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Original Article

Evaluation of Thyroid Dysfunction in AUB & Its Correlation with Endometrial Histopathology at Tertiary Care Centre

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ABSTRACT

Background: Endometrial biopsy is the usual investigation performed in AUB (Abnormal uterine bleeding) & it can help to determine the etiology & decide the management of AUB cases.[1]
Objective: To assess incidence of the thyroid dysfunction in women with abnormal uterine bleeding. To evaluate the age group in which thyroid dysfunctions are more common. To study the different thyroid abnormalities in AUB & different endometrial histopathology pattern in AUB.
Methods: This cross-sectional prospective study was conducted in Department of Obstetrics & Gynecology, RMC, JLN Medical College, AJMER between June 2023 & May 2024 included all women age group of 18-49 years with abnormal uterine bleeding.
Results: Among 100 patients, thyroid profile as a screening test has a sensitivity of 81.1%, specificity of 87.5%, positive predictive value of 90, negative predictive value of 85.1, & an overall accuracy of 85.
Conclusion: As lots of study done for association between thyroid disorders & AUB & the incidence of thyroid disorders in women with AUB, but in our study we study different thyroid abnormalities in AUB & its correlation with endometrial biopsy.

Keywords*:Pelvic Inflammatory disease, Sex hormone Binding globulin, Tri-iodothyronine, Thyroxin Abnormal uterine bleeding, Body mass index, Board of radiation & isotope technology, Follicle Stimulating Hormone, Free Thyroxin.*

INTRODUCTION

AUB (Abnormal uterine bleeding) is defined as any variation from the normal menstrual cycle & include changes in regularity, frequency, duration of flow, or amount of blood loss.[1] AUB is a common but complicated clinical presentation, accounting for at least 20% of new outpatient visits significantly affecting the quality of life.[2] After adolescence, menstrual cycles generally a cycle of 24 to 38 days, with duration of menstrual flow fewer than 7 days. The most frequent cause of irregular bleeding in the reproductive age group is hormonal, although other causes such as pregnancy related bleeding (abortion, ectopic pregnancy) should always considered. AUB may be acute or chronic. Acute AUB is defined as heavy bleeding which require immediate intervention to prevent ongoing losses. Chronic AUB defined as bleeding that has been present during since last 6 months.

Both hyper & hypothyroidism may present in menstrual disturbances.[6] 9-30% of women of reproductive age suffer from menorrhagia, as most of the cases are associated with anovulatory menstrual cycles.[7] so the prevalence increases with age. Endometrial biopsy is the usual investigation performed in AUB & it can help to determine the etiology & decide the management of AUB cases.[12]Histopathological examination is the gold standard for studying the pattern of endometrium in various causes of AUB. The importance of studying the histological pattern of endometrium in AUB in different age group is to correctly diagnose the underlying etiology thus, help in the management of disease.

METHODOLOGY

Study Design & Setting: This cross-sectional prospective study was conducted at Department of OBGY, RMC, JLN Medical College, AJMER between June 2023 & May 2024 included all women age group of 18-49 years with abnormal uterine bleeding.

Study Population & Sample Size: Patients study was conducted on 100 women attending to outpatient department with complaints of AUB.

Inclusion Criteria

- Females of age group of 18-49 years with AUB & those who don't have demonstrable pelvic pathology.

Exclusion Criteria

Women with other known case of AUB

- Pregnant women
- Presence of pelvic pathology like fibroids, polyp, cervical growth etc.
- History of bleeding diathesis & clotting abnormalities.
- On drugs like aspirin, heparin, anti-thyroid agents, thyroxin & other hormonal treatment.
- Women with Diabetes mellitus & chronic liver/renal disease.
- Women with intrauterine contraceptive device (IUCD) in situ & Oral contraceptive pills users.

Data Collection Procedure

Consent was obtained in all cases. Patient general physical examination including BP, Pulse rate, Respiratory rate temperature, edema, weight, BMI, chest & heart auscultation with Local examination of thyroid, per abdomen examination was done. The detailed gynecological history & also the detailed present & past menstrual history was taken from the patients. Basic investigation was done. Blood samples of all the patients was sent for CBC, Blood sugar, coagulation profile & thyroid profile which including Thyroxin (T4), TSH & Routine urine examination. After this urine pregnancy test followed by bleeding & clotting time USG abdomen & pelvis done. After all the exclusion criteria rule out & diagnosis confirmed, patient was prepared for TFT. The thyroid profile was measured in central laboratory unit by chemiluminescenceimmuneassay (CLIA) technique in maglumi 800 machine. Collected data was filled in computer generator (eg. Microsoft excel sheet) & was compared.

