

Correlation of Thyroid Dysfunction with Abnormal Uterine Bleeding among Reproductive Age Women

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Abstract: *The most prevalent endocrinological disorders are thyroid abnormalities. Menstrual abnormalities, infertility, and aberrant sexual development are all linked to hypothyroidism. Occult menorrhagia is associated with subclinical hypothyroidism. Hyperthyroidism usually associates with oligomenorrhea and amenorrhea^[4]. Abnormal uterine bleeding (AUB) are mainly due to polyp, adenomyosis leiomyoma, malignancy, hyperplasia, coagulopathy and ovulatory disorders. **Objective:** To study the prevalence of thyroid abnormality in patients with different reasons of AUB. **Methodology:** Conducted a hospital - based cross - sectional study on both inpatient and outpatient patients from July 1 to December 1, 2022, the department of obstetrics and gynaecology at Tertiary care centre. Structured questionnaires and a clinical evaluation were used to collect data. In addition to routine investigations, serum TSH, total T3, and T4 testing were performed in all patients. **Results:** Among 203 patients with AUB majority belongs to 31 - 40yrs. AUB was most prevalent in patients with parity status two (58%). Menorrhagia (60%) and polymenorrhea (26%) were the two most prevalent AUB patterns. 30% of the 203 cases of which 24% are hypothyroid and 6% are hyperthyroid. Menorrhagia (26%) is the most prevalent bleeding pattern in between the ages of 31 and 40. Most common structural cause of AUB is fibroid (20%). Menorrhagia (12%) and polymenorrhea (8%) are the most frequent bleeding patterns in hypothyroid patients. The most frequent bleeding complaint is oligomenorrhea (6%) in cases with hyperthyroidism. 4% of hypothyroid individuals had severe anaemia. In age group of 31 - 40yrs, 16 % are hypothyroid and with age >40yrs, 6 % are hyperthyroid and 8% hypothyroid. **Conclusions:** Our study leads us to the conclusion that abnormal uterine bleeding and thyroid dysfunction are strongly correlated. If the thyroid issue is managed, unnecessary surgical intervention can be prevented.*

Keywords: Thyroid profile, Abnormal uterine bleeding

1. Introduction

Abnormal uterine bleeding (AUB) is most common gynaecological presentation. Abnormal uterine bleeding is variation in any normal constitutes like in amount, frequency, duration, cyclicity of bleeding^[5]. It may be either acute or chronic. In order to stop further losses, acute AUB must be treated right away because the bleeding is so severe. Chronic AUB is defined as bleeding that is present prior to 6 months.

AUB may be a manifestation of benign or malignant female genital tract lesions, or it may be associated to hormonal imbalance disruption. The causes of AUB in reproductive years age are polyp, adenomyosis, leiomyoma, malignancy, hyperplasia, coagulopathy, and ovulatory disorders (PALM - COEIN).

Thyroid disorders are most commonly seen endocrinology disorder⁽³⁾. Female hypothyroidism is usually associated with irregular periods, infertility, and impaired sexual development^[5]. Occult menorrhagia is typically associated with subclinical hypothyroidism^[4]. Amenorrhea and oligomenorrhea frequently accompany hyperthyroidism.

Normal physiology and reproductive function are dependent on normal TSH function. Thyroid hormone interacts with proteins that bind sex hormones to have a substantial effect on ovaries both directly and indirectly.

LH response is altered as a result of altered TSH response, TRH (thyroid releasing hormone) induced rise in prolactin levels, peripheral conversion of androgen to oestrogen, altered SHBG, and effects on coagulation factors.

In hypothyroid women, TRH induced hyperprolactinemia alters GnRH pulsatile secretion, which causes a delayed or deficient LH response, which results in a defect in the luteal phase and an ovulation^[5].

According to a hypothesis, irregular or absent ovulation causes inadequate LH secretion which can result in an oestrogen surplus and cause menorrhagia^[1].

