

## A Hospital Based Prospective Study to Estimate the Prevalence of Thyroid Disorders in Reproductive Age Group Women with Abnormal Uterine Bleeding (AUB)

Usha Rangey Chouhan<sup>1</sup>, Pradeep Kumar Chouhan<sup>2\*</sup>

<sup>1</sup>Senior Specialist, Department of Obst. & Gynae., Government District Hospital, Sirohi, Rajasthan, India

<sup>2</sup>Principal Specialist, Department of Medicine, Government District Hospital, Sirohi, Rajasthan, India

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### Abstract

**Background:** Thyroid disorders are ubiquitous and insidious in their presentation. 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. The aim of this study to estimate the prevalence of thyroid disorders in reproductive age group women with abnormal uterine bleeding (AUB). **Materials & Methods:** A hospital based prospective study done on 50 women with complaining of menstrual dysfunction in obstetrics and gynecology department in government district hospital, Sirohi, Rajasthan, India during one year period. Routine investigations like hemoglobin, platelet count, total and differential count, ESR, blood grouping and Rh typing, RBS, Serum creatinine, and thyroid profile which includes T3, T4, TSH were performed in all patients. For quantitative type of data test of significance applied was student T test and for qualitative data chi square test was applied. P value of <0.05 was considered significant. **Results:** Among 50 women majority of patients belong to more than 30 years (50%) age group, followed by 21 to 30 yrs age group (36%) and less than 20 years were 14%. Mean age was 32.78 years. In menorrhagic patients majority were euthyroid (14) followed by subclinical hypothyroidism (5) and in oligomenorrhoea majority were again euthyroid (6) followed by subclinical hypothyroidism (5). **Conclusion:** Abnormal uterine bleeding is frequently seen to be associated with thyroid dysfunction and in majority of the patients, menstrual abnormality may even precede the occurrence of other clinical signs and symptoms of thyroid dysfunction. Unless proper evaluation of thyroid function is done among these patients, we often miss an important etiology of AUB.

**Key Words:** AUB, Thyroid hormones, Hypothyroid, Hyperthyroid, Euthyroid, Menstrual bleeding.

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### Introduction

Abnormal uterine bleeding is an abnormal bleeding from the uterus in the absence of organic disease of genital tract and demonstrable extragenital cause. Thyroid hormones play an important role in normal reproductive function both through direct effects on the ovaries and indirectly by interacting with sex hormones binding proteins. Thyroid dysfunction can lead to menstrual irregularities and infertility[1]. Diseases of the thyroid gland are among the most abundant disorders worldwide second only to diabetes[2]. Abnormal uterine bleeding is a common clinical problem among women of reproductive age group and with the reported prevalence of about 17.9% in India[3]. By definition abnormal uterine bleeding is menstrual flow outside of normal volume, duration, regularity or frequency. Adolescent and perimenopause women are affected most often. The relation between menstrual irregularities and thyroid disorders are attributed to multiple mechanisms[4]. They are altered TSH response, TRH induced increased prolactin levels, altered LH response, peripheral conversion of androgens to estrogens, altered sex hormones binding globulin (SHBG) and effect on coagulation factors. In hypothyroidism, TRH induced hyperprolactinemia alter the GnRH pulsatile secretion and it leads 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 levels.

\*Correspondence

**Dr. Pradeep Kumar Chouhan**

Principal Specialist, Department of Medicine, Government District Hospital, Sirohi, Rajasthan, India

E-mail: [drpradeepchouhanmd@gmail.com](mailto:drpradeepchouhanmd@gmail.com)

Apart from effect on ovulation, hypothyroidism also causes menorrhagia by altering coagulation factors i.e. decrease in factors VII, VIII, IX, XI. Heavy menstrual bleeding is most common and frequently debilitating symptom resulting in need for repeated curettage and hysterectomy. Timely detection of thyroid disorder in those presenting with menstrual dysfunction and their management can prevent surgical intervention. The aim of this study to estimate the prevalence of thyroid disorders in reproductive age group women with abnormal uterine bleeding (AUB).