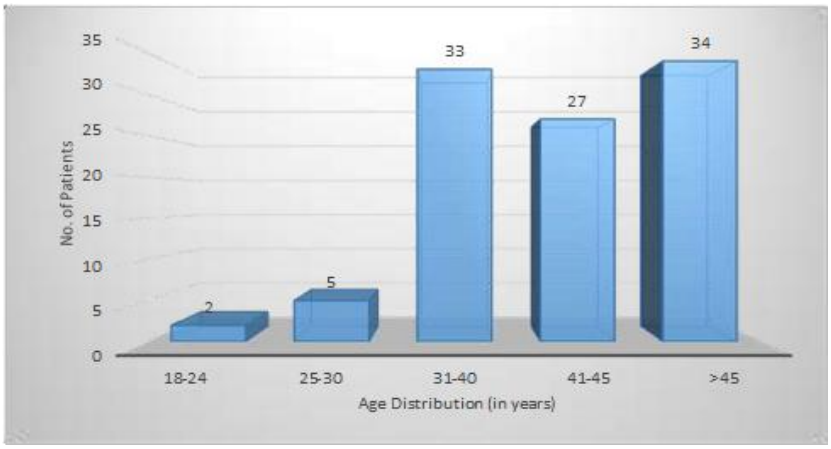
Ethical Considerations: The study was approved by the Institutional Ethics Committee of JawaharLal Nehru Medical College in Ajmer.

Statistical Analysis: data was collected & statistical analysis done.

RESULTS

Demographic Profile The largest proportion of patients, 34 (34%), were older than 45 years, followed by 27 (27%) in the 4145 age group. Patients aged 31-40 accounted for 33 (33%), while those in the 25-30 age groups represented 5 (5%) patients & in the 18-24 year age group only 2 patients (2%). The mean age of the study population was 41.86 ± 5.74 years, indicating that most patients were middle-aged to older adults.

Age Distribution (in years)	No. of Patients	Percentage
18-24	2	2
25-30	5	5
31-40	33	33
41-45	27	27
>45	34	34
Total	100	100
Mean ± SD	41.86±5.74	



TSH Status

In our study majority of patients i.e. 52 patients (52%) had TSH level above normal limit > 4.5mIU/L, 43 patients (43%) had normal TSH between 0.4-4.5mIU/l & 5% cases below 0.4miu/l TSH level.

