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Original Research Article

HISTOPATHOLOGICAL SPECTRUM OF ENDOMETRIAL BIOPSY/CURETTAGE IN ABNORMAL UTERINE BLEEDING AND ITS ASSOCIATION WITH THYROID STATUS

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ABSTRACT

Background: To study the histopathological spectrum of endometrial biopsy in cases of Abnormal uterine bleeding (AUB) and its association with thyroid status.

Material and Methods: It was a hospital based prospective observational study conducted in the Department of Pathology, Northern Railway Central Hospital, New Delhi. A total of 250 patients who presented with abnormal uterine bleeding were included in the study and their histopathological examination was conducted on the endometrial samples obtained. The data pertaining to all the clinical details, physical examination and investigations including thyroid function tests were collected. The patients were classified based on their thyroid function into euthyroid, subclinical hypothyroidism, hypothyroidism, and hyperthyroidism. The clinical data including the age, thyroid status, and histopathological findings, were analyzed using statistical methods to identify any significant association.

Results: A total of 250 patients in different age groups with a mean age of 44.41 years were included in the study. The findings indicated that the majority of the patients were euthyroid, thyroid dysfunction was identified in only 20% of the patients, with hypothyroidism being the most common thyroid dysfunction seen in 10% of the patients. In the present study 30.8% had proliferative endometrium, followed by secretory endometrium in 28%, disordered proliferative endometrium in 14.4% and endometrial polyp was seen in 8.4% of the patients. Endometrial hyperplasia without atypia was found in 6.4% which was more common in hypothyroid group compared to the other thyroid groups, suggesting a possible link, although it was not found to be statistically significant.

Conclusion: Thyroid dysfunction, particularly hypothyroidism, was prevalent among women with AUB, however no statistically significant association was found in our study, and thus its direct impact on endometrial histopathology remained unclear. The study highlighted the need for further investigation into the underlying mechanisms by which thyroid disorders may influence the abnormal bleeding pattern, and it was suggested that the thyroid function should be routinely assessed in women with AUB. Future studies with larger sample sizes and more rigorous statistical analysis are warranted to better understand the relationship between thyroid dysfunction and endometrial pathology with the aim to optimize treatment and reduce invasive procedures.

Keywords: Endometrial histopathology, Thyroid function test, Abnormal uterine bleeding.

INTRODUCTION

Abnormal uterine bleeding (AUB) is a term used to describe any type of bleeding that does not fall within the normal range for the amount, frequency, duration and cyclicity. AUB is one of the most frequent presentations to Gynaecology OPD.[1]

About one third of hysterectomies are carried out for the menstrual disorders alone, and thyroid dysfunction was one of the important cause for menstrual disturbances. Both hyper and hypothyroidism can be the reason for menstrual disturbances.[2] Hypothyroidism usually causes menorrhagia and hyperthyroidism causes oligomenorrhea.[3] Therefore, the awareness of prevalence of thyroid disorders in the population with complaints of AUB, the menstrual pattern associated with different thyroid disorders and their associated endometrial histopathological findings are crucial in the management of AUB. Thyroid function test (TFT) is a cost effective, easily available test which can help to identify a potentially treatable cause of AUB, thus avoiding unnecessary interventions like hormonal treatment and hysterectomy.

Endometrial biopsy (EB) using curettage/pipelle aspirations are the usual invasive procedures performed in cases of AUB to determine the etiology and to decide their management. Histopathological examination is the gold standard for studying the different patterns of endometrium in the various causes of AUB. The importance of studying the histological pattern of endometrium in AUB across different age groups lies in correctly diagnosing the underlying etiology, which helps in the management of disease. The most important objective in the postmenopausal age group is to rule out or to confirm malignancy. Endometrial biopsy is also helpful in the diagnosis of premalignant conditions, making it a helpful tool for early diagnosis and management of AUB.

Aims and Objectives: To study the association of the patterns of endometrial histological findings in AUB patients across different age groups attending Gynaecology OPD at Northern Railway Central Hospital and its association with their thyroid status as Euthyroid, Subclinical Hypothyroidism, Hypothyroidism and Hyperthyroidism.

MATERIALS AND METHODS

This was a prospective observational study which was conducted in the Department of Pathology, Northern Railway Central Hospital, New Delhi from December 2022 to June 2024. This thesis study was conducted after obtaining the Ethical Clearance from the Institutional ethical committee. All the cases who presented to the OPD with complaints of abnormal uterine bleeding, their clinical data, physical examination, all the routine investigations, thyroid function tests were collected and histopathology was performed. The data was analyzed using SPSS version 25.0 to identify any significant association. For statistical significance, p value of less than 0.05 was considered statistically significant.

