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Original Article

Obstetrics and Gynaecology Section

Association of Bleeding Patterns with Thyroid Dysfunction in Patients with Abnormal Uterine Bleeding: A Prospective Cross-sectional Study

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ABSTRACT

Introduction: Excessive menstruation outside the normal parameters is one of the most common manifestations of hypothyroidism affecting the females. Thyroid disorders, such as hypothyroidism and hyperthyroidism are associated with late onset puberty, anovulatory cycles and abnormally high incidence of foetal morbidity and mortality.

Aim: To study the association of bleeding pattern with thyroid dysfunction among patients with Abnormal Uterine Bleeding (AUB).

Materials and Methods: This was a prospective cross-sectional study carried out in the Department of Obstetrics and Gynaecology at Shri B.M. Patil Medical College, Hospital and Research Centre, Vijayapura, Karnataka, India, from October 2012 to June 2014, among 140 females with a provisional diagnosis of abnormal uterine bleeding were subjected to testing for serum Triiodothyronine (T3), Thyroxine (T4), Thyroid Stimulating Hormone (TSH) and Thyroid Peroxidase (TPO) antibodies estimation in their serum. Data was analysed using Chi-square test and the p-value <0.05 was considered significant.

Results: Total of 140 patients, with maximum number of patients in the study belonged to the age group 31-40 years, 57 (40.71%) and 46 (32.8%) patients were para 2. Among different bleeding patterns observed, most common was menorrhagia, 62 (44.28%). The prevalence of subclinical hypothyroidism was 10 (7.14%), there were five hypothyroid cases (3.5%), and two hyperthyroid cases (1.4%) among 140 cases. The total thyroid disorders associated were 17 (12.14%).

Conclusion: In the present study, association of thyroid dysfunction with AUB has been noted. With early diagnosis of thyroid disorders in AUB patients, followed by appropriate treatment, the menstrual irregularities can be resolved and major surgical procedures can be avoided.

Keywords: Foetal morbidity, Hyperthyroidism, Hypothyroidism, Thyroid peroxidase antibodies

INTRODUCTION

Abnormal uterine bleeding is defined as atypical bleeding from the uterus in the absence of any detectable pelvic pathology and in the absence of any demonstrable extragenital cause. The abnormal pathology can account for 10% of all gynaecologically-related complaints [1]. Disorders of the thyroid gland also have a large association with menstrual irregularities. These disorders, such as hypothyroidism and hyperthyroidism are associated with late onset puberty, anovulatory cycles and abnormally high incidence of foetal morbidity and mortality [2]. Excessive menstruation outside the normal parameters is one of the most common manifestations of hypothyroidism affecting the female reproductive tract. Despite documentation of the occurrence of menstrual disturbances in hypothyroid women, the number of these patients requiring treatment for menorrhagia has not been clearly identified [3]. Majority of these subclinical cases of hypothyroidism are often missed. The overall prevalence of these subclinical cases of hypothyroidism are as high as 19.5% in women [4]. Hypothyroidism is known to cause menorrhagia in early phases and oligomenorrhoea in later phases and hyperthyroidism to cause oligomenorrhoea and amenorrhoea [5]. Most cases of anovulatory bleeding can be treated medically, thus, avoiding surgeries [6]. Diagnosing and treating thyroid dysfunction has shown to improve the menstrual abnormalities [7].

New tests including serum Triiodothyronine (T3), serum Thyroid Stimulating Hormone (TSH) and Thyroid Peroxidase (TPO) antibody radioimmunoassay have significantly increased the sensitivity and specificity of thyroid function testing. Serum TSH assay is an important sensitive indicator of the reduced thyroid functional reserve. This is because, TSH levels become elevated prior to the fall of circulating serum thyroxine levels below the normal values [8]. In a study, patients with menstrual disorders 44% had thyroid disorders in which subclinical hypothyroidism was prevalent in 20%, overt hypothyroidism in 14%, and overt hyperthyroidism in 8% of the women. Autoimmune thyroid antibodies were present in 30% patients of women with menstrual disorders. On endometrial sampling, hypothyroid patients mainly had proliferative endometrium (42.85%), whereas hyperthyroid had atrophic endometrium (60%) [9].

