JALALABAD MEDICAL JOURNAL

Original Article

Evaluation of Thyroid Function in Women of Reproductive Age with Menstrual Abnormalities

Shahina Akther[1], Namita Rani Sinha[2], Lubna Yesmin[3], Tahmina Sharmin[4]

[1]Assistant Professor, Department of Obstetrics and Gynaecology, Jalalabad Ragib-Rabeya Medical College, Sylhet.
[2]Associate Professor, Department of Obstetrics and Gynaecology, Jalalabad Ragib-Rabeya Medical College, Sylhet.
[3]Consultant, Department of Obstetrics and Gynaecology, Al Haramain Hospital, Sylhet.
[4]Registrar, Department of Obstetrics and Gynaecology, Jalalabad Ragib-Rabeya Medical College Hospital, Sylhet.

ABSTRACT

Thyroid hormones play a key role in the menstrual and reproductive function of women. Menstrual abnormalities may accompany alterations in thyroid function. This cross-sectional observational study was conducted in both inpatient and outpatient department of Obstetrics and Gynaecology, Jalalabad Ragib-Rabeya Medical College Hospital, Sylhet during the period from July 2012 to December 2012 to evaluate thyroid function in women of reproductive age with menstrual abnormalities. For this purpose fifty women of reproductive age with menstrual abnormalities were selected purposively. Serum free triiodothyronine (FT_3), free thyroxine (FT_4) and thyroid stimulating hormone (TSH) levels were measured. The result showed that, the mean age was 32.62±8.74 years. The most common menstrual disorder was menorrhagia (68%) followed by oligomenorrhoea (16%), polymenorrhagia (14%) and hypomenorrhoea (2%). The mean FT_3 was 0.44±0.34 ng/dl in menorrhagia, 1.15±0.94 ng/dl in oligomenorrhoea and 0.41±0.23 ng/dl in polymenorrhagia (p=0.001). The mean FT_4 was 1.81±0.66 ng/dl in menorrhagia, 6.14±3.21 ng/dl in oligomenorrhoea and 1.45±0.72 ng/dl in polymenorrhagia (p=0.001). The mean TSH was 8.28±8.74 µlU/ml in menorrhagia, 1.52±2.84 µlU/ml in oligomenorrhoea and 24.86±17.88 µlU/ml in polymenorrhagia (p=0.001). So menorrhagia was found as the commonest menstrual disturbance followed by oligomenorrhoea and polymenorrhagia. We concluded that hypothyroidism markedly influences the type of menstrual abnormalities.

Keywords: *Thyroid function, Menstrual abnormalities, Menorrhagia, Oligomenorrhoea.*

[Jalalabad Med J 2019; 16(1): 19-22]

Address of Correspondence:
Dr. Shahina Akther, Assistant Professor, Department of Obstetrics and Gynaecology, Jalalabad Ragib-Rabeya Medical College, Sylhet. Mobile: +8801674580441, Email: rumikhan260926@gmail.com

INTRODUCTION

Menstrual problems account for much of the morbidity, affecting one in every five women during their life span[1]. Prevalence of menstrual morbidity in developing countries is comparable to that observed in developed countries and menstrual dysfunction represents a

problem for women in developing countries[2]. Menstrual disorders pose a huge burden on gynaecology out patient department, accounting for approximately 25% of attendance[3].

Thyroid dysfunction influences both menstrual flow and fertility, likely through changes in sex hormone levels, gonadotropin release and possibly ovarian function. Similarly, alterations in reproductive physiology can modulate thyroid function[4]. Dysfunction of thyroid secretion results in inappropriate production of thyrotropin releasing hormone (TRH). This interferes with normal physiological pulsatile secretion of gonadotropin releasing hormone (GnRH), which is required for normal follicular development and maturation. Hypothyroidism in adult women often results in changes in cycle length and blood flow. In older series, menorrhagia was the most prevalent symptom and occurred in 60% of overt hypothyroid women. Hypothyroidism also results in altered peripheral oestrogen metabolism[5]. Hyperthyroidism also augments gonadotropin response to GnRH and baseline gonadotropin concentrations are frequently elevated. The decrease in menstrual flow may also relate to effects on haemostatic factors, including the synthesis of factor VIII[5,6].