Inclusion Criteria: A total of 250 women with abnormal uterine bleeding, across different age groups were selected for the study.

Exclusion Criteria: The cases of cervical/vaginal pathology, known bleeding disorders, intrauterine contraceptive device usage, pelvic infections, pregnancy-related bleeding, unsatisfactory biopsy samples, and patients on thyroid medication were excluded from the study.

RESULTS

A total of 250 patients with AUB across different age groups were included in the study. The patterns of endometrial histological finding and thyroid status were evaluated. Majority of the patients were in the age group of 41-50 years with a mean age of 44.41 years. Most of the patients were multiparous (80.4%). 50.4% patients presented with complaints of heavy menstrual bleeding out of which the majority (77.6%) had a duration of at least 6 to 12 months. Patients with endometrial carcinoma most commonly presented with postmenopausal bleeding (14%). [Table 1]

The various histopathological findings and their prevalence in different age groups were evaluated. Proliferative endometrium was the most common histopathological finding (30.8%) and it was more common in 31 to 40 years age group (40.25%). Endometrial carcinoma and atrophic endometrium were more prevalent in the 51 to 60 years age group. [Table 2]

The patients were evaluated for their weight and height, and BMI was calculated for each patient. They were categorized into normal, overweight and obese by Asia-Pacific BMI classification. In patients who were overweight and obese, hyperplasia without atypia was higher, 11.11% in overweight and 4.44% in obese, as compared to the normal BMI group.

Out of 250 patients, 200 were euthyroid, 25 hypothyroid, 23 had subclinical hypothyroidism. and 2 had hyperthyroidism. Hyperplasia without atypia was more common in the hypothyroid group (16.00%) compared to the subclinical hypothyroid (8.70%) and euthyroid groups (5.00%), which suggested a possible link, though no statistically significant association between different thyroid profile parameters and histopathology could be established with a p value of 0.063. [Table 3 & 4]

Endometrial thickness (ET) was evaluated by Transvaginal sonography (TVS), the criteria of increased thickness of endometrium in premenopausal patients was taken as more than 16mm and in postmenopausal patients more than 4mm. 20% of the 250 patients in the study had thickened endometrium which was found to be 6% with atypical hyperplasia, 20% with disordered proliferative endometrium, 12% with endometrial

carcinoma 30% with endometrial polyp and 26% with hyperplasia without atypia. [Table 5]

Table 1: Age distribution (n=250)

Age	Frequency	Percentage
20 to 30 years	17	6.80%
31 to 40 years	81	32.40%
41 to 50 years	98	39.20%
51 to 60 years	34	13.60%
61 to 70 years	14	5.60%
71 to 80 years	6	2.40%
Mean± SD	44.41 ± 10.5	
Median (25th-75th percentile)	44(37-49)	

Table 2: Histopathological Pattern distribution (n=250)

Histopathological patterns	Frequency	Percentage
Proliferative endometrium	77	30.80%
Secretory endometrium	70	28.00%
Atrophic endometrium	12	4.80%
Disordered proliferative endometrium	36	14.40%
Interval endometrium	1	0.40%
Endometrial polyp	21	8.40%
Hormonal effect	6	2.40%
Hyperplasia without atypia	16	6.40%
Atypical hyperplasia	3	1.20%
Endometrial carcinoma	7	2.80%
Acute endometritis	1	0.40%

Table 3: Thyroid status distribution

Thyroid status	Frequency	Percentage
Subclinical hypothyroidism	23	9.20%
Hypothyroidism	25	10.00%
Euthyroid	200	80.00%
Hyperthyroidism	2	0.80%
Total	250	100.00%

