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Prevalence of Thyroid Disorders in Women of Reproductive Age Group with Abnormal Uterine Bleeding

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Abstract

Introduction: Abnormal uterine bleeding (AUB) is one of the most common presentations in the outpatient gynecological department. Numerous mechanisms, including thyroid hormone, controls the physiology of menstruation. Assessing thyroid function is essential for definitive management. Objective of study was to analyse and find thyroid dysfunction among patient of AUB.

Methods: This study is hospital-based, descriptive, cross-sectional study conducted at Kathmandu Medical College, Kathmandu, a tertiary centre. Study period was 14 months from December 1st, 2021 to January 2nd, 2023. Study included 126 patients meeting inclusion criteria. Thyroid function tests (TFT) was done in eligible under inclusion criteria. Prevalence of thyroid disorder and pattern of AUB associated with specific type of thyroid disorder was noted.

Results: 126 patients presented with AUB. Women over 40 years had highest prevalence of AUB (41.26%; 52 out of 126). In multipara, prevalence was 60.31% (76 out of 126 cases). Most prevalent pattern in AUB was Menorrhagia i.e 53.17% of cases (67 out of 126). 35 out of 126 cases (27.77%) had thyroid dysfunction. Of them, hypothyroidism was most prevalent occurring in 26.08% cases (34 out of 126). 1 out of 126 cases (0.79%) had hyperthyroidism. Majority of subclinical hypothyroidism (48.3%) was discovered in menorrhagia.

Thyroid dysfunction was caused by non-structural causes AUB in 65.71% patients (23 out of 35). Types of thyroid disorders and causes of bleeding were shown significantly correlated (p=0.048).

Conclusion: TFT can be routine test during evaluation of AUB to avoid unnecessary hormonal exposure and surgeries.

Keywords: AUB; hypothyroidism

Introduction

Abnormal uterine bleeding (AUB) is one of the most common presentation among women of various reproductive age group.[1] AUB can be caused by a number of different factors and is characterized by any change in the regularity or frequency of menstruation, as well as the length or volume of blood loss.[2] Thyroid dysfunction remains one of the most important cause for menstrual disorder. 20% of women have abnormal uterine bleeding when they first arrive.[3] Thyroid disorder is seen more common in women with menstrual irregularity as compared to general population.[4] AUB have presented with variety of reproductive disorders ranging from abnormal sexual development to menstrual irregularities, infertility and even premature menopause.[5] Both hypo and hyperthyroidism can result in menstrual irregulaties.[6] Even in its preclinical form, hypothyroidism typically results in menorrhagia.[7] Management of thyroid dysfunction can help to reverse menstrual abnormalities and improve the fertility. Usually many cases with hypothyroidism are seen

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unrecognized thus the prevalence of hypothyroidism is seen as high as 9.5% in females.[8]

Many symptoms of thyroid disease are also linked to irregular menstruation.[9] Thus any menstrual irregularities among those non-pregnant women justifies screening for thyroid disorder. As such, the objective of this study was to describe thyroid dysfunction among patient of AUB.

Methods

This study is a hospital- based, descriptive cross-sectional study, conducted at Kathmandu Medical College (KMC), Sinamangal, Kathmandu, a tertiary health centre. The study period was of 14 months from December 1st, 2021 to January 2nd 2023. Patient included were patients of reproductive age group from age 15 to 45 years. Patients who present with abnormal menstrual bleeding pattern and patient who give consent for the study were included. Sample size was calculated according to the study done by Kattel P, Baral G in 2017 at PMWH, Thapathali, prevalence of thyroid dysfunction in AUB is 20%

Sample size calculation is done as under,

Sample size (n)= $Z2pq/d^2$

Where,

Z= 1.96 at confidence level 95% (standard value = 1.96)

P= 20%

q= (1-p) = 80%

d= margin of error at 7% of prevalence

sample size (n) = $(1.96)2 \times 0.2 \times 0.8 / (0.07)^2$

= ~125.44, approximately 126.0

Sample size 126.0

Non-probability - Convenient Sampling technique was opted. Cases were enrolled during OPD days (Monday/ Thursday /Friday) between 9 Am to 5 Pm (Since regular OPD posting was not possible due to daily rotational duty at ward and OT). The study population consisted of all consecutive women who attended the gynaecological OPD having complain of abnormal p/v bleeding fulfilling the selection criteria. However, those under hormonal method of contraception, under medication for known thyroid disorder, with history of pregnancy related bleeding and those who refused to get enrolled in the study were excluded.

