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Original Research

To study the thyroid status in patients with Menstrual disorder among the tribal population in a tertiary care hospital

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ABSTRACT

Aim: To study the thyroid status in patients with menstrual disorder among the tribal population in a tertiary care hospital
Materials and Methods: The study comprised a sample size of 200 patients who were enrolled following the acquisition of written informed consent. Thyroid function tests, including measurements of T3, T4, and TSH, were conducted for all cases. Patients exhibiting a thyroid-stimulating hormone (TSH) level exceeding 5U/mL were classified as hypothyroid, whereas a TSH level below 0.5U/mL served as the threshold for diagnosing hyperthyroidism. Patients were classified into three categories based on the provided values: hypothyroid, euthyroid, and hyperthyroid patients.
Results: Among the 200 patients included in the study, a significant proportion of 153 individuals (76.5%) were found to be euthyroid. Subclinical hypothyroidism was observed in 19 patients (9.5%), while clinical hypothyroidism was detected in 16 patients (8%). A total of 12 patients, accounting for 6% of the sample, were diagnosed with hyperthyroidism. The predominant menstrual abnormality observed in the analyzed cases was menorrhagia, which was present in 77 patients, accounting for 38.5% of the sample. This was followed by polymenorrhea, which was reported in 35 patients (17.5%), amenorrhea in 30 patients (15%), and polymenorrhagia in 25 patients (12.5%). A relatively smaller proportion of patients exhibited Menorrhagia 16(8%), Oligomenorrhea 11(5.5%), and hypomenorrhea 6(3%).
Conclusion: Thyroid function abnormalities frequently occur in women experiencing menstrual irregularities. Given that subclinical hypothyroidism has been found to potentially lead to menstrual abnormalities, it is imperative that thyroid function tests be conducted for all individuals presenting with such abnormalities.

Keywords: Euthyroid, Subclinical hypothyroidism, Clinical hypothyroidism, Menorrhagia

Introduction

Menstrual irregularities are frequently observed among individuals in the adolescent and reproductive age bracket, constituting a significant concern that prompts consultations with obstetricians and gynecologists. The variations in menstrual blood flow can encompass the absence of bleeding, known as amenorrhea, irregular bleeding, referred to as metrorrhagia, abnormally heavy bleeding, known as menorrhagia, and bleeding occurring between periods (1).The euthyroid state is crucial not only for the maintenance of regular menstrual cycles but also for the timely onset of menarche, appropriate pubertal growth, and optimal fertility. Furthermore, it is imperative to ensure the appropriate maintenance of pregnancy and facilitate the optimal growth of the fetus. Maternal hypothyroidism has been found to be linked with adverse pregnancy outcomes such as intrauterine growth retardation, premature delivery, and intrauterine fetal demise (2,3).The etiology of different menstrual abnormalities can vary and encompass disorders such as polycystic ovarian syndrome, hyperandrogenism, hypothyroidism, hyperprolactinemia, and functional hypothalamic dysfunction. Bleeding disorders, such as Von Willebrand disease, qualitative platelet deficiency (Glanzmann' s thrombasthenia), and quantitative platelet deficiency (thrombocytopenia), can contribute to the occurrence of heavy menstrual bleeding. Females who engage in sexual activity, particularly adolescent girls, are susceptible to contracting various infections, including Chlamydia trachomatis, Trichomonas vaginalis, herpes simplex virus (HSV), human papillomavirus (HPV), and Neisseria gonorrhea. Various types of infections have the potential to induce pelvic inflammatory disease and can contribute to irregularities in the menstrual cycle. Before conducting further investigations, it is crucial to rule out pregnancy, including the possibility of ectopic pregnancy, in any sexually active female presenting with amenorrhea (3).The assessment of thyroid hormone levels plays a critical role in the examination of menstrual irregularities. Thyroid hormones (TH) play a crucial role in regulating normal reproductive physiology. Testosterone has the ability to impact reproductive physiology through both direct mechanisms, such as its effects on the ovaries, as well as indirect mechanisms, such as its interaction with sex hormone-binding globulin. Menstrual abnormalities and infertility are frequently observed in women of