Menstrual disturbances in females with thyroid dysfunction are sometimes the first symptom which help in diagnosis however subclinical hypothyroid cases might be neglected for many years.

Serum TSH levels is cost effective and easily available test and can detect possibly curable cause of AUB and avoid unnecessary interventions like hormonal treatment and hysterectomy^[9]. It helps the physician to successfully plan the treatment of AUB.

Objective

To study the prevalence of thyroid abnormality in patients with different reasons of abnormal uterine bleeding.

2. Materials and Methodology

We conducted a hospital based cross - sectional study on both inpatient and outpatient patients from July 1 to December 1, 2022, the department of obstetrics and gynaecology at Tertiary care centre.

After an informed consent a detailed clinical data was collected according to a pre structured questionnaire. After collecting data clinical examination was done which include breast examination, thyroid examination, per speculum, per vaginal examination and pap smear was taken.

A detailed general examination focusing mainly on presence/absence of anemia, thyroid swelling, cardiovascular abnormalities, nervous system dysfunction, galactorrhea and abnormal hair distribution. An abdominal, speculum examination and pelvic examination were done to rule out other causes of abnormal bleeding.

Serum TSH, T3, T4, haemoglobin levels and USG done to rule out organic causes are studied in 203 women. 5ml of venous blood was taken in a dry plain glass container without any anticoagulant for TSH estimation. Morning sample in fasting state was taken. Treatment was provided according to serum TSH, T3 and T4 levels.

REFERENCE VALUES:

TSH: 0.25 - 5 IU/ml

T3: 0.92 - 2.33 nmol/L

T4: 60 - 120 nmol/L

Sample Size: 203

Inclusion criteria: All women presenting with abnormal uterine bleeding age between 15 - 45yrs.

Exclusion standards: Patients who were pregnant, who had an IUCD, known cases of malignancy, who were on Oral contraceptive pills, anticoagulants, those with liver and renal disorders and those with clotting abnormalities.

3. Results

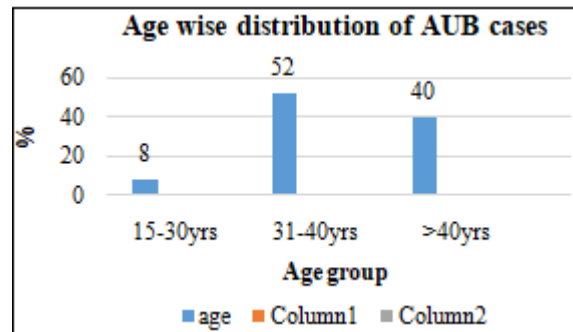


Chart 1: Age Wise Distribution of AUB Cases in Bar Chart

Maximum number of cases are 106 with age group of 31 - 40yrs and number of cases where 16 between age group of 15 - 30yrs.

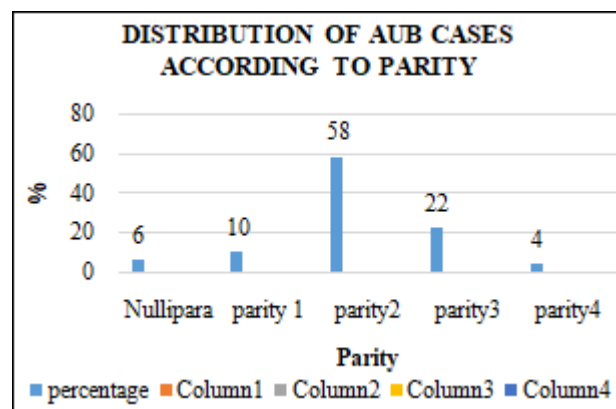


Chart 2: Bar Chart showing parity wise distribution of AUB cases

Among 203 cases of AUB 6% are nulliparous, 10% were para1, 58% were para2, 22% were para3 and 4% were para 4. In this study maximum number of cases are seen with parity 2 and minimum number of cases are seen with nulliparous and parity above 4.

