RESEARCH ARTICLE

Histopathological pattern in endometrial biopsies in reproductive age group and Post-menopausal women

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Abstract

Objective: To identify and analyse the different types and frequencies of morphological pattern in endometrial biopsies along with their associated diagnoses across different age groups.

Method: The cross-sectional study was conducted at the Histopathology Section of the Dow Diagnostics Reference and Research Laboratory, Dow University Health Sciences, Karachi, from October 2022 to October 2023. Data was obtained from pre-existing medical record of samples of endometrial biopsies. Open Epi sample size calculator is used for the estimation of sample size. The patients were divided into two aged-based groups; reproductive age ≤45 years in group 1 and post-menopause age ≥46 years in group 2. The histological diagnosis was made by a consultant histopathologist.

Result: Of the 430 endometrial biopsies 222(51.6%) were in group 1 and 208(48.4%) were in group 2. In both groups, the most common finding was polyps 271(63%). Malignant changes were found in 12(5.7%) group 2 cases compared to 4(1.8%) group 1 cases.

Conclusion: The most common endometrial lesion in both age groups was endometrial polyp. Malignant changes were seen more in postmenopausal women compared to those in the reproductive age group.

Keywords: Endometrial hyperplasia, Heavy menstrual bleeding, Postmenopausal period, Abnormal uterine bleeding, Dysfunctional uterine bleeding, Endometrial cancer. (JPMA 74: 1964; 2024)

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Introduction

The cause of abnormal uterine bleeding (AUB) must be assessed through histopathology testing on endometrial samples, which constitutes 34% of outpatient gynaecological referrals, and is a serious concern.[1] The majority of hysterectomies and practically all endometrial ablation treatments are due to causes that cover a wide spectrum of disorders. Many women with endometrial cancer (EC) experience abrupt bleeding during their premenopausal period, although one-third merely have heavy periods.[2] In roughly 12% of individuals, EC and abnormal postmenopausal and peri-menopausal bleeding are related. Between 18% and 40% of women experience benign lesions such as uterine fibroids and endometrial polyps. The relevance of irregular bleeding in EC is rather astounding when demographic factors are taken into account.[3] If patients have postmenopausal bleeding, they should be concerned about EC. AUB in the reproductive age group, on the other hand, is not necessarily a sign of cancer, as there are numerous physiological causes, and the prevalence of uterine cancer in women aged <40 years is extremely rare.[4] Dilation and curettage (D&C) is the gold standard approach for endometrial sample, although there is a possibility of perforation, infection and general anaesthesia (GA) when 60% of the uterine cavity is typically curetted. This prompted the development of modern and accessible endometrial sampling techniques. It plays an important role in early cancer diagnosis, preoperative assessment, and therapy planning for endometrial diseases.[5] The Pipelle curette is one of various gadgets available in the market today. Many studies have confirmed the safety and acceptability of the device.[6] It has been reported in recent studies that Pipelle suction curettes have become the most frequent method for endometrial tissue collection, which is often used to evaluate AUB, which accounts for over 70% of all gynaecological visits. When compared to other endometrial sample procedures, endometrial biopsy (EMB) has been shown to be a comparable, if not better, tool for detecting EC.[7] Pipelle sampling, which is easier and less expensive, is currently favoured. One-third of the endometrium may be analysed with D&C and biopsy procedures, allowing for a comprehensive evaluation of the endometrium. The normal menstrual cycle is based on the endometrium's complicated regular cycle of periodic growth, differentiation, breakdown and regeneration. Any variation from this pattern would cause AUB. The International Federation of Gynaecology and Obstetrics (FIGO) created a new classification system, called polyp, adenomyosis, leiomyoma, malignancy, coagulopathy, ovulatory dysfunction, endometrial, iatrogenic, and not-yet-classified

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(PALM-COEIN), regarding AUB in November 2010.[8] Further tests, including transvaginal ultrasound and hysteroscopy with biopsy, if necessary, are required when unexpected bleeding occurs, especially if it is heavy or prolonged. It has been estimated that endometrial biopsy can detect endometrial abnormalities with an accuracy of up to 96%. Without assessing the histological features of the endometrial biopsy, the diagnosis and therapy methods for AUB are incomplete.[9] Hysteroscopy is the gold standard for evaluating endometrial diseases because it allows for direct observation of the endometrial cavity while also allowing for contemporaneous therapy. Routine endometrial sampling is contentious, according to recent studies, because it is connected with high costs, significant morbidity, and anxiety in patients.[10] Endometrial biopsy is a simple technique that can be useful in diagnosing a variety of uterine problems. The method is simple to learn and can be performed alone. An endometrial suction catheter is introduced via the cervix into the uterine cavity, and used to obtain the biopsy. Endometrial biopsy can be used to investigate AUB, cancer screening, endometrial dating, and infertility.