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reproductive age groups who have thyroid abnormalities (4). Indeed, a considerable number of thyroid irregularities are identified in women while undergoing investigations for menstrual irregularities or infertility. Both hypothyroidism and hyperthyroidism have been linked to a range of menstrual irregularities. Hypothyroidism has been found to be correlated with a range of menstrual irregularities, such as menorrhagia, oligomenorrhea, and polymenorrhagia. Hypothyroidism can potentially contribute to delayed puberty and abnormal sexual development in adolescent girls, as well as menstrual abnormalities and infertility in adult females (5). It is crucial to comprehend that even subclinical hypothyroidism can potentially contribute to menstrual irregularities and infertility. Therefore, it is imperative to conduct thyroid function tests on all patients who present with menstrual abnormalities (6).Menstrual irregularities, specifically oligomenorrhea and amenorrhea, are frequently observed in individuals with hyperthyroidism. Indirectly, an elevation in sex hormone-binding globulin (SHBG) levels leads to menstrual abnormalities. In addition to menstrual irregularities, hyperthyroidism has been associated with infertility, adverse pregnancy outcomes, and an increased risk of miscarriage when compared to women without the condition. The prompt emphasizes the significance of promptly identifying both hypothyroidism and hyperthyroidism in relation to effectively managing patients experiencing menstrual abnormalities. The failure to promptly diagnose and effectively manage a condition can lead to higher levels of morbidity and an increased likelihood of resorting to radical interventions, such as hysterectomy, in order to control severe bleeding (7).

Materials and Methods

This study was conducted with the aim of investigating the thyroid status in patients with menstrual disorders within the tribal population. The participants were recruited for the study based on predetermined criteria for inclusion and exclusion. The study comprised a sample size of 200 patients who were enrolled following the acquisition of written informed consent. A comprehensive history was obtained, encompassing age, parity, menstrual complaints, volume and duration of menstrual flow, associated symptoms, and previous obstetric history. A comprehensive clinical assessment, encompassing both general and systemic examination, was performed on all the subjects. All cases underwent routine blood investigations, including complete blood count, bleeding time, clotting time, prothrombin time, and erythrocyte sedimentation rate (ESR). In all instances, an abdominal and pelvic ultrasound was conducted. The Papanicolaou smear, along with radioimmunoassay for infections, was performed in specific instances where there was suspicion of cervical pathology or pelvic inflammatory disease. Additional imaging techniques, such as computerized tomography and magnetic resonance imaging, were performed in specific instances. Thyroid function tests, including measurements of T3, T4, and TSH, were conducted for all cases. Patients exhibiting a thyroid-stimulating hormone (TSH) level exceeding 5U/mL were classified as hypothyroid, whereas a TSH level below 0.5U/m L served as the threshold for diagnosing hyperthyroidism. Patients were classified into three categories based on the provided values: hypothyroid, euthyroid, and hyperthyroid patients. Thyroid imaging was recommended for instances in which there was evidence of abnormal thyroid function. The data was analyzed utilizing SSPE 25.0 software. The utilization of Microsoft Office was employed for the purpose of creating and formatting charts and graphs. This study included women under the age of 40 who exhibited menstrual abnormalities and provided informed consent to participate in the research. This study excluded individuals who were taking oral contraceptive pills, individuals with hematological disorders, and individuals with genitourinary malignancies.

Results

Among the 200 patients included in the study, a significant proportion of 153 individuals (76.5%) were found to be euthyroid. Subclinical hypothyroidism was observed in 19 patients (9.5%), while clinical hypothyroidism was detected in 16 patients (8%). A total of 12 patients, accounting for 6% of the sample, were diagnosed with hyperthyroidism.

Table 1: Thyroid status of patients

	Number of patients	Percentage
Euthyroid	153	76.5
subclinical hypothyroidism	19	9.5
clinical hypothyroidism	16	8
Hyperthyroidism	12	6

Most of the patients (53%) were belong to 30-35 years of age group followed by 25-30 years (22.5%) , 35-40 years (14.5%) and below 25 years (10%).

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Table 2: Age Distribution of the Patients

Below 25	20	10
25-30	45	22.5
30-35	106	53
35-40	29	14.5

The predominant menstrual abnormality observed in the analyzed cases was menorrhagia, which was present in 77 patients, accounting for 38.5% of the sample. This was followed by polymenorrhea, which was reported in 35 patients (17.5%), amenorrhea in 30 patients (15%), and polymenorrhagia in 25 patients (12.5%). A relatively smaller proportion of patients exhibited Menorrhagia (16, 8%), Oligomenorrhea (11, 5.5%), and hypomenorrhea (6, 3%). The examination of menstrual irregularities and thyroid function revealed that menorrhagia was the predominant menstrual abnormality observed in euthyroid (26%), subclinical hypothyroid (6.5%), hypothyroid (4.5%), and hyperthyroid (1.5%) individuals. Among euthyroid individuals, additional prevalent menstrual irregularities included polymenorrhea (15%) and amenorrhea (13%). In cases of hypothyroidism following menorrhagia, prevalent menstrual irregularities include polymenorrhea (1%) and polymenorrhagia (1%). In hyperthyroid patients with menorrhagia, other frequently observed menstrual abnormalities include polymenorrhagia (1%) and menorrhagia (1.5%).

