Section: Pathology

Original Research Article

MORPHOLOGICAL STUDY OF ENDOMETRIAL GLANDULAR LESIONS IN THE PERIMENOPAUSAL AND POSTMENOPAUSAL AGE GROUP

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ABSTRACT

Background: Endometrial glandular lesions encompass a spectrum of pathological conditions, ranging from benign hyperplasia to malignant changes. The incidence of these lesions rises significantly during the perimenopausal and postmenopausal stages due to hormonal fluctuations and changes in the endometrium. Early detection and accurate morphological evaluation of these lesions are critical for timely management and prevention of progression to malignancy. **Aim:** To comprehensively examine and characterize the morphological features of endometrial glandular lesions occurring in women within the perimenopausal and postmenopausal age group. **Materials and Methods:** This is a prospective, observational study conducted over a period of two years (September 2022 to August 2024) in the Department of Pathology at MGM Medical College & LSK Hospital Kishanganj, Bihar. A total of 100 perimenopausal and postmenopausal women with abnormal uterine bleeding were included in the study. Endometrial biopsy specimens were obtained and evaluated for various morphological features, including glandular architecture, cellular atypia, and the presence of hyperplasia or carcinoma. Data on age, menopausal status, and associated clinical symptoms were also collected and analyzed. **Result:** In this study, the perimenopausal group consists of 20 cases (38.5%), with a mean age of 43.52 ±4.21 years, and the postmenopausal group includes 32 cases (61.5%), with a mean age of 51.22 ±5.82 years, making the overall sample size of 52 cases with a mean age of 50.52 ±6.74 years. Abnormal uterine bleeding is the most common symptom, reported by 60.0% of perimenopausal and 56.25% of postmenopausal women, while pelvic pain is experienced by 20.0% of perimenopausal and 25.0% of postmenopausal women, and menorrhagia by 40.0% of perimenopausal women and 15.63% of postmenopausal women. Endometrial hyperplasia is prevalent in 30.0% of the perimenopausal group and 31.25% of the postmenopausal group, with no significant difference between the two groups (P = 0.415). Endometrial polyps occur in 20.0% of perimenopausal women and 21.88% of postmenopausal women, with no significant difference (P = 0.425), and endometrial carcinoma is found in 10.0% of the perimenopausal group and 15.63% of the postmenopausal group, with no significant difference (P = 0.436). **Conclusion:** The results showed no significant differences in the prevalence of endometrial glandular lesions between the perimenopausal and postmenopausal groups, with similar rates of hyperplasia, polyps, carcinoma, atrophic endometrium with metaplasia, and simple cystic changes in both groups. Subgroup analysis revealed that simple hyperplasia was the most common subtype of hyperplasia, and benign polyps were predominant in both groups.

INTRODUCTION

The human endometrium is a dynamic tissue that exhibits a high regenerative capability after cyclic shedding namely menstruation. Menstruation is a unique biological phenomenon that occurs in a limited number of mammals, such as humans and other higher primates.[1] Menstruation involves cyclic morphological and functional changes in the uterine endometrium that occur on a monthly basis in response to ovarian hormones.[2]

The uterine endometrium changes dramatically based on the phases of the menstrual cycle (i.e., the proliferative phase, the secretory phase, and menstrual phase) and plays a crucial role in the implantation of fertilized eggs. Additionally, "endometrium-related diseases," such as endometrial hyperplasia, adenomyosis, endometriosis, and endometrial cancer, originate in the uterine endometrium due to its high intrinsic regenerative capacity and affect the lives of women from puberty until after menopause.[3,4] However, the pathogenesis of these endometrium-related diseases remains unclear, and further investigations focusing on the endometrium from the standpoint of disease prevention are required.