Table 1: Distribution according to Bleeding Pattern

Type of bleeding	No of cases	Percentage
Menorrhagia	122	60%
Metorrhagia	28	14%
Menometorrhagia	20	10%
Polymenorrhea	53	26%
Oligomenorrhea	32	16%
Amenorrhea	8	4%

The above table shows 203 patients who came with complaint of different bleeding pattern. Commonest was menorrhagia 60%. Among others 14% were showing metorrhagia, 10% showing menometorrhagia, 26% showing polymenorrhea, 16% showing oligomenorrhea and 4% showing amenorrhea. Maximum number of patients are showing menorrhagia following which polymenorrhea and oligomenorrhea are common presentations.

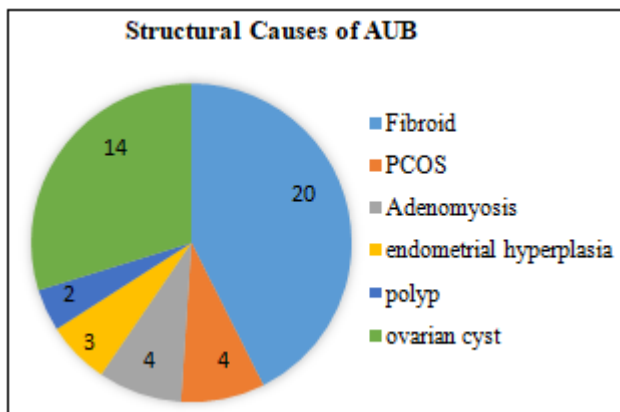


Chart 3: Pie Chart Showing Distribution of Cases According to Structural Causes in AUB

Most common structural cause of AUB is fibroid (20%) followed by ovarian cyst (14%) and minimum number of cases seen with polyp (2%).

Table 2: Distribution according to Serum Thyroid Profile Levels

Thyroid Profile	Cases	%
Serum TSH < 0.25 IU/ml	12	6
0.25 - 5 IU/ml	142	70
>5 IU/ml	49	24
Serum T3 (nmol/l) <0.92 nmol/l	5	17
0.92 - 2.33 nmol/l	157	77
>2.33nmol/l	11	5
Serum T4 (nmol/l) <60 nmol/l	32	16
60 - 120nmol/l	159	78
>120 nmol/l	12	6

According to table 2 maximum number (70%) of AUB cases belong to euthyroid and 24% cases belong to hypothyroid and 6% belong to hyperthyroid status.

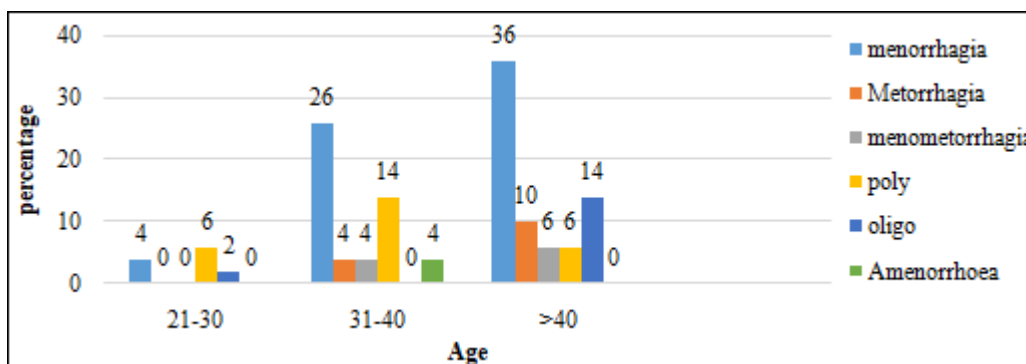


Chart 4: Distribution of Patients according to Age Group and Bleeding Pattern in a Bar Diagram

Menorrhagia (36%) is the most frequent bleeding pattern in patients over 40 years of age, with oligomenorrhoea is the next most common bleeding pattern.