Table 3: 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	Total	%
Menorrhagia	52	26	13	6.5%	9	4.5	3	1.5	77	38.5
Amenorrhea	26	13	1	0.5%	2	1	1	0.5	30	15
polymenorrhea	30	15	1	0.5%	2	1	2	1	35	17.5
Polymenorrhagia	19	9.5	1	0.5%	2	1	3	1.5	25	12.5
Menorrhagia	12	6	1	0.5%	1	0.5	2	1	16	8
Oligomenorrhoea	9	4.5	1	0.5%	0	0	1	0.5	11	5.5
hypomenorrhea	5	2.5	1	0.5%	0	0	0	0	6	3
Total	153		19		16		12			

The examination of additional patient complaints, aside from menstrual irregularities, revealed that among a sample of 200 patients, 170 reported experiencing fatigue, accounting for 85% of the total. Other frequently reported symptoms among the patients encompassed constipation, affecting 21% of the individuals, cold intolerance, affecting 19.5% of the individuals, weight gain, affecting 15.5% of the individuals, and anorexia, affecting 12.5% of the individuals.

Table 4: Associated signs and symptoms in studied cases

Signs or Symptoms	No of Patients	Percentage
Fatigue	170	85
Heat Intolerance	10	5
Cold Intolerance	39	19.5
Palpitations	11	5.5
Weight gain	31	15.5
Weight loss	9	4.5
Hypertension	14	7
Constipation	42	21
Excessive Hunger	12	6
Anorexia	25	12.5
Palmoplantar Hyperhidrosis	11	5.5

Discussion

Thyroid disorders, including hypothyroidism, are prevalent factors contributing to menstrual disorders among women. The thyroid status of women significantly impacts various aspects of their reproductive health, including menarche, pubertal growth and development, menstrual cycles, fertility and fetal development, the

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post-partum period, reproductive years, and postmenopausal years. It is widely acknowledged that menstrual disturbances can occur alongside, and in some cases, precede thyroid dysfunction. This study examines a cohort of 200 patients who sought medical attention at our outpatient department (OPD) due to various menstrual abnormalities, including amenorrhea, menorrhagia, menorrhagia, polymenorrhagia, and polymenorrhea. Among the sample of 200 patients, the prevailing menstrual abnormality observed was menorrhagia, which was present in 77 individuals, accounting for 38.5% of the total. This was followed by polymenorrhea, which affected 35 patients (17.5%), amenorrhea, which was reported by 30 patients (15%), and polymenorrhagia, which was experienced by 25 patients (12.5%). A relatively smaller proportion of patients exhibited Menorrhagia (16, 8%), Oligomenorrhea (11, 5.5%), and hypomenorrhea (6, 3%). Menorrhagia and Polymenorrhea are frequently observed menstrual irregularities among women within the reproductive age demographic. In a cross-sectional study conducted by Ahamed et al. (8), a sample of 344 women was examined to assess and estimate the prevalence of menstrual disorders among women in the reproductive age group. The researchers discovered that approximately 20.3% (95% CI: 16.4, 24.9) of the participants experienced at least one symptom associated with menstrual disorder. The most prevalent symptom reported was excessive pain during menstruation, affecting 72.9% of the participants. This was followed by abdominal pain (12.9%), excessive bleeding (7.1%), and early onset of menses (2.8%). The study revealed that there was a prevalence rate of 22.4% for menstrual irregularity. Koutras DA et al(9) and Kakuno Y et al(10) both reported a comparable occurrence of menstrual abnormalities.
The examination of thyroid status in the observed cases revealed that a majority of the patients, specifically 153 individuals (76.5%), exhibited euthyroidism. Subclinical hypothyroidism was observed in 19 patients (9.5%), while clinical hypothyroidism was present in 16 patients (8%). A study was conducted by Krassas GE and colleagues (11) to investigate the prevalence and nature of menstrual irregularities among premenopausal individuals with hypothyroidism. The researchers discovered that among a sample of 171 individuals diagnosed with hypothyroidism, 131 individuals (76.6%) exhibited regular menstrual cycles, while 40 individuals (23.4%) experienced irregular periods. The latter group exhibited oligomenorrhea and menorrhagia as the most prevalent characteristics. The researchers reached the conclusion that there is a higher prevalence of menstrual irregularities in individuals with severe hypothyroidism as compared to those with mild hypothyroidism. The prevailing menstrual disturbances observed in the study were oligomenorrhea and menorrhagia. The association between thyroid abnormalities and menstrual disturbance has been investigated by numerous researchers. Various menstrual abnormalities have been reported to be associated with both hypothyroidism and hyperthyroidism. In a study conducted by Gerasimos EK et al(12), the researchers examined the menstrual history of 214 female individuals who were premenopausal and diagnosed with thyrotoxicosis. A comparable number of healthy individuals were included in the study as controls, with matching age and weight. The researchers discovered that among the 214 patients included in the study, a majority of 168 individuals (78.5%) exhibited regular menstrual cycles, while a minority of 46 individuals (21.5%) experienced irregular cycles. The researchers reached the conclusion that there is a significant correlation between T4 levels and the occurrence of menstrual disturbances in individuals with thyrotoxicosis. In conclusion, the examination of correlated indicators and manifestations observed in the examined cases revealed that, in addition to menstrual irregularities, a total of 170 out of 200 patients (85%) reported experiencing fatigue. Other frequently reported symptoms among the patients encompassed constipation (21%), cold intolerance (19.5%), weight gain (15.5%), and anorexia (12.5%). Hypothyroidism is commonly characterized by a range of symptoms, including constipation, cold intolerance, and fatigue. Hyperthyroidism is commonly correlated with symptoms such as weight loss, fever, tachycardia, and exophthalmos. Furthermore, alongside these characteristics, hypothyroidism and hyperthyroidism have been found to be correlated with menstrual irregularities, infertility, and miscarriages. Furthermore, Debanjali Sarkar (13) has reported that women who possess certain characteristics are more susceptible to experiencing complications, particularly pre-eclampsia, perinatal mortality, and miscarriage.