The endometrium a dynamic uterine lining undergoes cyclic changes in response to hormonal fluctuations throughout a woman's reproductive years. The transition phases of perimenopause and postmenopause mark significant physiological alterations in the endometrium characterized by declining ovarian function and hormonal milieu shifts. These phases are associated with diverse endometrial changes including variations in glandular morphology which may contribute to various pathological conditions.[5,6]

Several studies have explored endometrial lesions, yet there is limited comprehensive investigation specifically focusing on the morphological variations of endometrial glandular lesions during the perimenopausal and postmenopausal phases. Therefore this study aims to address this gap by meticulously examining and categorizing the diverse glandular lesions prevalent in perimenopausal and postmenopausal women.

This study will utilize histopathological analysis the spectrum of endometrial glandular lesions observed in perimenopausal and postmenopausal women. Additionally, it seeks to correlate these morphological findings with clinical presentations and relevant risk factors.

The primary goal of this research is to enhance the understanding of endometrial glandular lesions in perimenopausal and postmenopausal women, thereby facilitating improved diagnostic accuracy and tailored therapeutic approaches. The findings are anticipated to contribute significantly to the existing knowledge base, potentially guiding more effective management strategies and promoting better outcomes for women undergoing these transitional phases.

MATERIALSANDMETHODS

This is a prospective, observational study conducted over a period of two years (September 2022 to August 2024) in the Department of Pathology at MGM Medical College & LSK Hospital Kishanganj, Bihar.A total of 100 perimenopausal and postmenopausal women with abnormal uterine bleeding were included in the study. Endometrial biopsy specimens were obtained and evaluated for various morphological features, including glandular architecture, cellular atypia, and the presence of hyperplasia or carcinoma. Data on age, menopausal status, and associated clinical symptoms were also collected and analyzed.

The inclusion criteria for the study involved women aged between 40 to 60 years who presented with irregular vaginal bleeding and discharge during the perimenopausal and postmenopausal periods, along with ultrasonography findings showing increased endometrial thickness. Exclusion criteria included women aged below 40 years, the absence of the specified clinical parameters, or those who exhibited the symptoms but refused further investigations.

Selection for perimenopausal and postmenopausal age group

The perimenopausal age in Indian women is 44.69 ± 3.79 years. The mean menopausal age of the Indian women as interpreted from the survey is 45.59 ± 5.59 years.

Ethical Consideration: Ethical consideration was taken from the ethical committee of M.G.M. Medical College &L.S.K. Hospital. Kishanganj, Bihar.

Method of data collection:

The patients in perimenopausal and postmenopausal age group attended the Outpatient and indoor Department of Obstetrics &Gynaecology MGM MEDICAL COLLEGE AND LSK HOSPITAL Kishanganj with the complaints of abnormal vaginal bleeding and thoroughly questioned about chief complaints, present history, past history, family history. After proper examinations and relevant investigations like biochemical and radiological investigations (ultrasonography), they were instructed to undergo biopsy for the same. Histological specimens (in the form of D & C material & endometrial biopsy after hysterectomy) of the patients who attending the OPD and OT of Obstetrics &Gynaecology Department, MGM MEDICAL COLLEGE AND LSK HOSPITAL Kishanganjand was taken to the Department of Pathology of the same institution for analysis. The biopsy samples were processed. Hematoxylin and eosin study along with morphologicalanalysis and proliferative studies on stained histopathology sections was done.

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Statistical Analysis

All data was analyzed using SPSS software SPSS (Statistical Package for the Social Science ver-21.0); version 23 for Microsoft Windows. Data was collected and observed carefully. The sums of errors was calculated. Their relative frequencies compared to the total specimens was calculated and presented as a percentage. The difference between relative frequencies of errors observed in the hospitals considered will be tested by a proportional Chi-square test. P<0.05 will be considered statistically different.