In case hyperthyroidism oligomenorrhoea (6%) is most common bleeding pattern.

Menorrhagia (26%) is the most common bleeding pattern in women between the ages of 31 and 40, with polymenorrhoea is next most common bleeding pattern.

In euthyroid state menorrhagia is most common bleeding pattern seen in patients of AUB.

The most frequent bleeding pattern in women between the ages of 18 and 30 is polymenorrhoea (6%) followed by menorrhagia (4%).

Table 3: Distribution according to Hemoglobin Levels and Thyroid Status

Hemoglobin	Hyperthyroid	%	Euthyroid	%	Hypothyroid	%
<7	0	0	0	0	2	4
7.1 - 9	0	0	4	8	1	2
>9g/dl	3	6	32	64	8	16

In 203 cases of AUB, patients with hemoglobin <7g/dl, 4% of AUB cases have hypothyroidism.

In patients with hemoglobin 7.1 - 9g/dl, 8% of AUB cases are euthyroid and 2% are hypothyroid.

In patients with hemoglobin >9 g/dl, 6% of AUB cases are hyperthyroid and 64% are euthyroid and 16% are hypothyroid.

Among 22% hypothyroid patients 4% found to be severe anemic.

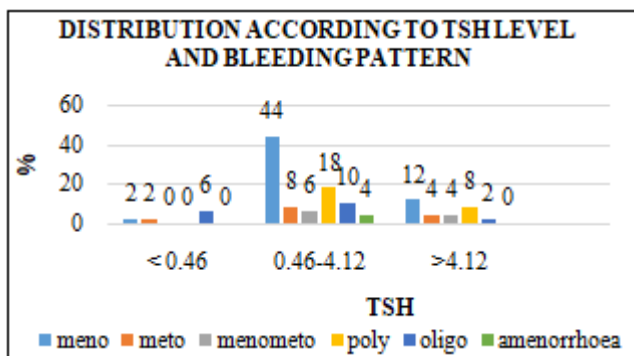


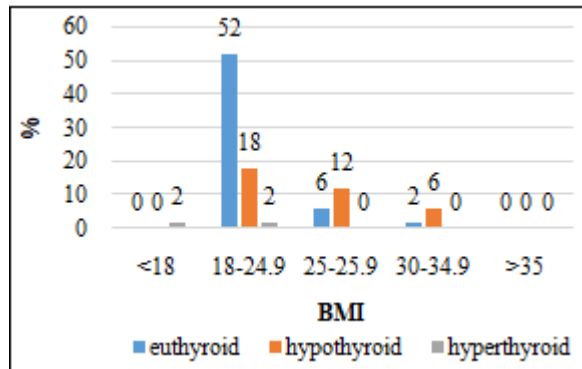
Chart 5: Bar Chart Showing Distribution of Cases according to TSH Level and Bleeding Pattern

In hypothyroidism cases menorrhagia (12%) is most common bleeding pattern followed by polymenorrhoea (8%).

Table 4: Distribution according to Age and Thyroid Status

Age	Hyperthyroid	%	Euthyroid	%	Hypothyroid	%
18 - 30	0	0	4	8	0	0
31 - 40	0	0	18	36	8	16
>40	3	6	13	26	4	8

In age group of 18 - 30yrs of AUB patients 8% are euthyroid and in age group of 31 - 40yrs 36% are euthyroid and 16% are hypothyroid and individuals with age group of >40yrs 6% are hyperthyroid, 26% euthyroid and 8% hypothyroid.

**Chart 6:** Bar Diagram Showing Distribution of Cases according to BMI

According to BMI 52% of patients have normal BMI, 2% patients are underweight, 18% are overweight and 8% are obese.

4. Discussion

Menorrhagia is the most common gynaecological problem. The causes of it are diverse like hormonal imbalance, benign and malignant disease of genital tract.

From the present study Menorrhagia is the most common bleeding abnormality seen in 203 cases of AUB collected followed by polymenorrhagia.

