

# A study of correlation between abnormal uterine bleeding and thyroid dysfunction

N Bhavani \*\*, Avanthi Sathineedi \*, Aradhana Giri \*\*\*, Sangeeta Chippa \*, V S Prasannakumar Reddy \*\*

\*Assistant Professor, \*\*Associate Professor, \*\*\*Professor and HOD, Department of Obstetrics and Gynaecology, M. N. R. Medical College and Hospital, Sangareddy, Medak, Andhra Pradesh, INDIA.

Email: [c\\_sangeeta12@rediffmail.com](mailto:c_sangeeta12@rediffmail.com), [sangeethadoc81@gmail.com](mailto:sangeethadoc81@gmail.com), [spkrvuchuru@yahoo.com](mailto:spkrvuchuru@yahoo.com)

## Abstract

**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. **Aims and Objectives:** To evaluate and detect the thyroid dysfunction in patients with abnormal uterine bleeding (from puberty to menopause). The prevalence of thyroid dysfunction in abnormal uterine bleeding and to assess the menstrual patterns in women with thyroid disorders. **Materials and Methods:** A hospital based prospective observational study was carried out in the department of Obstetrics and Gynecology at MNR medical college and hospital, Sangareddy during the period between 2014 Jan to Dec 2014. 200 women who presented with abnormal uterine bleeding to the out-patient department were recruited in this study. **Inclusion Criteria:** All women with AUB from puberty to menopause. **Exclusion Criteria:** Women who are on drugs or hormone therapy, Intra uterine device users, Women with goiter, Carcinoma thyroid or with overt clinical symptom of thyroid dysfunction and History of bleeding disorders. **Results:** In the study conducted 19% (38 cases out of 200) have thyroid dysfunction. Among which 76.3% (29 out of 38) of thyroid dysfunction was seen in nonstructural causes of AUB and 23.6% (9 out of 38) of thyroid dysfunction was seen in structural causes of AUB. Among structural causes leiomyoma is associated with 9% of thyroid dysfunction, of which 5.19% of cases have subclinical hypothyroidism. Among nonstructural causes of AUB subclinical hypothyroidism is the commonest 15.38% followed by overt hypothyroidism. Hyperthyroidism was seen in 2.19% of cases of nonstructural causes of AUB and 1.29% was seen in structural causes of AUB. **Conclusion:** Both subclinical hypothyroid and overt hypothyroid cases together were the commonest thyroid dysfunction and menorrhagia was their commonest menstrual abnormality. The study concludes that biochemical evaluation of thyroid function should be made mandatory in all cases of AUB. **Keywords:** Abnormal uterine bleeding, Thyroid dysfunction, overt hypothyroidism, sub clinical Hypothyroidism, Hyperthyroidism.

## \*Address for Correspondence:

Dr. N Bhavani, Associate Professor, Department of Obstetrics and Gynaecology, M. N. R. Medical College and Hospital, Sangareddy, Medak, Andhra Pradesh, INDIA.

Email: [c\\_sangeeta12@rediffmail.com](mailto:c_sangeeta12@rediffmail.com)

Received Date: 22/01/2015 Revised Date: 30/01/2015 Accepted Date: 06/02/2015

Access this article online	
Quick Response Code:	Website: <a href="http://www.statperson.com">www.statperson.com</a>
	DOI: 08 February 2015

## INTRODUCTION

Thyroid disorders are ubiquitous and insidious in their presentation. They have been implicated in a broad

spectrum of reproductive disorders ranging from abnormal sexual development to menstrual irregularities, infertility and premature menopause<sup>1</sup>. 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<sup>2</sup>. Abnormal uterine bleeding is a common but complicated clinical presentation. It occurs in 9-14% of women between menarche and menopause, significantly impacting quality of life and imposing financial burden<sup>3</sup>. The etiologies and treatment of AUB over the reproductive years are best understood in the context of normal menstrual physiology. A normal cycle starts when pituitary follicle stimulating hormone induces ovarian follicles to produce

estrogen. 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<sup>4</sup>. 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<sup>5</sup>. Terms used to describe AUB<sup>6</sup>

**Oligomenorhea:** Bleeding occurs at intervals of >35 days and usually is caused by a prolonged follicular phase.

**Polymenorrhea:** Bleeding occurs at intervals of <21 days and may be caused by luteal phase defect.

**Menorrhagia** (Now called Heavy menstrual bleeding): Bleeding occurs at normal intervals (21-35 days) but with heavy flow (> or = 80ml) or duration (>7 days)

**Menorrhagia:** Bleeding occurs at irregular, non cyclical intervals and with heavy flow (> or = 80ml) or duration (>7 days)

**Amenorrhea:** Bleeding is absent for 6 months or more in a non menopausal woman. Metrorrhagia or intermenstrual bleeding: Irregular bleeding occurs between ovulatory cycles; causes to consider include cervical disease, intrauterine device, endometritis, polyps, submucous myomas, endometrial hyperplasia and cancer.