RESULTS

Table 1: Age distribution among perimenopausal and postmenopausal group.(n=52)

Group Distribution	Age	
	No of cases (Percentage)	Mean & SD
Perimenopausal Group	20 (38.5%)	43.52±4.21
Postmenopausal Group	32 (61.5%)	51.22±5.82
Total	52 (100%)	50.52±6.74

The age distribution of the study participants presenting in Table 1. The perimenopausal group consists of 20 cases, representing 38.5% of the total participants, with a mean age of 43.52 ±4.21 years. The postmenopausal group includes 32 cases, accounting for 61.5% of the participants, with a mean age of 51.22±5.82 years. Overall, the total sample of 52 cases has a mean age of 50.52±6.74years. The majority of the study subjects are in the postmenopausal group.

Table 2: Presenting Symptoms in Perimenopausal and Postmenopausal Groups (n=52)

Symptom	Perimenopausal Group (n=20)	Postmenopausal Group (n=32)	Total (n=52)
Abnormal Uterine Bleeding	12 (60.0%)	18 (56.25%)	30 (57.69%)
Pelvic Pain	4 (20.0%)	8 (25.0%)	12 (23.08%)
Menorrhagia	8 (40.0%)	5 (15.63%)	13 (25.0%)

Presenting symptoms varied between the two groups. Abnormal uterine bleeding was the most common symptom, reported by 60.0% of perimenopausal and 56.25% of postmenopausal women. Pelvic pain was experienced by 20.0% of perimenopausal and 25.0% of postmenopausal women. Menorrhagia was reported by 40.0% of perimenopausal women and 15.63% of postmenopausal women.

Table 3: Prevalence and Morphological Classification of Endometrial Glandular Lesions in Perimenopausal and Postmenopausal Groups (n=52)

Lesion Type	Perimenopausal Group (n=20)	Postmenopausal Group (n=32)	Total (n=52)	Difference [95% CI]	P Value
Endometrial Hyperplasia	6 (30.0%)	10 (31.25%)	16 (30.77%)	1.25%[-28.53, 31.03]	0.415
Endometrial Polyps	4 (20.0%)	7 (21.88%)	11 (21.15%)	1.88% [-24.82, 28.58]	0.425
Endometrial Carcinoma	2 (10.0%)	5 (15.63%)	7 (13.46%)	5.63% [-16.63, 27.89]	0.436
Atrophic Endometrium with Metaplasia	3 (15.0%)	6 (18.75%)	9 (17.31%)	3.75% [-21.00, 28.50]	0.488
Atrophic Endometrium with Cystic Change	5 (25.0%)	4 (12.50%)	9 (17.31%)	12.50% [-13.73, 38.73]	0.216
Total	20 (100.0%)	32 (100%)	52 (100.0%)	-	-

The prevalence of various endometrial glandular lesions in both perimenopausal and postmenopausal groups, Endometrial hyperplasia is prevalent in 30.0% of the perimenopausal group and 31.25% of the postmenopausal group, with a difference of 1.25% (95% CI: -28.53, 31.03) and a P value of 0.415, indicating no significant difference. Endometrial polyps occur in 20.0% of perimenopausal women and 21.88% of postmenopausal women, with a difference of 1.88% (95% CI: -24.82, 28.58) and a P value of 0.425, also showing no significant difference. Endometrial carcinoma is found in 10.0% of the perimenopausalgroup and 15.63% of the postmenopausal group, with a difference of 5.63% (95% CI: -16.63, 27.89) and a P value of 0.436, indicating no significant difference. Atrophic endometrium with metaplasia is seen in 15.0% of perimenopausal cases and 18.75% of postmenopausal cases, with a difference of 3.75% (95% CI: -21.00, 28.50) and a P value of 0.488, showing no significant difference. Simple cystic change is more common in the perimenopausal group (25.0%) compared to the postmenopausal group (12.50%), with a difference of 12.50% (95% CI: -13.73, 38.73) and a P value of 0.216, indicating no significant difference

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Table 4: Histological Classification of Endometrial Hyperplasia by Subtype in Perimenopausal and Postmenopausal Groups (n=52)