### Material & Methods

A hospital based prospective study done on 50 women with complaining of menstrual dysfunction like menorrhagia, Oligomenorrhoea, hypomenorrhoea, polymenorrhoea, metrorraghea and amenorrhoea in obstetrics and gynecology department in government district hospital, Sirohi, Rajasthan, India during one year period.

### Inclusion criteria

- Women presenting with AUB in reproductive age group.

### Exclusion criteria

- Patient on: Anticoagulant therapy.
- Intra uterine device users.
- History of bleeding disorder.
- Benign and Malignant disorders of uterine /cervical/breast.

### Methodology

Detailed history regarding age, parity, age of menarche, menstrual disorders and dysmenorrhoea were recorded. General physical examination along with pelvic examination was done in all the patients.

Routine investigations like hemoglobin, platelet count, total and differential count, ESR, blood grouping and Rh typing, RBS, Serum

creatinine, and thyroid profile which includes T3, T4, TSH were performed in all patients.

- When TSH is high with T4 and T3 within normal range they were labelled as subclinical hypothyroidism.
- When high TSH and low T3 and T4 levels they were labelled as Overt hypothyroidism.
- When TSH low and T3 and T4 are in normal range labelled as subclinical hyperthyroidism.
- When TSH is low and T3 and T4 levels are highlabelled as overt hyperthyroidism.

**Statistical analysis**

Qualitative type of data was expressed as percentage or proportion. Data was analyzed using SPSS (statistical program for social sciences) software 22.0 version. For quantitative type of data test of significance applied was student T test and for qualitative data chi square test was applied. P value of <0.05 was considered significant.

**Results**

Among 50 women majority of patients belong to more than 30 years (50%) age group, followed by 21 to 30 yrs age group (36%) and less than 20 years were 14%. Mean age was 32.78 years. In our study majority of patients were nulliparous that is 21 (42%) followed by 14 patients of para2 (28%). The maximum number of patients with abnormal uterine bleeding are euthyroid 72%, and 24% belong to subclinical hypothyroidism. About 2% were overt hypothyroid and 2% were overt hyperthyroidism (table 1).

**Table 1: Characteristics of patients**

Characteristics of patients	No. of patients (N=50)	Percentage
<b>Age groups (yrs)</b>		
18-20 yrs	7	14%
21-30 yrs	18	36%
>30 yrs	25	50%
<b>Parity</b>		
Nullipara	21	42%
Para 1	4	8%
Para 2	14	28%
Para 3	10	20%
Para≥4	1	2%
<b>Thyroid dysfunction</b>		
Euthyroid	36	72%
Subclinical hypothyroidism	12	24%
Overt hypothyroidism	1	2%
Overt hyperthyroidism	1	2%

In our study majority were euthyroid. In subclinical hypothyroidism majority were in age group more than 30 years (table 2).

**Table 2: Thyroid disorders in different age group**

Thyroid dysfunction	18-20 yrs	21-30 yrs	>30 yrs	Total	P-value
Euthyroid	6	13	17	36	>0.05
Subclinical hypothyroidism	1	4	7	12	
Overt hypothyroidism	0	0	1	1	
Overt hyperthyroidism	0	1	0	1	

Chi-square test

In menorrhagic patients majority were euthyroid (14) followed by subclinical hypothyroidism (5) and in oligomenorrhoea majority were again euthyroid (6) followed by subclinical hypothyroidism (5). (table 3)

**Table 3: Correlation between pattern of bleeding and thyroid dysfunction**

Bleeding pattern	Euthyroid	Subclinical hypothyroidism	Overt hypothyroidism	Overt hyperthyroidism	Total
Menorrhagia	14	5	1	1	21
Metorrhagia	4	0	0	0	4
Meno metorrhagia	1	0	0	0	1
Polymenorrhoea	2	1	0	0	3
Oligomenorrhoea	6	5	0	0	11
Amenorrhoea	1	0	0	0	1
Dysmenorrhoea	3	1	0	0	4
Menorrhagia+ Dysmenorrhoea	3	0	0	0	3
Metorrhagia+ Dysmenorrhoea	1	0	0	0	1
Oligomenorrhoea+ Dysmenorrhoea	1	0	0	0	1
<b>Total</b>	36	12	1	1	50

Chi-square test, P>0.05

**Discussion**

Thyroid disorders in general and hypothyroidism in particular is extremely common especially in women. Menarche, Pubertal growth and development, menstrual cycles, fertility and fetal development, post –partum period, reproductive years and menopausal years are profoundly influenced by the thyroid status of the women. Both hyper and hypothyroidism may result in menstrual disturbances.