Table2 Distribution of study population according to serum TSH level

TSH (mIU/L)	Number	Percentage
<0.4	5	5
0.4-4.5	43	43
>4.5	52	52
TOTAL	100	100

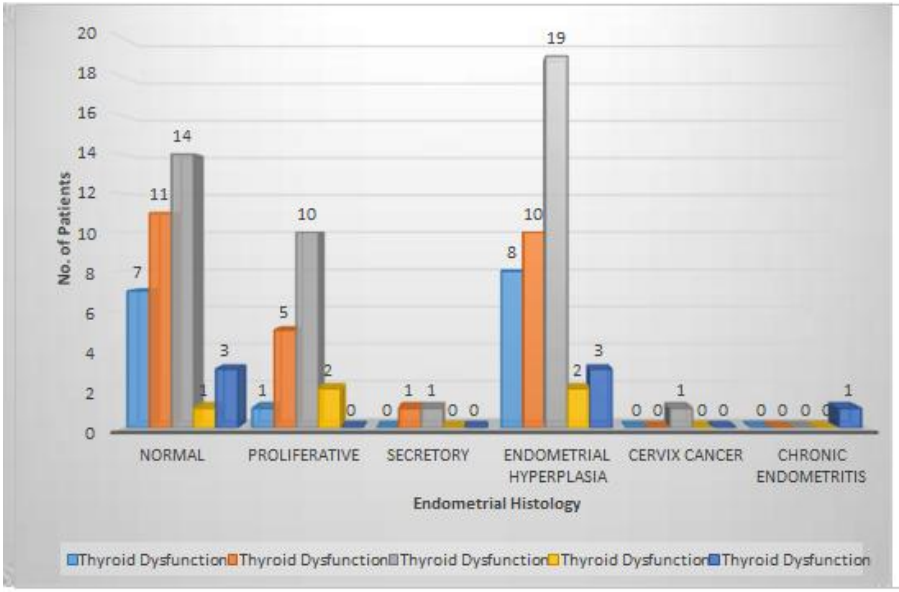
CORRELATION BETWEEN THYROID DYSFUNCTION & TYPE OF BLEEDING DISORDER-

Menorrhagia was the most prevalent bleeding disorder overall, with the highest occurrence in hypothyroid patients (50.91%), followed by hyperthyroid (23.64%) &euthyroid (14.55%) individuals. Amenorrhea was most commonly seen in hypothyroid (50%) & hyperthyroid (37.5%) patients, whereas hypomenorrhea appeared predominantly in euthyroid& hyperthyroid patients, both at 40%. Metromenorrhagia &oligomenorrhea were relatively evenly distributed, with oligomenorrhea being most frequent among hypothyroid patients (39.13%). Overall, the majority of bleeding disorders were observed in hypothyroid (45%) & hyperthyroid (27%)

CORRELATION BETWEEN THYROID DYSFUNCTION & ENDOMETRIAL HISTOLOGY-

Endometrial hyperplasia was the most common histological finding, observed in 42% of patients, with the highest prevalence among hypothyroid individuals (45.24%), & followed by hyperthyroid (23.81%) &euthyroid (19.05%) patients. A **normal endometrium** was found in 36% of patients, predominantly among hypothyroid (38.89%) & hyperthyroid (30.56%) individuals. The **proliferative phase** was noted in 18% of cases, most frequently among hypothyroid patients (55.56%) & to a lesser extent among hyperthyroid (27.78%) & subclinical hyperthyroid (11.11%) groups. **Secretory phase** histology was rare, seen in only 2 patients—one each in the hyperthyroid & hypothyroid categories. **Cervical cancer&chronic endometritis** were uncommon findings, each reported in a single patient with hypothyroidism & subclinical hypothyroidism respectively. Overall, hypothyroid patients exhibited the widest range & highest frequency of endometrial abnormalities, highlighting a significant association between hypothyroidism & altered endometrial histology.

Endometrial Histology	Thyroid Dysfunction										Total
	Euthyroid		Hyperthyroid		Hypothyroid		Subclinical Hyperthyroid		Subclinical Hypothyroid		
	No. of Patients	Percentage	No. of Patients	Percentage	No. of Patients	Percentage	No. of Patients	Percentage	No. of Patients	Percentage	No. of Patients
Normal	7	19.44	11	30.56	14	38.89	1	2.78	3	8.3	36
Proliferative	1	5.56	5	27.78	10	55.56	2	11.11	0	0.0	18
Secretory	0	0.00	1	50.00	1	50.00	0	0.00	0	0.0	2
Endometrial Hyperplasia	8	19.05	10	23.81	19	45.24	2	4.76	3	7.1	42
Cervix Cancer	0	0.00	0	0.00	1	100.0	0	0.00	0	0.0	1
Chronic endometritis	0	0.00	0	0.00	0	0.00	0	0.00	1	100.0	1
Total	16	16.00	27	27.00	45	45.00	5	5.00	7	7.0	100



- The study showed a significant correlation between increasing age & thyroid dysfunction.
- There was a significant correlation with the duration of AUB & no. of episodes.
- There was no correlation with parity or the type of AUB.
- The BMI showed a significant correlation.
- The USG estimation did not show a significant correlation.
- The hemoglobin level showed a significant correlation.
- Menorrhagia was the most prevalent bleeding disorder overall, with the highest occurrence in hypothyroid patients (50.91%), followed by hyperthyroid (23.64%) &euthyroid (14.55%).
- TSH is a good screening test with a sensitivity of 81.1 % & specificity of 87.5 %.the positive & negative predictive value were 90% & 85.5% respectively.
- Endometrial histology revealed that 36 patients (36%) had endometrial hyperplasia, making it the most common finding. Normal histology was observed in 36 patients (36%), while 13 patients (13%) showed proliferative endometrium. Secretory endometrium was seen in 11 patients (11%), & endometrial cancer was diagnosed in 1 patient (1%).chronic endometritis seen in 3 (3%) patients.
- A **normal endometrium** was found in 36% of patients, predominantly among hypothyroid (38.89%) & hyperthyroid (30.56%) individuals. The **proliferative phase** was noted in 18% of cases, most frequently among hypothyroid patients (55.56%) & to a lesser extent among hyperthyroid (27.78%) & subclinical hyperthyroid (11.11%) groups. **Secretory phase** histology was rare, seen in only 2 patients—one each in the hyperthyroid & hypothyroid categories. **Cervical cancer&chronic endometritis** were uncommon findings, each reported in a single patient with hypothyroidism & subclinical hypothyroidism respectively.

