Original Article

A study of menstrual pattern in relation to thyroid status in infertile women

Bhanu Mahajan[1], Parikh Rana[2], Anuradha[3*], Anita Sharma[4]

[1,3]Senior Resident, [2]Lecturer, [4]Professor, Department of Obstetrics and Gynaecology, SMGS Hospital Govt Medical College, Jammu , Jammu & Kashmir, INDIA.
Email: asthappa1971@gmail.com

Abstract

Introduction: It has long been recognized that thyroid dysfunction may have profound effects on the female reproductive system. A relationship between the thyroid gland and the gonads is suggested by the far more frequent occurrence of thyroid disorders in women than in men and by the common appearance of goiter during puberty, pregnancy and the menopause **Aims and Objectives:** To Study Menstrual pattern in relation to thyroid status. **Material and Methods:** The present study was conducted in the Department of Obstetrics and Gynaecology, SMGS Hospital, Government Medical College, Jammu for a period of one year. Study Group: Fifty (50) cases of infertile women, in the age group of 20 to 35 years, were selected from outpatient department and indoor. Control Group: Fifty (50) cases of non-pregnant women with proven fertility, in the age group of 20 to 35 years, were selected for control group. The following investigations were carried out in the study group Data was analysed using computer software SPSS version 12.0 for Windows. Data presented as percentages for qualitative variables, mean and standard deviation for quantitative variables. For the continuous variable, student 't'-test (unpaired) was applied and to see for the associationd among the variables, chi-square test was used. p value of less than 0.05 was considered as statistically significant. **Result:** Clinical hyperthyroidism was not observed in any group, In study group, subclinical hypothyroidism was present in 11 (22%) cases, clinical hypothyroidism was present in 2 (4%) cases and subclinical hyperthyroidism was present in 1 (2%) cases. In control group, only subclinical hypothyroidism was present in 2 (4%) cases. Among euthyroid cases,19 (52.78%) cases had normal menstrual pattern, 4 (11.11%) cases had menorrhagia, 3 (8.33%) cases had polymenorrhea, 4 (11.11%) cases had oligomenorrhea, 5 (13.89%) cases had hypomenorrhea, 1 (2.78%) case had amenorrhea while in controls, 41(85.41%) cases had normal menstruation, 3 (6.26%) cases had menorrhagia, 1 (2.08%) cases had polymenorrhea, 2 (4.17%) cases had oligomenorrhea, 1 (2.08%) case had hypomenorrhea and no case had ammennorhea.In study group with hypothyroidism, 6 (46.15%) cases had normal menstrual pattern, 2 (15.38%) cases had menorrhagia, 5 (38.47%) cases had oligomenorrhea, while no case had either polymenorrhea, hypomenorrhea or amenorrhea. In controls with hypothyroidism there were only 2 cases who had oligomennorhea. **Conclusion:** The infertile cases with abnormal menstruation had more of thyroid disorders in comparison to infertile cases with normal menstruation.

Keywords: Menstrual pattern, Infertility, Thyroid function Test.

[*]**Address for Correspondence:**
Dr. Anuradha, Sr. Resident, Department of Obstetrics and Gynaecology, SMGS Hospital Govt Medical College Jammu, J & K, INDIA.
Email: ashthappa1971@gmail.com

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INTRODUCTION

It has long been recognized that thyroid dysfunction may have profound effects on the female reproductive system. A relationship between the thyroid gland and the gonads is suggested by the far more frequent occurrence of thyroid disorders in women than in men and by the common appearance of goiter during puberty, pregnancy and the menopause[1]. Thyroid disorders are ten times more common in women than in men[2]. During the investigations of abnormal uterine bleeding, abnormal sexual development, delayed puberty, hirsuitism, infertility, and recurrent pregnancy loss, the possibility of thyroid dysfunction must always be considered. While