Menorrhagia is a frequent debilitating symptom in gynecological practice resulting in need for repeated curettage and hysterectomy with its attendant morbidity and mortality. Objective measurement have shown that mean menstrual blood loss in each menstrual cycle is 35 ml and menstrual blood loss is considered to be excessive when it is more than 80ml per cycle(90<sup>th</sup> percentile). The etiology of menorrhagia is very diverse. It may be due to systemic conditions like

hormonal imbalance (usually hypothyroidism and hyperthyroidism), or local lesions of genital tract like endometrial hyperplasia, pelvic inflammatory disease, endometriosis, benign tumors (leiomyoma, polyps) and malignant tumors (endometrial carcinoma). Thyroid dysfunction is one of the common causes of excessive menstrual blood loss and menstrual irregularities. Menorrhagia has been reported in 32% of subjects with myxedema [5] and is 32.4% [6]. It may also lead to anovulation, infertility and recurrent abortion. The onset of hypothyroidism is insidious that classic clinical manifestation may take months and years to appear [7]. Furthermore, menorrhagia may be the only presenting complaint in hypothyroid women [8].

With the advent of modern hormonal assay techniques, precise estimation of thyroid hormones in serum is possible in a rapid and reliable manner. Treatment of hypothyroidism is very satisfying as it usually relieves the patient of all the symptoms. Hence, in investigating a patient with menorrhagia and / or menstrual irregularities, evaluation of thyroid functional status forms an essential component. Early detection of hypothyroidism in such subjects saves the patients from recurrent curettage and at times hysterectomy. In our study, maximum number of patients were seen in the age group of more than 30 years (50%) which is similar to the study done by Dhanapal et al [9] which showed maximum number of patients were in the age group of 25-31 years (41%). In other similar study done by Deshmukh et al [10] showed that almost 44% patients were in the age group of 31-40 years. Other studies done by Komathi et al [11] and Bhavani et al [12] showed similar results.

In the present study, most of the cases belong to 2<sup>nd</sup> parity (28%). Pilli et al also reported that DUB was seen in 87% multipara, 7% primipara and 6% in nulliparous women [13].

In the present study, the commonest bleeding pattern was menorrhagia that is 21 (42%) followed by oligomenorrhoea with 11 patients (22%). Among others, 4 presented with metrorrhagia, 4 with dysmenorrhoea, 3 with polymenorrhoea and 1 with combination of menorrhagia and dysmenorrhoea. Similar findings were observed in the study conducted by Bhavani et al [12] and Dhanpal et al [9] which showed menorrhagia as the most common bleeding disorder.

According to C.D. Doifode et al, menorrhagia was seen in 63.33% of overt hypothyroidism [14]. Douglas et al observed that 22.3% of their cases with menorrhagia had subclinical hypothyroidism [15]. A study conducted by Lakshmi Singh et al observed that oligomenorrhoea was seen in 63.6% of hyperthyroid patients and 36.3% of hypothyroid patients [16]. In our study, euthyroid patients constituted 72%. According to Shruithi et al, euthyroid patients constituted 85% of patients with provisional diagnosis of dysfunctional uterine bleeding [17].

### Conclusion

Abnormal uterine bleeding is frequently seen to be associated with thyroid dysfunction and in majority of the patients, menstrual abnormality may even precede the occurrence of other clinical signs and symptoms of thyroid dysfunction. Unless proper evaluation of thyroid function is done among these patients, we often miss an important etiology of AUB. This may in turn lead to unnecessary exposure of the patient to a variety of nonspecific and ineffective diagnostic and therapeutic procedures, including both invasive (surgical) and non-invasive (hormonal) techniques. Correct diagnosis of this etiology of AUB would help in proper management of the

patient, treating both the menstrual abnormality along with the thyroid disorder, and would be cost-effective as well.

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