Once the approval from the Institutional Review Committee-KMC, Sinamangal was taken, patient fulfilling before mentioned selection criteria were recruited for the study. Detailed clinical examination including pallor, icterus, edema, lymphadenopathy, dehydration was done. Neck examination done to rule out thyroid disorders. vitals and systemic examination were performed. After the case history & clinical examinations, patient had undergone urine pregnancy test, Thyroid function test and ultrasonography of abdomen and pelvis. TFT were sent to certified laboratory of Kathmandu Medical college, Sinamangal, Kathmandu. TFT was done via automated quantitative "Enzyme Linked Fluorescent Assay" technique by Maglumi machine.

Obtained data were entered in a master chart daily. Interim analysis was done after enrolling 10% of total cases. The final data was analysed by computer programmes (Microsoft Excel & Statistical Package for Social Sciences Version 20). Mean and standard deviation was computed for variables like age, parity. Frequency in percentage was calculated for parity, marital status, types of thyroid dysfunction and abnormal uterine bleeding. Chi square test was applied and P value ($\leq$ 0.005) was taken as significant.

Results

There were total 126 cases of AUB attending gynaecological OPD who have met the selection criteria. These selected respondents were enrolled after taking written informed consent. Patients were interviewed to find out detailed history, examined and necessary investigation were done. Reports were traced and reviewed and database was made in SPSS 20. Analysis of data was done with help of SPSS version 20 software.

Descriptive statistics were used for demographic features.

Table 1: Frequency distribution of age group of patients

Age group(years)	Frequency(n=126)	Percentage (%)
<=20	12	9.52
21-30	18	14.29
31-40	44	34.93
>40	52	41.26
Mean ± SD = 36.25 ± 8.72 years		

Age ranges from 15-45 years. The average age of patient was 36.25±8.72 years. The majority of respondents were from age group >40years (41.26%) followed by age groups 31-40 years (34.93%).

The results showed majority of the respondents were multipara (60.31%) followed by primi para (20.63%) and nullipara (19.04%)

Frequency of distribution in thyroid level among patients of abnormal uterine bleeding

The results showed about 72 % (n=91) of AUB occurred in euthyroid patients. About 27.78% (n=35) patients had thyroid disorder. Among them 29 had subclinical hypothyroid, 5 had overt hypothyroid and 1 had hyperthyroid.

Frequency distribution according to bleeding pattern

Most common pattern of menstrual disorder seen was Menorrhagia which was analysed on basis of history of

menstrual cycle and amount of blood loss. This was seen in 67 cases that accounted for 53.17%. The second most common pattern seen was Metrorrhagia in 22 cases i.e 17.48% followed by Oligomenorrhea in 16 cases (12.6 9%), Meno-Metrorrhagia in 15 cases (11.9%) and 6 cases of polymenorrhoea (4.76%) (Table1)

The results showed commonest cause of abnormal uterine bleeding was non-structural (47.6%) followed by leiomyoma which accounted for (34.1%) and adenomyosis was (7.9%). Similarly, polyp was least common cause (4.0%) (Table 2)

Table 2: Frequency distribution of causes of abnormal uterine bleeding

Causes of bleeding	Frequency(n=126)	Percentage (%)
Non-Structural	60	47.6
Leiomyoma	43	34.1
Adenomyosis	10	7.9
Endometrial Hyperplasia	8	6.3
Polyp	5	4.0
Total	126	100.0

Table 3: Association between thyroid function and pattern of bleeding

Thyroid Status	Pattern of abnormal uterine bleeding (n= 126)					P value
	Meno-rrhagia n (%)	Meno-metro-rrhagia n (%)	Oligo-menorrhea n (%)	Metro-rrhagia n (%)	Poly-menorrhoea n (%)	
Euthyroid	49(53.8%)	11(12.1%)	9(9.9%)	18(19.8%)	4(4.4%)	0.507
Subclinical Hypothyroid	14(48.3%)	3(10.3%)	6(20.7%)	4(13.8%)	2(6.9%)	
Overt Hypothyroid	4(80%)	1(20%)	0(0)	0(0)	0(0)	
Hyperthyroid	0(0)	0(0)	1(100%)	0(0)	0(0)	

This study showed thyroid dysfunction was seen among 27.78% of patient with menstrual irregulaties. Among which subclinical hypothyroid was found mostly in Menorrhagia (48.3%) followed by oligomenorrhoea (20.7%). Similarly, Overt hypothyroid found to be most common in Menorrhagia (80%) and in Meno-Metrorrhagia (20%). Likewise, Hyperthyroid was tested to be hundred percent in Oligomenorrhea (100%).