Hence, the present study was done to evaluate the association of bleeding pattern with thyroid dysfunction among patients with abnormal uterine bleeding. This will assist in the further development of managing AUB and also knowing the latest prevalence of hypothyroidism in patients who are provisionally diagnosed as AUB.

MATERIALS AND METHODS

This was a prospective cross-sectional study conducted in the Department of Obstetrics and Gynaecology at Shri B.M. Patil Medical College, Hospital and Research Centre, Vijayapur, Karnataka, India, from October 2012 to June 2014. The study was started after obtaining Ethical Clearance (IEC/046/12/18-10-12). A total of 140 women with abnormal uterine bleeding were selected for the study.

Sample size calculation: With the incidence rate of Dysfunctional Uterine Bleeding (DUB) 10% [10], at 95% confidence interval and at +5 margin of error, the worked-out sample size was 140, using the sample size formula:

$$N=Z\alpha^2\times p\times q/d^2,$$

where N=sample,

p=proportion in target population with specific characterstics,

q=1-p,

d=degree of accuracy required [11]. Hence, 140 cases were included in the present study.

Inclusion criteria: All cases having abnormal uterine bleeding belonging to the puberty to premenopausal age groups were included in the study.

Exclusion criteria: Patients currently or previously on antithyroid medication or thyroid hormones, Intrauterine Contraceptive Device (IUCD) users and history of bleeding disorders, and patients with organic lesions of genital tract were excluded from the study.

Study Procedure

A thorough history of all patients was taken. This included a detailed account of bleeding history, which included, the pattern of bleeding, onset, duration, quantity of bleeding and other complaints related to thyroid dysfunction. A clinical examination was conducted. Examination of the general physical state of the patient, neck/thyroid gland area, gynaecological examination per speculum and bimanual examination, and systemic examination was done thoroughly. Special attention to thyroid dysfunction was given in cases that had a clinically based provisional diagnosis of AUB. The selected patients were subjected to routine investigations like complete blood count, urinary examination for albumin and sugar, coagulation parameters (bleeding time, clotting time) and ultrasonographic evaluation of abdomen and pelvis. Afterwards, all patients were subjected to evaluation of Triiodothyronine (T3), Thyroxine (T4), Thyroid Stimulating Hormone (TSH) and Thyroid Peroxidase antibodies (TPO-Ab) estimations in their serum. Investigations were estimated by Chemiluminescence Immuno Assay (CLIA) method using reagent Monobind IN C; USA Kit. With the help of a fully automatic Alphalite machine in the biochemical laboratory at Vijayapur. Drop of reagent Monobind Inc. is mixed with collected blood and using a special programming chart and place it in the fully automatic analysing machine Alphalite. Tests were done and results were noted. Patients were then grouped into four categories:

- Euthyroid
- Subclinical hypothyroid
- Hypothyroid
- Hyperthyroid

Any patient found to have thyroid dysfunction was referred to a physician for further management.

STATISTICAL ANALYSIS

Data was collected, presented as Mean±SD and was analysed by Chi-square test.

RESULTS

A total of 140 female patients with maximum number in age group of 31-40 years, 57 cases (40.7%). The age group 21-30 years had minimum number of cases i.e, 16 cases (11.4%) [Table/Fig-1].

Age (years)	Number of cases	Percentage
≤20	22	15.71
21-30	16	11.43
31-40	57	40.71
>40	45	32.14
Total	140	100

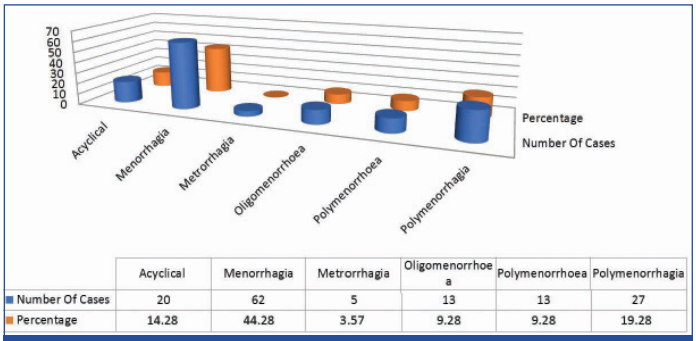
[Table/Fig-1]: Distribution of patients according to age.