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activity of the thyroid is closely linked with the process of ovarian maturation, the thyroid gland is itself dependent on direct and indirect stimuli from the ovary to discharge its own function. In gynae 20% women present with abnormal uterine bleeding [3]. The underlying cause of DUB is still uncertain, but in most cases it is associated with failure of ovulation and is a consequent hormonal imbalance. Ovarian dysfunction may be caused by either a primary defect or pathologic lesion within the ovary itself or it may be secondary to malfunction of other endocrine glands, notably the hypothalamus, pituitary and thyroid[4]. Menorrhagia is commonly tackled with curettage and hysterectomy with its attendant morbidity and mortality especially in anaemia, undiagnosed thyroid disease and coagulopathies[5]. Recently "occult" menorrhagia has been found to be an early manifestation of sub clinical hypothyroidism with disease becoming symptomatic later. Most of the patients of hypothyroidism in reproductive age group present with menorrhagia in early stage of the disease. Endometrium is mostly proliferative and sometimes even atrophic. Urinary pregnanetriol levels are low which suggests failure of LH production, ovulation, and resultant menorrhagia. In later stages, secondary depression of pituitary occurs, leading to ovarian atrophy and amenorrhoea. Hypometabolism in hypothyroidism is held to increase in prolactin secretion which may inhibit gonadotrophin leading to amenorrhoea. The underlying etiology of hypothyroidism commonly found is lymphocytic thyroiditis, thyroidectomy and anti-thyroid drugs. Menorrhagia being the chief symptom in hypothyroidism, its treatment with thyroxinehas been demonstrated by Menon[6]. Some encouraging results have been shown by DoifodeandFernandes[7]. Thyroid disorders are 10 times more common in women than men. Although the reason is not clearly understood the high prevalence of thyroid disorders in women is possibly due to autoimmune nature of thyroid disorders [8]. Abnormal uterine bleeding is a common but complicated clinical 14% of women between menarche and menopause, significantly impacting quality of life and imposing financial burden [9]. The etiologies and treatment of AUB over the reproductive years are best context of normal menstrual physiology. A normal cycle starts when pituitary follicle stimulating hormone induces ovarian follicles to produceestrogen. Estrogen stimulates proliferation of the endometrium. A luteinizing hormone surge prompts ovulation, the resultant corpus luteum produces progesterone, inducing a secretory endometrium. In the absence of pregnancy, estrogen and progesterone levels decline and withdrawal bleeding occurs 13-15 days post ovulation[10]. Any disruption in the normal physiology or anatomic changes in the endometrium results in abnormal uterine bleeding. Initially AUB was broadly divided in to two categories→ anovulatory and ovulatory, but now after November 2010 the International Federation Of Gynaecology and Obstetrics formally accepted a new classification system for causes of AUB in reproductive years. The system is based on acronym PALM-COEIN. PALM (Structural causes) → Polyps, Adenomyosis, Leiomyoma, Malignancy and hyperplasia. COEIN (nonstructural causes) →Coagulopathy, Ovulatory disorders, Endometrial causes, Iatrogenic, not classified[11].

MATERIAL AND METHODS

The present study was conducted in the Department of Obstetrics and Gynaecology, SMGS Hospital, Government Medical College, Jammu for a period of one. Study Group: Fifty (50) cases of infertile women, in the age group of 20 to 35 years, were selected from outpatient department and indoor. Control Group: Fifty (50) cases of non-pregnant women with proven fertility, in the age group of 20 to 35 years, were selected for control group. The following investigations were carried out in the study group: Hemoglobin, TLC, DLC, PBF ABO Rh typing, ESR, Blood sugar: Fasting and Postprandial, Urine: Routine/Microscopic Examination, HBsAg, HIV: I, II, VDRL: Husband & Wife and Serum prolactin (In hypothyroid cases). All the cases in study group were subjected to semen analysis of husband (to exclude male factor infertility), HSG (to exclude tubal factor infertility), ultrasonography for ovulation study for three consecutive cycles. Thyroid function tests were done in both, control and study groups. It included: Serum TSH Serum fT_3, Serum fT_4 Estimation of serum TSH, fT_3, fT_4. was done by chemiluminescence immunoassay method. Data was analysed using computer software SPSS version 12.0 for Windows. Data presented as percentages for qualitative variables, mean and standard deviation for quantitative variables. For the continuous variable, student 't'-test (unpaired) was applied and to see for the association among the variables, chi-square test was used. p value of less than 0.05 was considered as statistically significant.