Mid cycle spotting: Spotting occurs just before ovulation, usually because of a decline in the estrogen level.

**Postmenopausal bleeding:** Bleeding recurs in a menopausal women at least 1 year after cessation of cycles.

Acute emergent abnormal uterine bleeding: Bleeding is characterized by significant blood loss that results in hypovolemia (hypotension or tachycardia) or shock. Out of all the etiologies, age variations and clinical presentations – Thyroid dysfunction (subclinical or overt) is becoming a significantly important correlation with non structural causes of AUB. Hyperthyroidism and hypothyroidism are both associated with menstrual abnormalities. One of the explanations is activity of thyroid is closely linked with the process of ovarian maturation. The thyroid gland is itself dependent on direct and indirect stimulation from the ovary to discharge its

own function. After excluding the structural causes of AUB most cases are associated with failure of ovulation and consequent hormonal imbalance. Ovarian dysfunction may be caused by either a primary defect or pathological lesion within the ovary itself or may be secondary to malfunction of other endocrine glands notably hypothalamus, pituitary and thyroid<sup>7</sup>. In hypothyroid patients the menstrual abnormality is much more severe and anovulatory cycles are common. Menorrhagia or HMB and polymenorrhea are more common but amenorrhea is rare. Patients originally requiring treatment for menorrhagia or HMB has not been carefully elicited<sup>8</sup>. Majority of subclinical hypothyroid cases easily pass unrecognised and the prevalence of hypothyroidism is as high as 9.5% in women<sup>9</sup>. Danese M D *et al* recommended hypothyroidism is frequent enough to warrant consideration in most older woman, justifying screening even in asymptomatic older women<sup>10</sup>. Menorrhagia or HMB is commonly tackled with curettage and hysterectomy with its attendant morbidity and mortality especially in anaemia, undiagnosed thyroid disease and coagulopathies. Recently occult menorrhagia has been found to be an early manifestation of subclinical hypothyroidism with this being symptomatic later. In hyperthyroidism the most common manifestation is simple hypomenorrhea. Anovulatory cycles are very common. Increased bleeding may occur but rare in hypothyroidism. Ely *et al* states that any menstrual irregularity in non pregnant patients especially menorrhagia warrants TSH stimulation<sup>8</sup>. With the introduction of Serum Free T<sub>4</sub> and TSH radioimmunoassay has increased the sensitivity and specificity of thyroid function testing. The Serum TSH assay has been shown to be a sensitive indicator of diminished thyroid function reserve since TSH levels become elevated before circulating Thyroxine levels fall below the normal range<sup>11</sup>. Hence this study is to evaluate the thyroid function in patients having abnormal menstrual bleeding from puberty to menopausal age groups.

## AIMS AND OBJECTIVES

1. To evaluate and detect the thyroid dysfunction in patients with abnormal uterine bleeding (from puberty to menopause).
2. The prevalence of thyroid dysfunction in AUB.
3. To assess the menstrual patterns in women with thyroid disorders.

## MATERIAL AND METHODS

A hospital based prospective observational study was carried out in the department of Obs and Gyn at MNR

medical college and hospital, Sangareddy during the period between 2014 Jan to Dec 2014. 200 women who presented with abnormal uterine bleeding to the outpatient department were recruited in this study.

### INCLUSION CRITERIA

1. All women with AUB from puberty to menopause.

### EXCLUSION CRITERIA

2. Women who are on drugs or hormone therapy.
3. IUCD users.
4. Women with goiter, Carcinoma thyroid or with overt clinical symptom of thyroid dysfunction.
5. History of bleeding disorders.

### METHODOLOGY

- The study protocol included a thorough history taking regarding age, bleeding pattern, onset, duration, quantity of bleeding and complaints related to thyroid dysfunction were noted in detail.
- A thorough clinical examination including general physical examination, neck examination, systemic and gynecologic examinations were carried out.
- All the recruited patients were subjected to routine investigations like hemoglobin, ESR, LFT, RBS, complete urine examination, bleeding time, clotting time, chest x-ray, ultrasound abdomen and pelvis, pap smear, endometrial biopsy.
- Then all patients were subjected to T<sub>3</sub>, T<sub>4</sub> and TSH.
- T<sub>3</sub> and T<sub>4</sub> were assayed by competitive chemiluminiscent immunoassay. TSH was estimated by ultra sensitive fully automated ADVIA centaur, using two sites and with chemiluminescent immunoassay and analyzed.