Thyroid disorders are among the commonest endocrine disorders worldwide with females having higher dysfunction rate than males[7]. There is however little information about thyroid function status among females with menstrual disorders, and thus the importance of thyroid function test in such patients is unknown. In the light of inadequate information about thyroid function status in women in our country with menstrual disorders, we sought to find out the pattern of thyroid function in women of reproductive age with menstrual abnormalities. The study would be helpful in determining the burden of thyroid function in women with menstrual disorders and may help for clinical management of such women.

MATERIALS AND METHODS

This cross-sectional observational study was conducted in the department of Obstetrics and Gynaecology of Jalalabad Ragib-Rabeya Medical College Hospital, Sylhet during the period from July 2012 to December 2012. Fifty women of reproductive age (15 to 49 years) with menstrual abnormalities were selected purposively meeting the selection criteria. The patients with other cause of menstrual abnormalities like myoma, endometriosis, adenomyosis, bleeding disorders, patients with pelvic infections including endometritis and pelvic inflammatory disease (PID), pregnant women and lactating mother were excluded from the study. Before enrollment in this study informed written consent was taken from each patient. A detailed history was obtained with relevance to age, bleeding pattern, onset duration, amount of bleeding and complaints related to thyroid dysfunction. Thorough clinical examination including general examinations and gynaecological examinations were done. Thyroid function tests such as FT_3, FT_4 and TSH were done. FT_3 and FT_4 were assayed by chemiluminescent immunoassay. These tests were done in random blood sample as the variation in TSH secretion due to circadian rhythm is minimal. Data were analyzed by using the Statistical Package for Social Sciences (SPSS) version 16. The mean values were calculated for continuous variables. The quantitative observations were indicated by frequencies and percentages. Continuous variables were compared through the ANOVA and p values of <0.05 was considered as statistically significant.

RESULTS

The age of the patients ranged from 16 years to 53 years with the mean age of 32.62±8.74 years. There were 42% of patients in between 21 to 30 years, 30% in between 31 to 40 years, 16% in between 41 to 50 years, 10% under 20 years and 2% above 50 years. The types of menstrual abnormalities of the study patients were rnenorrhagia (68%), oligomenorrhoea (16%), polymenorrhagia (14%) and hypomenorrhoea (2%) (Figure-1). The mean FT_3 level was 0.44±0.34 ng/dl in menorrhagia, 1.15±0.94 ng/dl in oligomenorrhoea, 0.41±0.23 ng/dl in polymenorrhagia; difference among the menstrual disturbance was statistically significant (p=0.001) (Table-I). The mean FT_4 level was 1.81±0.66 ng/dl in menorrhagia, 6.14±3.21 ng/dl in

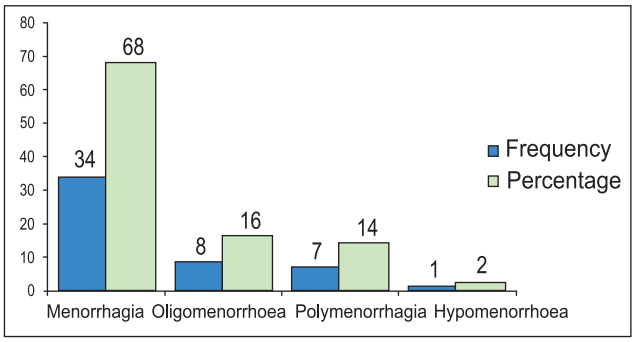

Figure-1: *Types of menstrual disturbance in women of reproductive age (n=50).*

oligomenorrhoea, 1.45±0.72 ng/dl in polymenorrhagia; difference among the menstrual disturbance was statistically significant (p=0.001) (Table-I). The mean TSH was 8.28±8.74 µIU/ml in menorrhagia, 1.52±2.84 µIU/ml in oligomenorrhoea, 24.86±17.88 µIU/ml in polymenorrhagia; difference among the menstrual disturbance was statistically significant (p=0.001) (Table-I).

