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A STUDY OF THYROID PROFILE IN ABNORMAL UTERINE BLEEDING (AUB) AMONG REPRODUCTIVE AGE GROUP WOMEN

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Thyroid disorders, BMI, Hemoglobin AUB, reproductive age group.

A B S T R A C T

Introduction: Abnormal uterine bleeding is a common problem and its management can be complex. Thyroid hormones play a key role in the menstrual and reproductive function of women. It is recognized universally that menstrual disturbances may accompany clinical alterations in thyroid function. Both hypothyroidism and hyperthyroidism may result in menstrual disturbances. Since thyroid dysfunction is commonly prevalent in women, present study was conducted to assess the prevalence of thyroid disorders in abnormal uterine bleeding patients.

Aims and objectives

- To evaluate thyroid function tests in women with AUB.
- To study the correlation of hemoglobin with menstrual patterns in AUB
- To evaluate BMI in Thyroid Disorders

Material and methods

Study design: Hospital based Cross sectional study. Study area: Dept. of Obstetrics and Gynecology, Rajah Muthiah Medical College and Hospital, Annamalai University, Chidambaram – 608 002. Study period: 2 year

Materials: A predesigned and restructured questionnaire, routine blood investigation, trans-abdominal USG, serum T3, T4, TSH. Sample size: 100. Sampling: Systematic Random Sampling. Statistical Analysis: Analyzed using Epi-info version 3.5.2.

Results: Most of the AUB cases were in the age group of 30 - 45 years, (78%) followed by 21-30 years (13%) and 9% were in the age group of <20 years. Hypothyroidism was present in 27% and Hyperthyroidism in 3% of the women with AUB. Thyroid dysfunction was most common in women aged between 30 – 45 yrs i.e. (82%). The commonest menstrual complaint was menorrhagia which was present in 72% of the AUB cases. Hypothyroidism is found to have increased BMI whereas Hyperthyroidism has decreased BMI

Conclusions: Thyroid dysfunction is associated with menstrual disturbances (abnormal uterine bleeding). Prevalence of hypothyroidism was more common than hyperthyroidism in AUB cases. Thyroid function tests should be performed in all patients with menstrual irregularities (AUB) to avoid unnecessary interventions. BMI and hemoglobin have a significant association with thyroid disorders and AUB respectively

INTRODUCTION

Abnormal Uterine Bleeding (AUB) is a term used to describe any type of bleeding that does not fall within the normal range for amount, frequency, duration and cyclicity. AUB is one of the most frequent presentation to gynecology OPD. AUB is a common but complicated clinical presentation and occurs in 15-20% of women

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between menarche to menopause and significantly affects the women's health. Thyroid disorders are more common in women than in men and cause abnormal sexual development, menstrual irregularity, infertility and premature menopause. Menstrual abnormality precedes the onset of clinically overt hypothyroidism or hyperthyroidism.

Menstrual irregularities and bleeding problems, due to thyroid disorders are attributed to multiple mechanisms. They are altered TSH response, TRH induced increased prolactin levels, altered LH response, peripheral conversion of androgens to estrogens, altered SHBG and affect on the coagulation factors. It also alters lipid levels in the serum.

In women with hypothyroidism, TRH induced hyperprolactinemia alter the GnRH pulsatile secretion leading to defective or delay in LH response leading to luteal phase defect and anovulation. For proper production of progesterone, the synergistic effect of FSH mediated LH receptor are important and they are directly influenced by thyroid hormones. Hypothyroidism also alters peripheral metabolism of estrogens by decreasing SHBG production leading to abnormal feedback at pituitary level. Apart from effect on ovulation, hypothyroidism also causes menorrhagia by altering coagulation factors i.e., decrease in factors VII, VIII, IX, XI SHBG production increases in hyperthyroidism. The metabolism of estrogen is altered and peripheral conversion of androgens to estrogens is increased. Hyperthyroxinemia increases the gonadotrophin response to GnRH and baseline gonadotrophin concentrations are also frequently elevated. The decrease in menstrual flow may also relate to effects on hemostatic factors, including the synthesis of factor VII. Despite these metabolic changes, hyperthyroid women usually maintain ovulation, according to endometrial biopsies.

Subclinical hypothyroidism is present in 5-8.5% of adult women and increases to 20% by the age of 60. TSH <10 IU/ml is defined as subclinical hypothyroidism. Menorrhagia is the early manifestation of subclinical hypothyroidism. These women are also at risk of having abnormal lipid profile and increased incidence of coronary heart disease. Iron deficiency anemia is also common in these women. Subclinical hypothyroidism is also one of the reason for recurrent pregnancy loss.

Hyperthyroidism is due to either Grave's or Plummer's disease. The menstrual changes associated with hyperthyroidism are unpredictable ranging from normal cycles to oligomenorrhoea, amenorrhea. There could be other symptoms like nervousness, heat intolerance, weight loss, sweating, palpitations and diarrhoea.