## RESULTS

**Table 1: Age distribution**

Age(years)	No of cases	Percentage (%)
<20	23	11.5
21-30	10	5
31-40	74	37
41-50	80	40
>50	13	6.5

Among 200 women recruited majority belong to the age group between 41 to 50 years (40%) followed by 31-40 yrs (37%) and 11.5% were in the age group <20 yrs.

**Table 2: Parity distribution**

Parity	No of cases	Percentage (%)
Unmarried	29	14.5
Nulliparous	39	19.5
1	24	12
2	43	21.5
3	41	20.5
4	24	12

It was observed that most of them belong to the category of 2<sup>nd</sup> (21.5%) and 3<sup>rd</sup> para (20.5%) and 29 patients (14.5%) were unmarried. 39 patients were nulliparous and 12% of patients belong to 4<sup>th</sup> para.

**Table 3: Causes of bleeding**

Causes of bleeding	No of patients	Percentage (%)
STRUCTURAL CAUSES		54.5%
Leiomyoma	77	38.5%
Adenomyosis	12	6%
Polyp	5	2.5%
Hyperplasia and malignancy	15	7.5%
<b>Non structural causes</b>	<b>91</b>	<b>45.5</b>

Among the causes of abnormal uterine bleeding, Structural causes accounted for 54.5% of cases. 45.5% of them had nonstructural causes of abnormal uterine bleeding. Leiomyoma (38.5%) is the commonest Cause of abnormal uterine bleeding in our study.

**Table 4: Pattern of bleeding**

Pattern of bleeding	No of cases	Percentage (%)
Menorrhagia	18	54
Acyclical(MPH)	41	20.5
Hypomenorrhoea	8	4
Oligomenorrhoea	6	3
Polymenorrhoea	7	3.5
Polymenorrhagia	17	8.5
<b>Metrorrhagia</b>	<b>13</b>	<b>6.5</b>

Above table depicts commonest pattern of bleeding was menorrhagia (54%) followed by metropathica haemorrhagica (20.5%) Among others 8.5% of them presented with polymenorrhagia, 6.5% of them had metrorrhagia, 3% with oligomenorrhoea, 4% with hypomenorea and 3.5% with polymenorrhoea.

**Table 5: Thyroid dysfunction**

Thyroid dysfunction	No of cases	Percentage (%)
Euthyroid	162	81
Overt hypothyroid	15	7.5
Subclinical hypothyroid	20	10
<b>Hyperthyroid</b>	<b>3</b>	<b>1.5</b>

This table shows maximum number of apparently normal patients with abnormal uterine bleeding belong to category of sub clinical hypothyroid (10%). Profound hypothyroid without any symptoms was present in only

7.5% of cases. 1.5% of cases had hyperthyroidism though they were clinically normal.

**Table 6: Pattern of bleeding and thyroid dysfunction**

Pattern of bleeding	No of cases	Euthyroid	Overt hypothyroid	Sub-clinical hypothyroid	Hyper Thyroid	Total thyroid dysfunction	%
Menorrhagia	108	83	11	13	1	25	23.1
Acyclical(MPH)	41	36	2	3	0	5	12.1
Hypomenorrhoea	8	7	0	0	1	1	12.5
Polymenorrhoea	7	3	2	1	1	4	57.1
Oligomenorrhoea	6	5	0	1	0	1	16.6
Polymenorrhagia	17	15	0	2	0	2	11.7
Metrorrhagia	13	13	0	0	0	0	0
<b>Total</b>	<b>200</b>	<b>162</b>	<b>15</b>	<b>20</b>	<b>3</b>	<b>38</b>	

This table revealed that thyroid dysfunction is related to various types of bleeding abnormalities. Thyroid dysfunction was commonest in patients with polymenorrhea (57.1%) next common in patients with

menorrhagia (23.1%) followed by oligomenorrhoea (16.6%). Thyroid dysfunction is least common in polymenorrhagia and absent in metrorrhagia.

**Table 7: Causes of bleeding and thyroid dysfunction**

Causes of Bleeding	No of cases	Euthyroid	Overthyroid	Subclinical hypothyroid	Hyperthyroid	Total thyroid dysfunction	%
Structural causes							
Leiomyoma	77	70	2	4	1	7	9
Adenomyosis	12	11	0	1	0	1	8.3
Polyp	5	5	0	0	0	0	0
Malignancy and hyperplasia	15	14	0	1	0	1	13
Non structural causes	91	62	13	14	2	29	31.8
<b>Total</b>	<b>200</b>	<b>162</b>	<b>15</b>	<b>20</b>	<b>3</b>	<b>38</b>	

According to FIGO PALM COEIN classification for causes of AUB included both structural and nonstructural causes. Structural causes are Polyps, Adenomyosis, Leiomyoma, Malignancy and Hyperplasia and nonstructural causes including Coagulopathy, Endometrial causes, Iatrogenic and not classified. In our study it was observed that 19% (38 cases out of 200) had thyroid dysfunction, among which 76.3% (29 out of 38) of thyroid dysfunction was seen in nonstructural causes of AUB and 23.6% (9 out of 38) of thyroid dysfunction was observed in structural causes of AUB.