Table 4: Association of histopathological Pattern with thyroid status

HPE	Subclinical hypothyroidism (n=23)	Hypothyroidism (n=25)	Euthyroid(n=200)	Hyperthyroidism (n=2)	Total	P Value
Acute Endometritis	0 (0.00%)	0 (0.00%)	1 (0.50%)	0 (0.00%)	1 (0.4%)	0.063
Atrophic endometrium	0 (0.00%)	0 (0.00%)	12 (6.00%)	0 (0.00%)	12 (4.80%)	
Atypical Hyperplasia	1 (4.35%)	1(4.00%)	1 (0.50%)	0 (0.00%)	3 (1.20%)	
Disordered proliferative	1 (4.35%)	3 (12.00%)	31 (15.50%)	1 (50.00%)	36 (14.40%)	
Endometrial carcinoma	0 (0.00%)	1 (4.00%)	6 (3.00%)	0 (0.00%)	7 (2.80%)	
Endometrial polyp	2 (8.70%)	1 (4.00%)	18 (9.00%)	0 (0.00%)	21 (8.40%)	
Hormonal Effect	0 (0.00%)	1 (4.00%)	5 (2.50%)	0 (0.00%)	6 (2.40%)	
Hyperplasia without atypia	2 (8.70%)	4 (16.00%)	10 (5.00%)	0 (0.00%)	16 (6.4%)	
Proliferative endometrium	9 (39.13%)	9 (36.00%)	59 (29.5%)	0 (0.00%)	77 (30.80%)	
Secretory Endometrium	8 (34.78%)	5 (20.00%)	56 (28.00%)	1 (50.00%)	70 (28.00%)	
Interval endometrium	0 (0.00%)	0 (0.00%)	1 (0.50%)	0 (0.00%)	1 (0.40%)	
Total	23 (100%)	25 (100.00%)	200 (100%)	2 (100.00%)	250 (100%)	

Table 5: Association of Histopathological findings with Endometrial thickness

HPE	Normal ET(n=200)	Thick ET(n=50)	Total	P value
Acute endometritis	1(0.50%)	0(0%)	1(0.40%)	
Atrophic endometrium	12(6%)	0(0%)	12(4.80%)	
Atypical hyperplasia	0(0%)	3(6%)	3(1.20%)	
Disordered proliferative	26(13%)	10 (20%)	36(14.40%)	
Endometrial carcinoma	1(0.50%)	6(12%)	7(2.80%)	<.0001*
Endometrial polyp	6(3%)	15(30%)	21(8.40%)	
Hormonal effect	6(3%)	0(0%)	6 (2.40%)	
Hyperplasia without atypia	3(1.50%)	13(26%)	16(6.40%)	
Proliferative endometrium	75(37.50%)	2(4%)	77(30.80%)	
Secretory endometrium	69 (34.50%)	1(2%)	70(28%)	
Interval endometrium	1(0.50%)	0(0%)	1(0.40%)	
Total	200(100%)	50(100%)	250(100%)	

*** Fisher's exact test**

DISCUSSION

AUB is the most common clinical complaint affecting women of all ages, accounting for about one-third of all patients visiting gynaecology OPD, and is often associated with a wide range of underlying etiologies.[5] In a study conducted by Tamilarasi S et al thyroid dysfunction, including both hypothyroidism and hyperthyroidism, accounted for 30%-40% of systemic disorders causing AUB which could be readily diagnosed by performing TFT.[6] In the present study, the histopathological findings of endometrial biopsies in women with AUB were evaluated along with an analysis of the patient's thyroid status. The results provided insight into the histopathological spectrum of AUB and the potential association with thyroid dysfunction.

Association of histopathological findings in AUB patients with different age groups

In the present study of 250 patients, AUB was most common in the age group of 41 to 50 years (39.20%) followed by 31 to 40 years age group (32.40%). In a study conducted by Vani B. S. et al on 231 patients, it was reported that the most common age group presenting with AUB was 40-49 year age group (47.18%) followed by 30-39 years (33.76%).[7]

In our study Proliferative endometrium was the most common histopathological finding in the 31 to 40 years age group (40.25%). Disordered proliferative endometrium was significantly higher in the 41 to 50 years (23.47%) age groups. Hyperplasia without atypia was found particularly in females aged 61 to 70 years (14.29%). Majority of patients with atypical hyperplasia (16.67%) were in the 71 to 80 years age group (50%) in the current study. Endometrial carcinoma and atrophic endometrium were more prevalent in postmenopausal age group. These findings were in concordance with study conducted by Tilva KK et al.[8]

Association of AUB with histopathological findings in endometrial biopsies

The most common HPE finding in the current study was proliferative endometrium, observed in 77(30.80%) cases, followed by secretory endometrium in 70(28.00%) cases. In a study conducted by Rai A et al, the most common histopathological finding in endometrial biopsies was proliferative type endometrium accounting for 79.8%.[9] Khanna K et al also found proliferative phase endometrium (42.5%) to be the commonest histopathological finding in his study followed by the secretory phase endometrium (23.7%).[10]