Among 140 cases of DUB, 25 (17.8%) patients were unmarried and nulliparous were 17 (12.1%). A total of 19 (13.5%) patients were para 1, 46 (32.8%) patients were para 2, 24 (17.1%) patients were para 3 and 9 (6.4%) patients with 4 or more parity. In the present study, maximum number of patients were of para 2 and minimum number of patients presenting as clinical DUB cases were of para 4 or more [Table/Fig-2].

Parity	Number of cases	Percent
Unmarried	25	17.8
0	17	12.1
1	19	13.5
2	46	32.8
3	24	17.1
4 or more	9	6.4
Total	140	100

[Table/Fig-2]: Distribution of patients according to parity.

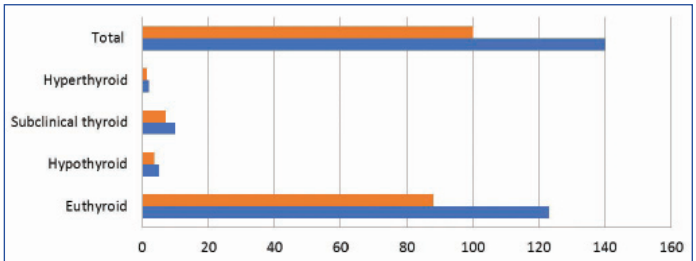
Most common complaint of the study participants was menorrhagia 62 (44.28%). Among others, 27 (19.28%) of cases presented with polymenorrhagia, 20 (14.28%) with acyclical, 13 (9.28%) each with oligomenorrhoea and polymenorrhoea and 5 (3.57%) metrorrhagia. Maximum patients were seen with complaint of menorrhagia [Table/Fig-3].



	Acyclical	Menorrhagia	Metrorrhagia	Oligomenorrhoea	Polymenorrhoea	Polymenorrhagia
Number Of Cases	20	62	5	13	13	27
Percentage	14.28	44.28	3.57	9.28	9.28	19.28

[Table/Fig-3]: Distribution of patients according to symptoms (N=140).

The prevalence of subclinical hypothyroidism was 10 (7.1%), hypothyroid cases 5 (3.6%) and 2 (1.4%) hyperthyroid cases among the total study patients. The total thyroid disorders associated accounted for 17 (12.1%). The most common thyroid dysfunction among the study group was subclinical hypothyroidism 10 cases (7.1%) [Table/Fig-4].



	Euthyroid	Hypothyroid	Subclinical thyroid	Hyperthyroid	Total
Percentage	87.9	3.6	7.1	1.4	100
Number Of cases	123	5	10	2	140

[Table/Fig-4]: Distribution of patients according to thyroid function (N=140).

Below the age 20 years, 18 cases were euthyroid, two had subclinical hypothyroidism and two had hyperthyroidism. Among the cases belonging to 21-30 years, 13 cases were euthyroid and one had hypothyroidism and two had subclinical hypothyroidism. Among the age group of 31-40 years, 51 patients were euthyroid, two had hypothyroidism and four had subclinical hypothyroidism. Above the age of 40 years, two patients had hypothyroidism, two patients had subclinical hypothyroidism [Table/Fig-5].

Patient who presented with menorrhagia had prevalence of 21% (13/62) of thyroid dysfunction, this appears to be the most common bleeding pattern according to this study to be associated with thyroid disorders. Patient who presented with oligomenorrhoea had

Age (years)	Euthyroid (n)	Hypothyroid (n)	Subclinical thyroid (n)	Hyperthyroid (n)	Total (N)
≤20	18	0	2	2	22
21-30	13	1	2	0	16
31-40	51	2	4	0	57
>40	41	2	2	0	45
Total	123	5	10	2	140

[Table/Fig-5]: Distribution of patients according to age and thyroid disorder.

2/13 (15%) prevalence of thyroid disorder [Table/Fig-6]. Out of 17 patients with thyroid disorders, eight of them had significantly raised anti-TPO antibody levels suggestive of associated autoimmune disease. And most of them showed menorrhagia as common bleeding pattern. T3 levels of four patients out of 17 patients with thyroid disorders were abnormal, two patients had low T3 value and two patients had higher than normal range T4 levels were found to be low in two cases and three cases showed elevated T4 levels.