Treating thyroid dysfunction can reverse menstrual abnormalities and thus improve fertility. A close interplay between thyroid hormones and normal steroid action and secretion exists. It is necessary for normal ovarian function and thus fertility. Women with thyroid dysfunction often have menstrual irregularities, infertility and increased morbidity during pregnancy.

Aims and objectives

- To evaluate thyroid function tests in women with AUB.
- To study the correlation of hemoglobin with menstrual patterns in AUB
- To evaluate BMI in Thyroid Disorders

MATERIAL AND METHODS

A Hospital based Cross sectional study was carried out in the Dept. of Obstetrics and Gynecology, Rajah Muthiah Medical College and Hospital, Annamalai University, Chidambaram – 608 002. Every alternate woman in reproductive age group with complaints of menstrual irregularities presenting to the Gynecology OPD was included in the study. This came to about 100 women who were studied for the 2 year period. These patients were evaluated for AUB and their thyroid profile was studied**.** The study protocol included a thorough history taking regarding menstrual irregularities using a predesigned and prestructured questionnaire. This was followed by clinical evaluation of thyroid stigmata, abdominal and pelvic examination, routine blood investigation, trans-abdominal USG, serum T3, T4, TSH. Patients with other causes of AUB like organic lesions of genital tract, patients on hormonal treatment, bleeding disorders, drugs which alter thyroid metabolism, IUCD users etc. were excluded from the study.

Reference Values

Serum T4 – 60-120 ng/ml
Serum T3 – 0.8-16 ng/ml
Serum TSH – 0.5-5 mU/ml

Statistical Methods

Data were entered into an excel spreadsheet and double checked for any errors. It was analyzed using spss version 16.0. Ethical clearance was obtained from the ethical committee of Rajah Muthiah Medical College and Hospital, Annamalai University, Chidambaram – 608 002.

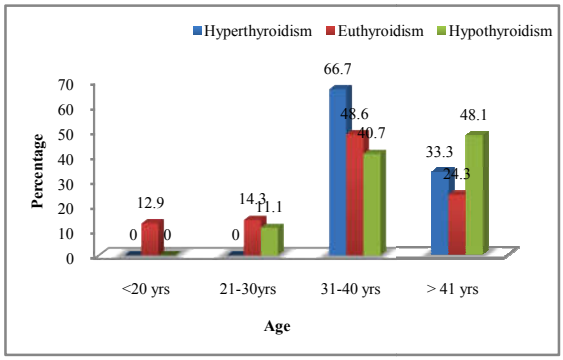
RESULTS

Thyroid dysfunction: Thyroid disorders were prevalent in 30% of AUB patients.

Table 1 Age level Thyroid level Crosstabulation

Age	Thyroid						Total	P value
	Hyperthyroidism		Euthyroidism		Hypothyroidism			
	N	%	N	%	N	%		
<20 yrs	0	.0	9	12.9	0	.0	9	9.0
21-30yrs	0	.0	10	14.3	3	11.1	13	13.0
31-40 yrs	2	66.7	34	48.6	11	40.7	47	47.0
> 41 yrs	1	33.3	17	24.3	13	48.1	31	31.0
Total	3	100.0	70	100.0	27	100.0	100	100.0

The prevalence of Hypothyroidism was 27% and Hyperthyroidism was 3% among the AUB patients as assessed by the findings of their thyroid function tests. Age wise distribution of Hypothyroidism and Hyperthyroidism cases among AUB patients showed that though thyroid dysfunction is seen in all age groups, it is most common in 30 – 45 yrs (27%) with hypothyroidism in 22.7% and hyperthyroidism 9.1% of the AUB cases. (Table 1)



Hemoglobin

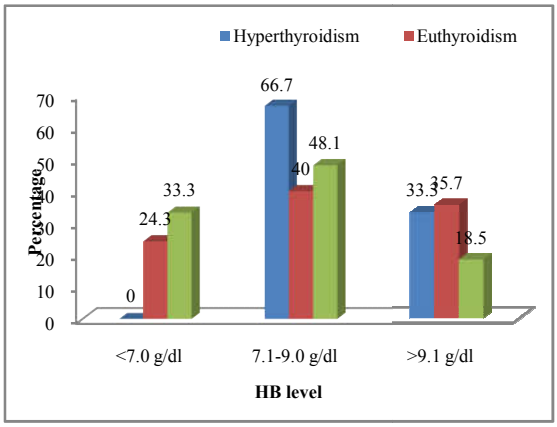
In our study of 100 cases of AUB 72% had menorrhagia as the chief complaint 26% had Hb level <7.0 g/dl, 43% fall in the range of 7.1-9 g/dl and 31% had >9.1 g/dl.