There was insignificant association between thyroid function and bleeding pattern of patients (p=0.507). (Table 3)

Table 4: Association between causes of bleeding and types of thyroid disorder

Thyroid Level	Causes of Bleeding (n= 126)		Total	P value
	Non-Structural n (%)	Structural n (%)		
Euthyroid	37(40.7)	54(59.3)	91	0.048
Subclinical Hypothyroid	18(62.1)	11(37.9)	29	
Hyperthyroid	1(100)	0(0)	1	
Overt Hypothyroid	4(80)	1(20)	5	

Study shows there was significant association between types of thyroid disorder and cause of bleeding (P=0.048).

The results showed Euthyroid is found mostly in structural cause of bleeding (n=54) which is about 59.3%.

Likewise, Subclinical hypothyroid, hyperthyroid and Overt hypothyroid was found mostly in unstructural cause of bleeding i.e 18%, 1% and 4% respectively. (Table 4)

Discussion

Among females of reproductive age, AUB is one of the most prevalent findings. Thyroid dysfunction is discovered to be an occult reason that is often overlooked among a broad range of factors, including structural causes such as polyps, leiomyoma, adenomyosis, etc. When treating any type of menstrual disorder, thyroid dysfunction cannot be disregarded because it is prevalent in women[10] and has been shown to impact every event from menarche to menopause.[11]

Thyroid hormones affect the menstrual cycle resulting in both case of hyperthyroidism and hypothyroidism which ultimately may result in menstrual disturbances.[12] Treating the thyroid disorder can help to reverse menstrual abnormality and thus improve fertility.[13]

The aim for performing TFT in women with abnormal uterine bleeding is to rule out benign cause of the problem so as to offer correct management to the patient.

In this study, the mean age of AUB is 37 years with range of 36.25+- 8.72 years. It is similar to the mean age of 42 years (18-83) years, 43 years, 45 years (40-60) 47 (31-75) and 40years (range 32-75), years in the study which was conducted by Milosevic et al14, Upadhyaya et al 15, Sah et al16, Tansathit et al 17 and Khan et al 18 respectively.

Most of the abnormal uterine bleeding patients were in the age group of 40-45 years (41.26%) followed by 31-40 years (34.92%), 21-30 years (14.28%), <=20years (9.52%). This result is similar to the study of Bhavani et al1, Ali et al19 , Pahwa et al20and Narula et al21respectively as 37%, 37%, 42% and 32.8 % .

found that multiparous women accounted for the majority of AUB cases (28.2% in parity 2 and 20.5% in parity 3).

According to this study, non-structural causes account for 47.6% of irregular uterine bleeding, with uterine leiomyoma (34.1%), adenomyosis (7.9%), and endometrial hyperplasia (6.3%) following closely behind. Polyp was the least frequent cause of AUB, accounting for 4.0% of cases.

This finding is closely comparable to the study conducted by Bhavani et al[1] which showed non structural cause accounted for 45.5 % of cases followed by uterine leiomyoma (38.5%), malignancy and hyperplasia (7.5%), adenomyosis (6%) and polyp(6%).

Leiomyoma was found to be the commonest structural cause of abnormal uterine bleeding. It is likely due to its high incidence in reproductive age group.

This study shows, the most common pattern for abnormal uterine bleeding results to be Menorrhagia (53.17%) followed by metrorrhagia (17.48%), oligomenorrhoea (12.69%), meno-metrorrhagia (11.90%). And the least common was found out to be polymenorrhoea (4.76%).

This study is comparable to one by Khan et al[25], where results show menorrhagia was the most common presenting complaint of AUB (57.8%), followed by metrorrhagia (32.8%).

A study by Upadhayay et al.[26] reported that 57.55% of women had menorrhagia, 33.96% had metrorrhagia, 6.6% had polymenorrhea, and 1.89% had menometrorrhagia.

Another study conducted by Sah et al[16] , menorrhagia was found in 52.86% of 105 cases of AUB followed by metrorrhagia in 26.41%, menometrorrhagia in 13.21%, post-menopausal bleeding in 4.72% and polymenorrhagia in 1.89 %. Menorrhagia was found in 42% of women with AUB in a research by Ali et al.[19] where Oligomenorrhea was found in 26% of these women, followed by metrorrhagia (12%), menometrorrhagia (9%), amenorrhea (7%), and polymenorrhea (4%).