Table-I: *Thyroid profile according to menstrual abnormalities (n=50).*

Menstrual Abnormalities	FT_3 (ng/dl)	FT_4 (ng/dl)	TSH (µlU/ml)
Menorrhagia (n=34)	0.44±0.34	1.81±0.66	8.28±8.74
Oligomenorrhoea (n=8)	1.15±0.94	6.14±3.21	1.52±2.84
Polymenorrhagia (n=7)	0.41±0.23	1.45±0.72	24.86±17.88
Hypomenorrhoea (n=1)	1	8	0.92
p-value	p=0.001	p=0.001	p=0.001

DISCUSSION

It was observed in the current study that, most (42%) of the patients with menstrual abnormalities were in 3rd decade and mean age was 32.62±8.74 years. This result was consistent with Akhter et al.[8] where majority (78%) of their patients were in 3rd decade. Similarly, Krassas et al.[9] showed the mean age of the patients with menstrual abnormalities was 34.5±7.4 years. In another study, Reindollar et al.[10] found the average age of their patients was 26.4 years, which was lesser compared to this study. This may be due to geographical and racial influences which may have significant impacts on menstrual abnormalities.

About the types of menstrual abnormalities it was observed that more than two third (68%) of the patients had menorrhagia, other menstrual abnormalities were oligomenorrhoea (16%), polymenorrhagia (14%) and hypomenorrhoea (2%). Sangita et al.[11] found that 50% of patients were presented with menorrhagia, 20% had hypo/oligomenorrhoea and 16% had polymenorrhoea. Rani et al.[12] reported menorrhagia in 38%, polymenorrhoea in 26%, polymenorrhagia in 12%, oligomenorrhoea in 6% and hypomenorrhoea in 10% of their series. Akhter et al.[8] found oligomenorrhoea in 59% of cases. Joshr et al.[13] found hypomenornea/ oligomenorrhoea in 36.4% and hypermenorrhoea/ polymenorrhoea in 22.7% cases. Kakuno et al.[14] reported oligomenorrhoea in 9.9% and hypomenorrhoea in 3.7% of their patients with menstrual disturbance. Krassas et al.[9] observed oligomenorrhoea in 42.5%, hypomenorrhoea in 15%, amenorrhoea in 12.5%, hypermenorrhoea/ menorrhagia in 30% cases and none had poly or hypermenorrhoea.

In current study, mean FT_3 was found as 0.44±0.34 ng/dl in menorrhagia, 1.15±0.94 ng/dl in oligomenorrhoea and 0.41±0.23 ng/dl in polymenorrhagia. Mean FT_3 was statistically significant ($p<0.001$) among menorrhagia, oligomenorrhoea, polymenorrhagia indicated that, FT_3 was significantly higher in menorrhagia and polymenorrhagia with compared to oligomenorrhoea. In the study of Kakuno et al.[14] patients of hyperthyroidism were divided into two groups based on serum FT_3 levels. They observed a significantly higher prevalence of secondary amenorrhoea (2.5%) in severe group ($FT_3 \geq 30$ pg/ml) compared mild or moderate hyperthyroidism (0.2%) ($FT_3 < 30$ pg/ml). Total frequency of menstrual abnormalities was found in 23.5% of severe hyperthyroidism and this was significantly higher than that of mild or moderate hyperthyroidism (16.3%).

In the present study, mean FT_4 was found as 1.81±0.66 ng/dl in menorrhagia, 6.14±3.21 ng/dl in oligomenorrhoea and 1.45±0.72 ng/dl in polymenorrhagia. Mean FT_4 was significantly ($p <0.001$) higher in oligomenorrhoea compared to menorrhagia and polymenorrhagia. Mean serum TSH was found as 8.28±8.74 µIU/ml in menorrhagia, 1.52±2.84 µlU/ml in oligomenorrhoea and 24.86±17.88 µIU/ml in polymenorrhagia in this study. Mean serum TSH was significantly ($p<0.001$) higher in polymenorrhagia compared to menorrhagia and oligomenorrhoea. Krassas et al.[9] found that, the mean TSH was 49.7±34.3 µIU/ml for the whole group of patients, 54.2±30.1 µIU/ml for the patients with menstrual abnormalities and 48.5±35.4 µIU/m. for the patients with normal menstruation was. ln another study Kakuno et al.[14] divided of their study patients into the mild or moderate group (TSH less than 100 µIU/ ml) and severe group (TSH 100 µIU/ml or more). The severe group had a higher frequency of menstrual abnormalities (34.8%) than the mild/moderate group (10.2%), suggesting that disease severity markedly influences menstrual abnormalities. It is well known that, hypothyroidism not only influence menstrual abnormalities but also affect the reproductive activity, fertility and pregnancy outcome[15,16]. Consequently, it was necessary to clarify the prevalence of menstrual abnormalities in euthyroid patients with chronic thyroiditis.