Association of BMI with histopathological findings in endometrial biopsies

In our study it was observed that hyperplasia without atypia was significantly higher in the overweight (11.11%) and obese (4.44%) groups compared to the normal BMI group (0%). Disordered proliferative endometrium was significantly higher in the overweight group (21.11%) compared to the normal BMI (11.54%) and obese (10.19%) groups. In a study conducted by Akalyaa K et al, the percentage of women having hyperplasia with or without atypia was more in those with BMI of ≥25.[11]

Association of endometrial thickness with histopathological findings in endometrial biopsies

Majority of the patients in our study (80%) had a normal endometrial thickness on ultrasound, which is consistent with previous study by Khanna K et al.10 Thick ET was observed in endometrial polyp (30%), disordered proliferative endometrium (20%), hyperplasia without atypia (26%), atypical hyperplasia (6%) and endometrial carcinoma (12%) in our study. It is comparable to the study conducted by Mishra P et al, in which endometrial thickness≥20mm was observed in atypical endometrial hyperplasia (33.33%) followed by adenocarcinoma (22.22%).[12]

Association of thyroid status with histopathological findings in endometrial biopsies

Both hyperthyroidism and hypothyroidism can lead to AUB, affecting quality of life and overall health. In hypothyroidism reduced thyroid hormone level leads to alterations in the menstrual cycle, often causing heavy menstrual bleeding or prolonged bleeding. This occurs because thyroid hormones have a role in regulating the metabolism of sex hormones, including estrogen and progesterone. Elevated levels of TSH in hypothyroidism can cause increased prolactin secretion, which may inhibit ovulation, leading to anovulatory cycles.[13] Anovulation is a significant contributor to AUB, as it results in unopposed estrogen stimulation of the endometrium without balancing effect of progesterone, leading to irregular and heavy bleeding.

Hyperthyroidism also disrupts menstrual cycles. Women with hyperthyroidism may experience less frequent menstrual periods or even amenorrhea. The excessive thyroid hormones accelerate metabolism, which can affect the hypothalamic-pituitary-ovarian axis and alters the normal menstrual cycle.[14]

Most of the patients in the present study were in euthyroid category (80%), followed by hypothyroid category (10%) and subclinical hypothyroid category (9.20%) with only 0.8% cases in hyperthyroid category. In a study conducted by Rai A et al thyroid dysfunction was prevalent in 24.9% of AUB patients, out of which 14.4% of patients had subclinical hypothyroidism which was the most common thyroid dysfunction and 9.2% patients had overt hypothyroidism.9 Thyroid disorder was prevalent in 24% of AUB patients in a study conducted by Usha Rani et al.[15] Out of these cases, overt hypothyroidism was found to be 22% and hyperthyroidism was seen in 2% patients, while 76% were euthyroid.

The study aimed to correlate thyroid dysfunction with endometrial histopathological findings. While there was a higher frequency of endometrial hyperplasia without atypia in hypothyroid patients (16.00%) compared to euthyroid (5.00%) and subclinical hypothyroid (8.70%) patients, this difference was not statistically significant. The lack of a significant association between thyroid dysfunction and specific endometrial patterns suggested that while thyroid status can influence menstrual patterns, it may not directly alter the histopathological appearance of the endometrium in a manner that is consistently detectable through biopsy. This observation aligned with the findings of other studies that suggest thyroid dysfunction influences menstrual cycles and bleeding patterns, but its direct effect on endometrial histology was less clear.

Limitations

There are several limitations to this study. First, the study was conducted in a single tertiary care hospital, which may limit the generalizability of the findings. Second, the sample size, although reasonable, could have been larger to achieve more robust statistical conclusions, especially when assessing the relationship between thyroid dysfunction and endometrial histology

CONCLUSION

This study provided valuable insight into the histopathological findings of endometrial biopsies in women with abnormal uterine bleeding (AUB) and the associated thyroid status. The findings demonstrated that AUB was most common in the perimenopausal age group, with the majority of patients being euthyroid. While thyroid dysfunction was noted in 20% of the study population, with hypothyroidism being the most prevalent, no significant correlation between thyroid dysfunction and endometrial histopathological findings was established.

Endometrial biopsy remains an important diagnostic tool in the evaluation of AUB, helping to identify various pathologies, including hyperplasia and carcinoma. However, thyroid dysfunction, though a relevant clinical factor in the management of AUB, does not appear to significantly alter the histopathological patterns of the endometrium. Therefore, while thyroid function tests should be routinely considered in women presenting with AUB, further studies with larger sample sizes and more comprehensive diagnostic workups are needed to better understand the intricate relationship between thyroid dysfunction and endometrial pathology.

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, and endometrial biopsy remains a crucial diagnostic tool in guiding treatment decisions.

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