Comparison with Prior Studies

Our results align with those in study of Dr. B.S. vani they reported Endometrial histology revealed that patients 20% had endometrial hyperplasia while 30.3% showed proliferative endometrium. Secretory endometrium was seen in 25 % patients, & endometrial cancer was diagnosed in 0.86% .chronic endometritis seen in 2.16% patients.

In our study of 100 patients of AUB, most common menstrual pattern is menorrhagia i.e. 55 (55%) followed by oligomenorrhea in 23 %, amenorrhea and metromenorrhgia both in 8 %, hypomenorrhea in 5 % and polymenorrhea in 1%.Similar results reported from study of Dr.bishal raj joshi, in their study menorrhagia was the most common presenting symptoms menorrhagia 47.37% followed by metromenorrhgia 21%, hypomenorrhea 6.31%.

Similar results reported from study of Dr.sailajagollakota , in their study menorrhagia was the most common presenting symptoms menorrhagia 78.5%% followed by oligomenorrhea in 38.6%,hypomenorrhea 5.7%.

DISCUSSION

The distribution of endometrial histological patterns among patients with various thyroid dysfunctions, including euthyroid, hyperthyroid, hypothyroid, subclinical hyperthyroid, and subclinical hypothyroid states. **Endometrial hyperplasia** was the most common histological finding, observed in 42% of patients, with the highest prevalence among hypothyroid individuals (45.24%), and followed by hyperthyroid (23.81%) and euthyroid (19.05%) patients. A **normal**

endometrium was found in 36% of patients, predominantly among hypothyroid (38.89%) and hyperthyroid (30.56%) individuals. The **proliferative phase** was noted in 18% of cases, most frequently among hypothyroid patients (55.56%) and to a lesser extent among hyperthyroid (27.78%) and subclinical hyperthyroid (11.11%) groups. **Secretory phase** histology was rare, seen in only 2 patients—one each in the hyperthyroid and hypothyroid categories. **Cervical cancer** and **chronic endometritis** were uncommon findings, each reported in a single patient with hypothyroidism and subclinical hypothyroidism respectively. Overall, hypothyroid patients exhibited the widest range and highest frequency of endometrial abnormalities, highlighting a significant association between hypothyroidism and altered endometrial histology.

Limitations

The cross-sectional nature of the study constrains causal assumptions. Recall bias may have influenced the precision of self-reported lifestyle behaviors.

CONCLUSION

As lots of study done for association between thyroid disorders & AUB & the incidence of thyroid disorders in women with AUB, but in our study we study different thyroid abnormalities in AUB & its correlation with endometrial biopsy.
We concluded from the present study that there is a significant association between thyroid disorders & AUB. The incidence of thyroid disorders in women with AUB, particularly if the 15% of hypothyroidism is justify the cost of screening in this selective population & the risk of progression to hypothyroidism (about 13% per year) in patients with subclinical disease & the cost benefit ratio also emphasizes the need for selective screening.

In our study found substantial patients with AUB suffering from thyroid dysfunction which was similar to previous studies done in similar setting. Hypothyroidism was most common finding in menorrhagia &metromenorrhagia& hyperthyroidism was found in oligomenorrhoea&hypomenorrhea.

Endometrial study gives significant etiological information in AUB when interpreted with relevance to age & other clinical data, thus guiding the appropriate management.

Early detection of subclinical disease by selective screening facilitates appropriate therapy early in the course of the disease. Endometrial sampling is a safe office procedure with a high sensitivity to evaluate the endometrium. Endometrial study should be considered in perimenopausal age wherein the incidence of atypical endometrial hyperplasia & early stages of carcinoma is more common thus exercising timely management.

As such, thyroid function tests (TFTs) are an effective & economical means of identifying potential underlying causes of AUB. Hypothyroidism is frequently associated with increased endometrial thickness, &histopathological examination remains the gold standard for determining the precise cause of AUB. This study underscores the importance of a holistic approach in the management of AUB, where thyroid dysfunction is considered a potentially reversible cause of abnormal bleeding, & endometrial biopsy remains crucial diagnostic tool in guiding treatment decisions.

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