type of Menstrual abnormality	Euthyroid		Subclinical Hypothyroidism		Hypothyroidism		Hyperthyroidism	
	No Of Patients	Percentage	No Of Patients	Percentage	No Of Patients	Percentage	No Of Patients	Percentage
Menorrhagia	64	25.60%	16	6.40%	10	4.00%	4	1.60%
Amenorrhea	32	12.80%	1	0.40%	2	0.80%	0	0.00%
polymenorrhea	38	15.20%	2	0.80%	3	1.20%	2	0.80%
Polymenorrhagia	27	10.80%	1	0.40%	3	1.20%	3	1.20%
Metrorrhagia	16	6.40%	1	0.40%	1	0.40%	3	1.20%
Oligomenorrhoea	13	5.20%	0	0.00%	1	0.40%	0	0.00%
hypomenorrhea	6	2.40%	1	0.40%	0	0.00%	0	0.00%
Total	208	83.20%	22	8.80%	20	8.00%	12	

The analysis of associated complaints of the patients other than menstrual irregularities showed that out of 250 patients 210 complained of fatigue (84%). The other common complaints of the patients included constipation (20.00%), cold intolerance (18.40%), weight gain (16%) and anorexia (12.80%).

Table 2: Associated signs and symptoms in studied cases

Signs or Symptoms	No of Patients	Percentage
Fatigue	210	84.00%
Heat Intolerance	12	4.80%
Cold Intolerance	46	18.40%
Palpitations	15	6.00%
Weight gain	40	16.00%
Weight loss	10	4.00%
Hypertension	17	6.80%
Constipation	50	20.00%
Excessive Hunger	14	5.60%
Anorexia	32	12.80%
Palmoplantar Hyperhidrosis	15	6.00%

Discussion

In this prospective study of 250 patients who presented to our OPD for primary complaint menstrual abnormalities such as amenorrhea, metrorrhagia, menorrhagia, polymenorrhagia and polymenorrhea. Out of 250 patients the most common menstrual abnormality found in these patients was menorrhagia which was seen in 94

(37.60%) patients followed by Polymenorrhea (18%), amenorrhea (14%) and Polymenorrhagia (13.60%). Polymenorrhagia (8.40%), Oligomenorrhea (5.60%) and hypomenorrhea (2.80%) was seen in relatively a smaller number of patients. Menorrhagia and Polymenorrhea are reported to be common menstrual abnormalities in women of reproductive age group. Farhad Ahamed et al¹⁰ conducted a cross sectional study of 344 women to determine and estimate prevalence of menstrual disorders in women of reproductive age group. The authors found that almost one out of every five participants (20.3%, 95% CI: 16.4, 24.9) reported at least one symptom of menstrual disorder, the most common being excessive pain during menstruation (72.9%), followed by pain abdomen (12.9%), excessive bleeding (7.1%) and early menses (2.8%). The prevalence of menstrual irregularity was found to be 22.4%. Similar incidence of menstrual abnormalities was reported by Koutras DA et al¹¹ and Kakuno Y et al¹².

The analysis of thyroid status of the studied cases showed that amongst the studied cases majority of the patients (78%) were euthyroid while subclinical hypothyroidism and clinical

hypothyroidism was seen in 22 (8.80%) and 20 (8%) patients respectively. Hyperthyroidism was found in 12 patients. Krassas GE¹³ et al conducted a study to determine the frequency and type of menstrual irregularities in premenopausal hypothyroid patients. The authors found that out of 171 hypothyroid patients, 131 (76.6%) had regular cycles and 40 (23.4%) irregular periods. Oligomenorrhoea and menorrhagia were the most common features in the latter group. The authors concluded that menstrual irregularities tend to be more frequent in severe hypothyroidism in comparison with mild cases. Oligomenorrhoea and menorrhagia were the most common menstrual disturbances. The link between thyroid abnormalities and menstrual disturbance has been the subject of study of many authors. Not only hypothyroidism but also hyperthyroidism is reported to be associated with various menstrual abnormalities. Gerasimos EK et al¹⁴ investigated the menstrual history of 214 female, premenopausal thyrotoxic patients and a similar number of normal controls matched for age and weight. The authors found that Out of 214 patients, 168 (78.5%) had regular menstrual cycles and 46 (21.5%) irregular cycles. The authors concluded that T4 levels were strongly associated with the occurrence of menstrual disturbances in thyrotoxicosis.

Finally, the analysis of associated signs and symptoms of the studied cases showed that other than menstrual irregularities showed that out of 250 patients 210 complained of fatigue (84%). The other common complaints of the patients included constipation (20.00%), cold intolerance (18.40%), weight gain (16%) and anorexia (12.80%). The common symptoms associated with hypothyroidism include constipation, cold intolerance and fatigue. While hyperthyroidism may be associated with weight loss, fever, tachycardia and exophthalmos. In addition to these features hypothyroidism as well as hyperthyroidism may be associated with menstrual problems, infertility and early pregnancy loss. In addition to these Debanjali

Sarkar¹⁵ reported that women with have an increased risk of complications, especially pre-eclampsia, perinatal mortality, and miscarriage.

Conclusion

Abnormalities of thyroid functions are common in women with menstrual abnormalities. Since in many cases even subclinical hypothyroidism may cause menstrual abnormalities it is essential that thyroid function test be done in all cases with menstrual abnormalities.

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