Hyperplasia Subtype	Perimenopausal Group (n=6)	Postmenopausal Group (n=10)	Total (n=16)
Simple Hyperplasia	4 (66.7%)	4 (40.0%)	8 (50.0%)
Complex Hyperplasia	2 (33.3%)	4 (40%)	6 (37.5%)
Atypical Hyperplasia	0 (0%)	2 (20.0%)	2 (12.5%)

The table provides a histological classification of endometrial hyperplasia subtypes in perimenopausal and postmenopausal women. Simple hyperplasia is observed in 66.7% of perimenopausal women and 40.0% of postmenopausal women, accounting for 50.0% of the total cases. Complex hyperplasia is found in 33.3% of perimenopausal women and 40.0% of postmenopausal women, making up 37.5% of the total cases. Atypical hyperplasia is not present in perimenopausal women but is seen in 20.0% of postmenopausal women, representing 12.5% of the total cases.

Table 5: Histological Classification of Endometrial Polyps by Subtype in Perimenopausal and Postmenopausal Groups (n=11)

Polyp Subtype	Perimenopausal Group (n=4)	Postmenopausal Group (n=7)	Total (n=11)
Benign Polyps	3 (75%)	6 (85.71%)	9 (81.82%)
Atypical Polyps	1 (25%)	1 (14.29%)	2 (18.18%)

The table classifies endometrial polyps into benign and atypical subtypes within the perimenopausal and postmenopausal groups. Benign polyps are more prevalent, found in 75.0% of perimenopausal women and 85.71% of postmenopausal women, comprising 81.82% of the total cases. Atypical polyps are less common, seen in 25.0% of perimenopausal women and 14.29% of postmenopausal women, accounting for 18.18% of the total cases.

Table 6: Histological Classification of Endometrioid Carcinoma by Grade in Perimenopausal and Postmenopausal Groups (n=7)

Carcinoma Grade	Perimenopausal Group (n=2)	Postmenopausal Group (n=5)	Total (n=7)
Grade 1 (Well Differentiated)	1 (50%)	2 (40%)	3 (42.86%)
Grade 2 (Moderately Differentiated)	1 (50%)	2 (40%)	3 (42.86%)
Grade 3 (Poorly Differentiated)	0 (0%)	1 (20%)	1 (14.28%)

The table categorizes endometrioid carcinoma into three grades (well differentiated, moderately differentiated, and poorly differentiated) in perimenopausal and postmenopausal women. Grade 1 (well differentiated) carcinoma is observed in 50.0% of perimenopausal women and 40.0% of postmenopausal women, accounting for 42.86% of the total cases. Grade 2 (moderately differentiated) carcinoma is also present in both groups, with each group comprising 50.0% of perimenopausal women and 40.0% of postmenopausal women, totaling 42.86% of the cases. Grade 3 (poorly differentiated) carcinoma is only found in the postmenopausal group, representing 20.0% of this group and 14.28% of the total cases.

Table 7: Histological Classification of Atrophic Endometrium with Metaplasia in Perimenopausal and Postmenopausal Groups (n=9)

Metaplasia Type	Perimenopausal Group (n=3)	Postmenopausal Group (n=6)	Total (n=9)
Squamous Metaplasia	2 (66.67%)	5 (83.33%)	7 (77.77%)
Mucinous Metaplasia	1 (33.33%)	1 (16.67%)	2 (22.23%)

The table illustrates the histological classification of atrophic endometrium with metaplasia into squamous and mucinous types in perimenopausal and postmenopausal women. Squamous metaplasia is prevalent in both groups, observed in 66.67% of perimenopausal women and 83.33% of postmenopausal women, comprising 77.77% of the total cases. Mucinous metaplasia is also present in both groups, seen in 33.33% of perimenopausal women and 16.67% of postmenopausal women, accounting for 22.23% of the total cases.