RESULT

Table 1: Type of thyroid disorder

Thyroid disorder	Study group (n = 50)		Control group (n = 50)	
	Number (No.)	Percentage (%)	Number (No.)	Percentage (%)
Subclinical hypothyroidism	11	22.00	2	4.00
Clinical hypothyroidism	2	4.00	–	–
Subclinical hyperthyroidism	1	2.00	–	–

Clinical hyperthyroidism was not observed in any group, In study group, subclinical hypothyroidism was present in 11 (22%) cases, clinical hypothyroidism was present in 2 (4%) cases and subclinical hyperthyroidism was present in 1 (2%) cases. In control group, only subclinical hypothyroidism was present in 2 (4%) cases.

Table 2: Menstrual pattern in relation to thyroid status

Menstrual pattern	Thyroid status			
	Euthyroid		Hypothyroid (both clinical and subclinical)	
	Study group No. (%)	Control group No. (%)	Study group No. (%)	Control group No. (%)
Normal	19 (52.78)	41 (85.41)	6 (46.15)	–
Menorrhagia	4 (11.11)	3 (6.26)	2 (15.38)	–
Polymenorrhea	3 (8.33)	1 (2.08)	–	–
Oligomenorrhea	4 (11.11)	2 (4.17)	5 (38.47)	2 (100.00)
Hypomenorrhea	5 (13.89)	1 (2.08)	–	–
Amenorrhea	1 (2.78)	_	–	–
Total	**36**	**48**	**13**	**2**

In study group, there was only 1 subclinical hyperthyroid case who had oligomenorrhea. Table 2 : shows that in study group among euthyroid cases,19 (52.78%) cases had normal menstrual pattern, 4 (11.11%) cases had menorrhagia, 3 (8.33%) cases had polymenorrhea, 4 (11.11%) cases had oligomenorrhea, 5 (13.89%) cases had hypomenorrhea, 1 (2.78%) case had amenorrhea while in controls, 41(85.41%) cases had normal menstruation, 3 (6.26%) cases had menorrhagia, 1 (2.08%) cases had polymenorrhea, 2 (4.17%) cases had oligomenorrhea, 1 (2.08%) case had hypomenorrhea and no case had ammennorhea. In study group with hypothyroidism, 6 (46.15%) cases had normal menstrual pattern, 2 (15.38%) cases had menorrhagia, 5 (38.47%) cases had oligomenorrhea, while no case had either polymenorrhea, hypomenorrhea or amenorrhea. In controls with hypothyroidism there were only 2 cases who had oligomennorhea. In cases with subclinical hyperthyroidism, there was only 1 case who had oligomenorrhea while in control group no hyperthyroid case was seen.

DISCUSSION

In relation to thyroid status, among hypothyroid cases oligomennorhea was present in 38.46% cases in study group (Table 2). Similar to our study, Singh *et al.*[12], Joshi *et al.*[13] and Krassas *et al.*[14] observed 44.4%, 36% and 42.5% incidence of oligomennorhea, respectively in their studies. Goswami*et al.*[30] reported higher incidence of oligomennorhea (82%) in their study on infertile women may be due to fact that patients with subclinical hypothyroidism were included in their study. Mennorhagia was seen in 15.38% of hypothyroid infertile women in our study group. Singh*et al.*[12] and Joshi *et al.*[13] reported incidence of mennorhagia as 33% and 23%, respectively in hypothyroid infertile woman. In our study group, only one hyperthyroid case was detected who had oligomenorrhea. Various others studies, Singh*et al.*[12], Joshi *et al.*[13] and Krassas*et al.*[14] reported high incidence of menstrual abnormalities in hyperthyroid infertile women and the incidence of oligomennorhea was highest among them.

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