Conclusion

Thyroid function abnormalities frequently occur in women experiencing menstrual irregularities. Given that subclinical hypothyroidism has been found to potentially lead to menstrual abnormalities, it is imperative that thyroid function tests be conducted for all individuals presenting with such abnormalities.

References

1. Yatish B., kachhawa K. , Sagar T.V., Kumar S. , Rath B., Mahapatra S.K. Effect of Hypothyroidism on Menstrual Cycle Pattern and Fertility at a Tertiary Care Centre in South India. National Journal of Laboratory Medicine. 2022 ;11(4): BO25-BO28.
2. Arora H, Collazo I, Palmerola KL, Parmar M, Narasimman M, Hendon N, et al. Positive effects of thyroid replacement therapy on assisted reproductive technology outcomes in women with subclinical hypothyroidism with positive thyroid peroxidase autoantibodies. F S Rep. 2021; 3(1):32-38.
3. Wu AK, Damico NJ, Healy E, Kharouta MZ, Khandel G, Deshane A, et al. Thyroidoptimized and thyroid-sparing radiotherapy in oral cavity and oropharyngeal carcinoma: A dosimetric study. Tech Innov Patient Support Radiat Oncol. 2021;20:28-34.

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4. Chaker L, Bianco AC, Jonklaas J, Peeters RP. Hypothyroidism. Lancet. 2017;390:1550-62.
5. Taylor PN, Albrecht D, Scholz A, Gutierrez-Buey G, Lazarus JH, Dayan CM, et al. Global epidemiology of hyperthyroidism and hypothyroidism. Nat Rev Endocrinol. 2018;14(5):301-16.
6. Ajmani NS, Sarbhai V, Yadav N, Paul M, Ahmad A, Ajmani AK. Role of Thyroid Dysfunction in Patients with Menstrual Disorders in Tertiary Care Center of Walled City of Delhi. Journal of Obstetrics and Gynaecology of India. 2016;66 (2):115-119.
7. Sriprasert I, Pakrashi T, Kimble T, Archer DF. Heavy menstrual bleeding diagnosis and medical management. Contraception and Reproductive Medicine. 2017;2:20.
8. Ahamed F, Lohiya A, Kankaria A, Silan V, Kharya P, Rizwan SA. Menstrual Disorders and Its Determinants Among Married Women of Rural Haryana. Journal of Clinical and Diagnostic Research : JCDR. 2015;9(9):LC06-LC09.
9. Koutras DA. Disturbances of menstruation in thyroid disease. Ann N Y Acad Sci.1997 Jun 17;816:280-4.
10. Kakuno Y, Amino N, Kanoh M, Kawai M, Fujiwara M, Kimura M, Kamitani A, Saya K,Shakuta R, Nitta S, Hayashida Y, Kudo T, Kubota S, Miyauchi A. Menstrual disturbances in various thyroid diseases. Endocr J. 2010;57(12):1017-22.
11. Krassas GE. Thyroid disease and female reproduction. FertilSteril. 2000Dec;74 (6):1063-70.
12. Krassas GE, Pontikides N, Kaltsas T, Papadopoulou P, Batrinos M. Menstrual- disturbances in thyrotoxicosis. Clin Endocrinol (Oxf). 1994 May;40(5): 641-4.
13. Sarkar D. Recurrent pregnancy loss in patients with thyroid dysfunction. Indian Journal of Endocrinology and Metabolism. 2012;16(Suppl 2):S350-S351