In contrast to above studies, according to Tansathit et al[17], among 226 women with AUB, 45.1% has metrorrhagia followed by postmenopausal bleeding in 19.5%, menometrorrhagia in 14.6%, Menorrhagia in 13.7%, endometrial hyperplasia in 5.7% and post coital bleeding in 1.3%.

It is mostly found that thyroid dysfunction may accompany menstrual disturbances and almost every clinician has found such menstrual patterns correlationamong women suffering from thyroid dysfunction.

In this study, 35 out of 126 cases i.e. 27.78 % had thyroid dysfunction whereas 72.2% of cases were found to be euthyroid. Amoung these cases of thyroid dysfunction, subclinical hypothyroidism was seen present in 29 cases i.e. 23.01% of total cases being followed by overt hypothyroidism in 3.96% of cases and hyperthyroidism in 0.79%.

A study by Bhavani et al.[1] found that 19% of patients had thyroid dysfunction, with 10% of those instances being subclinical hypothyroidism, whereas 7.5% of patients had overt hypothyroidism and 1.5% had hyperthyroidism.

Also, in the study by Pahwa at al 20, the results showed that 76% of cases were euthyroid, 2% were hyperthyroid, and 22% were hypothyroid.

The most prevalent menstrual abnormality in hypothyroidism in this study was menorrhagia (53.17%; n = 67), which was followed by metrorrhagia (17.48%), oligomenorrhea (12.69%), and meno-metrorrhagia (11.9%). The lowest rate was 4.76 % forpolymenorrhea (n=6).

This is comparable to a research by Kattel et al.[27] that found that menorrhagia was a prevalent complaint of AUB (36.6%). Menorrhagia was found to be present in 40.5% of AUB cases in a recent similar study conducted in Nepal by Thakur et al.[28]

Also, in the study conducted by Bhavani et al[1], the most common pattern of menstrual abnormality in hypothyroidism was menorrhagia. Where 73.3% overt hypothyroidism and 65% subclinical hypothyroidism presented with Menorrhagia.

As per study by Padmaleela et al[6] 57.13% of cases of menorrhagia were hypothyroid respectively.

In another study by Douglas et al[9], it was observed that 22.3% cases with menorrhagia had subclinical hypothyroidism.And Hypomenorrhoea, polymenorrhoea and Menorrhagia each sharing 33.3% were noted in hyperthyroid patients.

Here in our study, euthyroid patients constituted of 72%. And these findings were also reported in study by Bhavani et al.[1]

This study shows among 126 recruited cases, 35 cases (27.77%) had reported thyroid dysfunction.

Amoung cases of thyroid disorder, subclinical hypothyroidism was 62.1% (n=18) in non- structural causes and 37.9% (n=11) in structural cases. Similarly, overt hypothyroidism was present 80% (n=4) in non-structural causes and 20% (n=1) in structural causes.

Among total thyroid dysfunction 34.28% occurred in structural causes and 65.7% occurred in non-structural causes.

About 59.3% cases of euthyroid was due to structural causes.

At a 95% confidence level, this indicates a statistically significant correlation between the cause of bleeding and

thyroid disorders (p=0.048).

It is similar to a study by Bhavani et al.[1] that found 19% of 200 cases with AUB had thyroid dysfunction, with 23.6% of those cases having a structural etiology and 76.4% having a non-structural cause.

Limitation of study

Because of study's short duration, it was not possible to follow up on cases with over an extended period of time or to determine the efficacy of patients chosen course of treatment. Sampling was done according to the convenience of researcher only.

Conclusion

According to this study, thyroid dysfunction was prevalent among cases of AUB. Performing routine TFT among every patient with abnormal uterine bleeding in reproductive category age group can help make diagnosis early and prompt treatment can be started. However, such studies must be conducted in larger sample with adequate regular follow up to assess the long-term result and also to see if conservative management is sufficient or patient needs operative interventions.

This study has shown most of women with abnormal bleeding pattern are euthyroid and presenting complaint is heavy menstrual flow. There is association of cause of bleeding with thyroid dysfunction i.e structural causes are there to cause abnormal bleeding pattern. Thus, sometimes operative management may not only be sufficient rather patient may need thyroid medication depending upon type of thyroid dysfunction.

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