HB level * Thyroid level Crosstabulation

HB level	Thyroid						Total	
	Hyperthyroidism		Euthyroidism		Hypothyroidism			
	N	%	N	%	N	%	N	%
<7.0 g/dl	0	.0	17	24.3	9	33.3	26	26.0
7.1-9.0 g/dl	2	66.7	28	40.0	13	48.1	43	43.0
>9.1 g/dl	1	33.3	25	35.7	5	18.5	31	31.0
Total	3	100.0	70	100.0	27	100.0	100	100.0

Chi-Square Tests

	Value	df	Sig.
Pearson Chi-Square	3.985	4	0.408



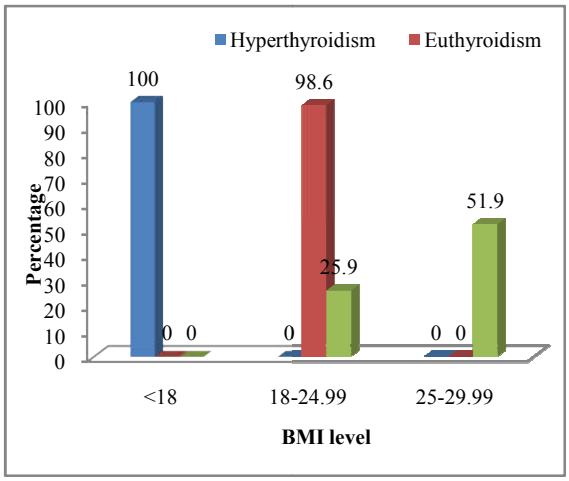
BMI

According to BMI, 76% of patients have normal BMI, 3% of patients belong to underweight, 14% of persons were overweight and 7% belong to obese category.

BMI level * Thyroid level

Chi-Square Tests

	Value	df	Sig.
Pearson Chi-Square	163.1	8	<0.001



DISCUSSION

Thyroid Dysfunction

In our study of 100 AUB patients serum T_3 levels remain within normal limits in 97% of patients, decreased (<70 ng/dl) in 1% and increased (>200 ng/dl) in 2% of patients, serum T_4 levels found to be normal in 93% of patients decreased in 5% of patients and increased in 2% of patients S.TSH was found within the normal range in 70% of patient and was found lesser than the normal range in 3% of patients and increased in 27% of patients.

On the whole 30% of women with AUB were found to have thyroid abnormalities of which 27% were found to be hypothyroid and 3% were found to have hyperthyroidism and remaining 70% were found to be euthyroid which is correlating with prentice *et al.,* 1995.

BMI level	Thyroid						Total	
	Hyperthyroidism		Euthyroidism		Hypothyroidism			
	N	%	N	%	N	%	N	%
<18	3	100.0	0	.0	0	.0	3	3.0
18-24.99	0	.0	69	98.6	7	25.9	76	76.0
25-29.99	0	.0	0	.0	14	51.9	14	14.0
30-34.99	0	.0	1	1.4	5	18.5	6	6.0
>35	0	.0	0	.0	1	3.7	1	1.0
Total	3	100.0	70	100.0	27	100.0	100	100.0

Hemoglobin

In our study of 100 cases of AUB 72% had menorrhagia as the chief complaint 26% had Hb level <7.0 g/dl, 43% fall in the range of 7.1-9 g/dl and 31% had >9.1 g/dl. As menorrhagia seems to be the commonest abnormality, 69% of the patients have moderate and severe anaemia. Out of 27% hypothyroid patients 9% were found to be severely anaemic (7.0 g/dl), 13% were moderately anaemic (7.1-9 g/dl). In hyperthyroid patients 1% had mild anaemia and 2% had moderate anaemia. Hence hypothyroid patients seems to be more anaemic than hyperthyroidism which is correlating with the study of Jayalakshmi G. Shenoy 2010.

BMI

According to BMI, 76% of patients have normal BMI, 3% of patients belong to underweight, 14% of persons were overweight and 7% belong to obese category.Out of 76% Normal BMI 98.6% were euthyroid,25.9%were hypothyroid patients.14 of overweight% and 6% seems to be obese and have hypothyroidism. Underweight is seen in 3% of patients and all the three fall in hyperthyroid category. Hence increased BMI was found in hypothyroidism and decreased BMI was found in hyperthyroid patients. This correlates with study of Jayalakshmi G. shenoy 2010.The prevalence of obesity is7% according to our study.

CONCLUSIONS

Prevalence of hypothyroidism was more common than hyperthyroidism in DUB cases. It can be concluded that thyroid dysfunction is associated with menstrual disturbances (abnormal uterine bleeding) which get relieved with the correction of thyroid dysfunction, so thyroid assessment by thyroid function tests should be performed in all patients with menstrual irregularities (AUB) to avoid unnecessary interventions like hormone replacement and surgery. All the hypothyroid patients were anaemic compared to hyperthyroid patient as menorrhagia seems to be the major problem in hypothyroidism. Hence Hb appears to be significantly correlating with thyroid dysfunction.

Hypothyrod patients have increased BMI and hyperthyroid patients have decreased BMI. Hence BMI seems to have a significant correlation Pvalue (<0.001) with thyroid dysfunction.

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