Table 8: Histological Classification of Simple Cystic Change in Perimenopausal and Postmenopausal Groups (n=9)

Simple Cystic Change Subtype	Perimenopausal Group (n=5)	Postmenopausal Group (n=4)	Total (n=9)
Focal Cystic Change	3 (60%)	2 (50%)	5 (55.56%)
Diffuse Cystic Change	2 (40%)	2 (50%)	4 (44.44%)

The table presents the histological classification of simple cystic change into focal and diffuse subtypes in perimenopausal and postmenopausal women. Focal cystic change is observed in 60.0% of perimenopausal women and 50.0% of postmenopausal women, comprising 55.56% of the total cases. Diffuse cystic change is present in 40.0% of perimenopausal women and 50.0% of

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postmenopausal women, accounting for 44.44% of the total cases.

DISCUSSION

According to WHO the endometrial hyperplasia are classified as simple or complex based on the absence or presence of architectural abnormalities such as glandular complexity and crowding. Hyperplasia are further designated as atypical if they show nuclear atypia.[7]

In current study 52 specimens of endometrium (biopsy) were evaluated to find out age incidence, clinical and pathological features. The incidence of abnormal uterine bleeding was more in post-menopausal age group than peri-menopausal age group. The reason may be due to earlier evaluation and treatment of those patients.

In our study The perimenopausal group consists of 20 cases, representing 38.5% of the total participants, with a mean age of 43.52 ±4.21 years. The postmenopausal group includes 32 cases, accounting for 61.5% of the participants, with a mean age of 51.22±5.82 years. Overall, the total sample of 52 cases has a mean age of 50.52±6.74years. The majority of the study subjects are in the postmenopausal group.age group which compared favourably with 89.13% by SagarS,[8] and very much higher than that reported by previous studies. Abnormal uterine bleeding was the most common symptom, reported by 60.0% of perimenopausal and 56.25% of postmenopausal women. Pelvic pain was experienced by 20.0% of perimenopausal and 25.0% of postmenopausal women. Menorrhagia was reported by 40.0% of perimenopausal women and 15.63% of postmenopausal women. Similar findings were also noted by SagarS,[8]Muzaffar et al,[9] and Samal et al.[10]

In the present study, The prevalence of various endometrial glandular lesions in both perimenopausal and postmenopausal groups, Endometrial hyperplasia is prevalent in 30.0% of the perimenopausal group and 31.25% of the postmenopausal group, with a difference of 1.25% (95% CI: -28.53, 31.03) and a P value of 0.415, indicating no significant difference. Endometrial polyps occur in 20.0% of perimenopausal women and 21.88% of postmenopausal women, with a difference of 1.88% (95% CI: -24.82, 28.58) and a P value of 0.425, also showing no significant difference. Endometrial carcinoma is found in 10.0% of the perimenopausal group and 15.63% of the postmenopausal group, with a difference of 5.63% (95% CI: -16.63, 27.89) and a P value of 0.436, indicating no significant difference. Atrophic endometrium with metaplasia is seen in 15.0% of perimenopausal cases and 18.75% of postmenopausal cases, with a difference of 3.75% (95% CI: -21.00, 28.50) and a P value of 0.488, showing no significant difference. Simple cystic change is more common in the perimenopausal group (25.0%) compared to the postmenopausal group (12.50%), with a difference of 12.50% (95% CI: -13.73, 38.73) and a P value of 0.216, indicating no significant difference.which is very much in alliance with study done by Dangal G (38.5%).[11]

The second most common lesion was endometrial hyperplasia (23.86 %) with maximum age incidence in the age group of 40-49 years which is in concordance with Dangal G (23%),[11] and Slobada L (22.6%).[91]Khare et al., (36.2%),[12] Doroiswami S et al., (68%),[13] observed high incidence of endometrial hyperplasia in 40-49 years of age group. The incidence of simple endometrial hyperplasia was more common in the 40-49 years age group.

In post-menopausal women we observed only complex hyperplasia without atypia and complex hyperplasia with atypia. Our findings are comparable with Khareet al.[12]

Endometrial hyperplasia is commonly seen in peri-menopausal age due to failure of ovulation. Persistent unriped follicles expose the endometrium to an abnormally excessive and prolonged estrogenic action.