Among structural causes, leiomyoma is associated with 9% of thyroid dysfunction, of which 5.19% of patients have subclinical hypothyroidism. Among non structural causes of AUB subclinical hypothyroidism is the commonest (15.38%) followed by overt hypothyroidism (14.2%). Hyperthyroidism was seen in 2.19% of cases. In this table we observed that among the causes of AUB maximum relation with thyroid dysfunction was observed with nonstructural causes of bleeding(31.8%)and the common thyroid dysfunction is hypothyroidism both hypo and hyperthyroidism.

## 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. Although the hormonal and other biochemical aberrations are not the same in these two disorders. In our study most of AUB patients were in the age group of 41-50 years (40%) followed by 31-40yrs (37%). Das and Chugh *et al* reported that highest incidence of Dysfunctional uterine bleeding was seen in the 41-50yrs (32.5yrs) of age group and then 31-40yrs(28.2%)<sup>12</sup>.sangeethaPahwa *et al*, observed that majority of patients were in the age group between 31-40 yrs (42%)<sup>13</sup>. In the present study most of cases belong to 2<sup>nd</sup> (21.5%) and 3<sup>rd</sup> (20.5%) parity. Pilli *et al* also reported that DUB was seen in 87% multipara, 7% primipara and 6% in nulliparous women<sup>14</sup>. Our study shows leiomyoma has highest prevalence with 70.6% among structural causes of abnormal uterine bleeding. According to Baird *et al* prevalence of leiomyoma is up to 70% in

Caucasians and up to 80% of women of African ancestry<sup>15</sup>. In the present study menorrhagia is the commonest bleeding pattern seen in 54% of the cases followed by metropathia hemorrhagica was seen in 20.5% of the cases. Mehrotia *et al* found an incidence of 54.2% of menorrhagia in their study<sup>16</sup>. We observed that 38 out of 200 cases were diagnosed with thyroid dysfunction constitutes 19% of the cases of which sub clinical hypothyroidism in 10% (20 cases), followed by overt hypothyroidism in 7.5% (15 cases) and hypothyroid was least commonly seen in 1.5% (3 cases). Euthyroid was seen in 81% (162 cases). Sangeeta Pahwa *et al* observed in their study that 22% of cases were found to be hypothyroid, 2% hyperthyroid and 76% were euthyroid<sup>13</sup>. In our study the most common type of menstrual abnormality in hypothyroidism was menorrhagia. 73.3% Overt hypothyroidism and 65% subclinical hypothyroidism patients presented with menorrhagia. According to C.D. Doifode *et al* menorrhagia was seen in 63.33% of overt hypothyroidism<sup>10</sup>. Douglas *et al* observed that 22.3% of their cases with menorrhagia had subclinical hypothyroidism<sup>8</sup>. Hypomenorrhoea (33.33%), Polymenorrhoea (33.33%) and Menorrhagia (33.33%) were seen in hyperthyroid patients. 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<sup>17</sup>. In our study euthyroid patients constituted 81%. According to Shruthi *et al*, Euthyroid patients constituted 85% of patients with provisional diagnosis of dysfunctional uterine bleeding<sup>18</sup>. Pushpasirichandetal also confirmed that hypothyroidism causes menorrhagia and hyperthyroidism reduces menstruation<sup>19</sup>. Among the 200 recruited cases 38 (19%) cases had thyroid dysfunction of which 76.3% of thyroid dysfunction was seen in nonstructural causes of AUB and 23.6% in structural causes.

## CONCLUSION

Thyroid dysfunction should be considered as an important etiological factor for menstrual abnormality. Biochemical estimation of T<sub>3</sub>, T<sub>4</sub>, TSH should be made mandatory in Abnormal uterine bleeding especially in nonstructural causes and also in those presenting with fatigue, obesity, lethargy in addition to infertility delayed puberty and recurrent abortions. As there is high incidence of thyroid dysfunction in our area, this evaluation of thyroid in abnormal uterine bleeding would also avoid unnecessary surgeries and exposure to hormones.

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Source of Support: None Declared  
Conflict of Interest: None Declared