Most common structural cause of AUB is fibroid (20%) followed by ovarian cyst (14%) minimum number of cases seen with polyp (2%) in contrast to Byna P et al⁽²⁾ which showed adenomyosis (9%) followed by fibroid (5.4%) and ovarian cyst (5.4 %).

Maximum number of cases are seen with parity 2 and minimum number of cases seen with nulliparous and parity above 4 in this study. This is compared to study done by Deshmukh P Y et al⁽⁴⁾.

On whole 30% of females with AUB were found to have thyroid abnormalities of which 24% were found to be hypothyroid and 6% were found to have hyperthyroidism and 70% were found to be euthyroid. The above is compared to a study done by Komathi et al⁽⁵⁾ in which 30 % women with AUB are found to have thyroid abnormalities.

Thyroid dysfunction is seen most commonly in age group of 31 - 40yrs of AUB patients and compared with javed Ali et al⁽⁹⁾ study which showed thyroid dysfunction more common at 21 - 40 yrs.

In 24 % hypothyroid patient 4% are found to be severely anemic and 2% moderately anemic and 16 % mild anemia. In hyperthyroid 6% AUB cases found to be mild anemia. Hence hypothyroid patients are more anemic than hyperthyroid patients which is correlating with study of komathi et al⁽⁵⁾.

In present study menstrual abnormality most commonly seen in hypothyroid AUB cases is menorrhagia (12%) followed by polymenorrhagia (8%). In a study according to Sudha HC et al⁽³⁾ common menstrual abnormality seen is polymenorrhagia (25%) followed by polymenorrhagia (20%).

In case hyperthyroidism menorrhagia and oligomenorrhagia are most common bleeding pattern. A study made by Lakshmi singh et al⁽⁸⁾ shows hyperthyroid patient with oligomenorrhagia.

In age group of 31 - 40yrs (26%) and >40yrs (36%) menorrhagia is most common bleeding abnormality. It is correlated with study made by Deshmukh PY et al⁽⁴⁾ showed menorrhagia as most common bleeding abnormality in 31 - 40yrs (27%) and >40yrs (42%).

Maximum number (70%) of AUB cases belong to euthyroid and 24% cases belong to hypothyroid and 6% belong to hyperthyroid status in present study which is correlating with Byna et al⁽²⁾.

From our study 52% of euthyroid patients have normal BMI and 18% hypothyroid have normal BMI and 12% hypothyroid are overweight and 6% hypothyroid patient are obese and 2% hyperthyroid patient are underweight and 2% have normal BMI this is comparable to study made by Komathi et al⁽⁵⁾.

5. Conclusion

Our study leads us to the conclusion that abnormal uterine bleeding and thyroid dysfunction are strongly correlated. If the thyroid issue is managed, unnecessary surgical intervention can be prevented.

So, thyroid profile should be a part of the battery of tests administered to patients who have abnormal uterine bleeding.

Treatment of thyroid issues and menstrual abnormalities together would be most cost - effective with a correct diagnosis of the cause of AUB.

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PROFORMA:

1. SOCIODEMOGRAPHIC CHARACTERISTICS:

- a) Age
- b) Occupation
- c) Education
- d) Monthly income

2. CLINICAL HISTORY:

- a) Parity
- b) Menstrual history: Type of menstrual complaint:
- c) Any vaginal discharge
- d) Marital history
- e) Past medical history
- f) Usage of OCPS
- g) Smoking history
- h) Any history thyroid disease: any symptoms and signs
- i) Any usage medication for thyroid disorder:
- j) Family history

4. Physical examination:

- a) General examination

Height, weight, BMI

Pallor

Thyroid and breast examination

- b) Local examination
- c) Per speculum examination
- d) Per vaginal examination

4. Investigation:

- a) Serum TSH, T3 and T4 levels
- b) Hemoglobin:
- c) USG abdomen and pelvis