In the present study, Endometrioid carcinoma into three grades (well differentiated, moderately differentiated, and poorly differentiated) in perimenopausal and postmenopausal women. Grade 1 (well differentiated) carcinoma is observed in 50.0% of perimenopausal women and 40.0% of postmenopausal women, accounting for 42.86% of the total cases. Grade 2 (moderately differentiated) carcinoma is also present in both groups, with each group comprising 50.0% of perimenopausal women and 40.0% of postmenopausal women, totaling 42.86% of the cases. Grade 3 (poorly differentiated) carcinoma is only found in the postmenopausal group, representing 20.0% of this group and 14.28% of the total cases.

In our study, we observed 5.58% of cases of irregular shedding of endometrium which is comparable with 6% by BaralR,[14]in 40-49 years of age group.

Chronic endometritis was seen in (5.68%) in peri-menopausal group which is similar with the findings of Khare et al,[12]and Abdulla LSl,[15] and only 2 cases in post-menopausal group which is in comparable with Bhatta S We found only single case of tuberculous endometritis in 40-49 years of age which is similar with 0.68% by Sagar,[8] Diagnosis of endometritis depends upon findings of neutrophils in the stroma of a nonmenstruating endometrium in acute endometritis and presence of plasma cells in the stroma in chronic endometritis.

In the present study, the histological classification of atrophic endometrium with metaplasia into squamous and mucinous types in perimenopausal and postmenopausal women. Squamous metaplasia is prevalent in both groups, observed in 66.67% of perimenopausal women and 83.33% of

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postmenopausal women, comprising 77.77% of the total cases.

Mucinous metaplasia is also present in both groups, seen in 33.33% of perimenopausal women and 16.67% of postmenopausal women, accounting for 22.23% of the total cases. And classification of simple cystic change into focal and diffuse subtypes in perimenopausal and postmenopausal women. Focal cystic change is observed in 60.0% of perimenopausal women and 50.0% of postmenopausal women, comprising 55.56% of the total cases. Diffuse cystic change is present in 40.0% of perimenopausal women and 50.0% of postmenopausal women, accounting for 44.44% of the total cases.

In the present study, endometrial polyps into benign and atypical subtypes within the perimenopausal and postmenopausal groups. Benign polyps are more prevalent, found in 75.0% of perimenopausal women and 85.71% of postmenopausal women, comprising 81.82% of the total cases. Atypical polyps are less common, seen in 25.0% of perimenopausal women and 14.29% of postmenopausal women, accounting for 18.18% of the total cases.

The incidence of endometrial polyp in our study was less as compared to Bhatta S.[16] Tuberculous endometritis and endometrial polyp were not seen in our study in post-menopausal age group.

Atrophic endometrium was seen predominantly in post-menopausal age group due to absence of estrogenic stimulation leading to thin atrophic endometrium susceptible to minor injury. Lidor (45%),[17]and Gredmark (50%) [18]studied that atrophic endometrium was the most common cause of post-menopausal bleeding.

We found Endometrial carcinoma is found in 10.0% of the perimenopausal group and 15.63% of the postmenopausal group, Similar results were also reported by DangalG,[11]and Khare et al.[12]

CONCLUSION

The results showed no significant differences in the prevalence of endometrial glandular lesions between the perimenopausal and postmenopausal groups, with similar rates of hyperplasia, polyps, carcinoma, atrophic endometrium with metaplasia, and simple cystic changes in both groups. Subgroup analysis revealed that simple hyperplasia was the most common subtype of hyperplasia, and benign polyps were predominant in both groups. The histological classifications of carcinoma, metaplasia, and cystic changes highlighted the diversity of lesions across age groups. Overall, age group alone may not significantly influence the distribution of these lesions, suggesting the need for further research with larger samples and longitudinal studies to explore other risk factors.

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