CONCLUSION

This study was under taken to evaluate thyroid function among the women of reproductive age with menstrual abnormalities. Most of the patients having menstrual abnormalities were in 3rd decade. Menorrhagia was the commonest menstrual abnormalities followed by oligomenorrhoea and polymenorrhagia. Hypothyroidism had markedly influences the type of menstrual abnormalities. However further multicentre study should be warranted.

REFERENCES

1. Abid M, Hashmi AA, Malik B, Haroon S, Faridi N, Edhi MM, et al. Clinical pattern and spectrum of endometrial pathologies in patients with abnormal uterine bleeding in Pakistan: need to adopt a more conservative approach to treatment. BMC Womens Health 2014; 14(1): 132.
2. Harlow SD, Campbell OM. Epidemiology of menstrual disorders in developing countries: a systematic review. BJOG 2004; 111(1): 6-16.
3. Albers JR, Hull SK, Wesley RM. Abnormal uterine bleeding. Am Fam Physician 2004; 69(8): 1915-26.
4. Adlersberg MA, Burrow GN. Focus on primary care thyroid function and dysfunction in women. Obstet Gynaecol Surv 2002; 57(3): S1-7.
5. Wakim AN, Polizotto SL, Buffo MJ, Marrero MA, Burholt DR. Thyroid hormones in human follicular fluid and thyroid hormone receptors in human granulose cells. Fertil Steril 1993; 59(6): 1187-90.
6. Tanaka T, Tamai H, Kuma K, Matsuzuka F, Hidaka H. Gonadotropin response to luteinizing hormone releasing hormone in hyperthyroid patients with menstrual disturbances. Metabolism 1981; 30(4): 323-6.
7. Unnikrishnan AG, Menon UV. Thyroid disorders in India: An epidemiological perspective. Indian J Endocrinol Metab 2011; 15(Suppl 2): S78-81.
8. Akhter N, Hassan SA. Subclinical hypothyroidism and hyperprolactinemia in infertile women: Bangladesh perspective after universal salt iodination. Internet J Endocrinol 2008; 5(1): 1-6.
9. Krassas GE, Pontikides N, Kaltsas T, Papadopoulou P, Paunkovic J, Paunkovic N, et al. Disturbances of menstruation in hypothyroidism. Clin Endocrinol (Oxf) 1999; 50(5): 655-9.
10. Reindoller RH, Novak M, Tho SP, McDonough PG. Adult onset amenorrhoea: a study of 262 patients. Am J Obstet Gynecol 1986; 155(3): 531-43.
11. 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. J Obstet Gynecol India 2016; 66(2): 115-9.
12. Rani AS, Rekha B, Reddy GA. Study of Hypothyroidism in Women with Abnormal Uterine Bleeding. IOSR-JDMS 2016; 15(4): 12-8.
13. Joshi JV, Bhandarkar SD, Chadha M, Balaiah D, Shah R. Menstrual irregularities and lactation failure may precede thyroid dysfunction or goiter. J Postgrad Med 1993; 39(3): 137-41.
14. Kakuno Y, Amino N, Kanoh M, Kawai M, Fujiwara M, Kimura M, et al. Menstrual disturbances in various thyroid diseases. Endocr J 2010; 57(12): 1017-22.
15. Krassas GE. Thyroid disease and female reproduction. Fertil Steril 2000; 74(6): 1063-70.
16. Abalovich M, Amino N. Barbour LA, Cobin RH, De Groot LJ, Glinoer D, et al. Management of thyroid dysfunction during pregnancy and postpartum: an Endocrine Society Clinical Practice Guideline. J Clin Endocrinol Metab 2007; 92(8 Suppl): S1-47.