Type of bleeding	Thyroid dysfunction				
	Euthyroid (n)	Hypothyroid (n)	Subclinical hypothyroid (n)	Hyperthyroid (n)	Total (n)
Acyclical	20	0	0	0	20
Menorrhagia	49	5	8	0	62
Metrorrhagia	05	0	0	0	05
Oligomenorrhoea	11	0	0	2	13
Polymenorrhoea	12	0	1	0	13
Polymenorrhagia	26	0	1	0	27
Total	123	5	10	2	140

[Table/Fig-6]: Bleeding pattern in thyroid dysfunction.
Chi-square value=33.1, p-value=0.004

DISCUSSION

Abnormal uterine bleeding is one of the most common conditions among females of reproductive age. The causes of AUB vary according to age from blood dyscrasias among adolescents, to endometrial hyperplasia in perimenopausal group and others like polyps, leiomyoma in reproductive age group. Thyroid dysfunction also accounts for AUB; many times may be missed out, thyroid dysfunction, are common endocrinological disorders in women [12]. They are known to affect all age groups right from menarche to menopause, and cannot be overlooked while treating any forms of menstrual disturbances [13,14].

It is more commonly encountered in the 4th to 5th decades of life. In the present study, most of the AUB patients were in the age group 31-40 years, which accounted for 41% of cases, which is slightly higher as compared to study done by Verma SK et al., which was 37% [4]. Most common menstrual pattern seen in patients with AUB in the present study was menorrhagia seen in 44% of cases which is comparable to previous study [12]. In the present study, 87.9% of patients were euthyroid, 12% of patients were associated with thyroid disorders. The prevalence of subclinical hypothyroidism was 7% which was the most common thyroid dysfunction, 4% of the patients were hypothyroid and only 1% of the patients were hyperthyroid. Joshi BR et al., reported 84.21% of patients as euthyroid and 15.79% patients with various thyroid dysfunctions, which is comparable to the present study [13]. In the study done by Wilansky DL and Greisman B, hypothyroid was seen in 22% of cases when compared to hypothyroid, incidence is higher [8]. Verma SK et al., observed 79.55% of patients as euthyroid, 19.5% of patients as hypothyroid and 1% of patients hyperthyroid [4]. So compared to these studies, hypothyroidism was noted in lesser percentage of patients with AUB in present study (3.57%). Few previous studies also mentioned the significance of thyroid immunoassays in AUB, similarly as were done in the present study [14]. The menstrual abnormalities observed in patients with thyroid abnormalities were menorrhagia, polymenorrhoea and oligomenorrhoea and hypomenorrhea [15]. Menorrhagia was seen in 62 (44.28%) of cases whereas study done by Pahwa S and Mangat S menorrhagia was seen in 50% cases which was comparable [16], and study by Verma SK et al., menorrhagia was seen, in 64.3% of cases. In the present study, T3 levels of four patients out of 17 patients with thyroid disorders were abnormal, two patients had low T3 value and two patients had higher than normal range T4 levels were found to be low in two cases and three cases showed elevated T4 levels [4]. A total of 8 patients (47%) out of 17 thyroid dysfunction presented as raised anti-TPO antibodies, most of them presenting as menorrhagia as presenting symptom. Authors of few previous studies observed thyroid autoimmunity in the form of thyroid anti-TPO antibody, significantly more prevalent in the study group (30%) compared to control group (8%) [9,17]. The present study also like previous studies depicted that, early diagnosis of thyroid disorders help in appropriate treatment of patients.

Limitation(s)

Small sample size was a limitation of the present study. Comparative analysis of relevant tests could have been included for better results.

CONCLUSION(S)

In the present study, association of thyroid dysfunction with in patients presenting with AUB has been noted. With early diagnosis of thyroid disorders in AUB patients followed by appropriate treatment, the menstrual irregularities can be resolved. The various treatment options such as using high dose hormones and surgical procedures such as ablations and hysterectomies can be avoided. So, thyroid function tests should form a part of investigations done for AUB. Even earlier diagnosis and treatment of subclinical hypothyroidism can be initiated to avoid women going for further complications.

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