The current study was planned to identify and analyse the different types and frequencies of morphological lesions in endometrial biopsies along with their associated diagnoses across different age groups.

Materials and Methods

The cross-sectional study was conducted at the Histopathology Section of the Dow Diagnostics Reference and Research Laboratory (DDRRL), Dow University Health Sciences (DUHS), Karachi, from October 2022 to October 2023.

After exemption from institutional ethics review board, data was retrieved using convenience/purposive sampling technique from pre-existing medical record of samples of endometrial biopsies. Open Epi sample size calculator was used for the estimation of sample size using the following parameters;

Two-sided significance level(1-alpha):	95
Power(1-beta, % chance of detecting):	80
Ratio of sample size, Unexposed/Exposed:	1
Percent of polyps in pre-menopausal women in a previous study:	2.7[11]
Percent of post-menopausal women in a previous study :	9.6[12]

[The data of the patients was divided into two age-based groups; reproductive age ≤45 years in group 1[11] and post-menopause age ≥46 years in group 2.[12]

After being fixed in 10% formalin for 12-24 hours, the endometrial tissue samples were sent together with the rest of the tissue for standard processing. A pathologist used Haematoxylin and Eosin (H&E) to stain 3-5mm thickness sections prepared from paraffin blocks, which were then examined under a light microscope. All types of endometrial biopsies samples were included. Those excluded related to patients with cervical-vaginal pathology, biopsies other than endometrial sampling, and those who had AUB due to systemic conditions. Data was retrieved using a requisition form.[8] The histological diagnosis was made by a consultant histopathologist.

Results

Of the 430 endometrial biopsies of female patients aged 20-90 years, 222(51.6%) were in group 1 and 208(48.4%) were in group 2. The duration of AUB ranged from 15 days to 10 years. Polymenorrhagia, menorrhagia, postmenopausal bleeding, dysfunctional uterine bleeding (DUB) amenorrhea and other AUB causes were noted (Table 1).

In both groups, the most common diagnosis was polyps 271(63%). Malignant changes were found in 12(5.7%) group 2 cases compared to 4(1.8%) group 1 cases (Table 2).

Table-1: Pattern of abnormal uterine bleeding (AUB) in the study groups [n(%)].

Findings	≤ 45 Years	≥ 46 Years	Total
Amenorrhea	2 (1.0)	4 (1.70)	6(1.39)
Polymenorrhagia	56 (25.22)	112 (53.84)	168(39.06)
Menorrhagia	134 (60.36)	-	134(31.16)
Dysfunctional uterine bleeding	1 (0.5)	3 (1.28)	4(0.93)
Postmenopausal bleeding	-	85 (41)	85(19.76)
Other causes	29 (14.5)	4 (1.70)	33(7.67)
Total	222	208	430

Table-2: Histological diagnosis in the study groups [n(%)].

Diagnosis	Age: ≤ 45 years	Age: ≥ 46 years
Endometrial Polyp	110 (49.5)	161 (77.4)
Endometrial Hyperplasia without atypia	20 (9.0)	2 (0.96)
Non-Secretory Endometrium	4 (1.80)	7 (3.36)
Secretory Endometrium	15 (6.75)	1 (0.48)
Proliferative Endometrium	6 (2.70)	-
Retained Product of Conception (RPOCS)	7 (3.15)	-
Endometritis	13 (5.85)	2 (0.96)
Malignant	4 (1.80)	12 (5.76)
Partial Hydatidiform Mole	1 (0.45)	-
Others	42 (18.91)	23 (11.05)
Total	222	208

Discussion

The normal menstrual cycle is dependent upon the cyclical process of periodic growth, differentiation, breakdown and regeneration of endometrium, and any deviation from this cycle would result in AUB.[9] Clinical signs of AUB include menorrhagia, polymenorrhea, metrorrhagia, menometrorrhagia, intermenstrual bleeding, etc. In November 2010, FIGO issued the PALM-COEIN guidelines for AUB, which suggested that AUB may be brought on by

polyps, adenomyosis, cancer, hyperplasia, coagulopathy, ovulatory abnormalities, endometrial reasons, iatrogenic factors, and other unclassified causes.[13] When AUB starts, especially if it is heavy, diagnostic procedures, such as transvaginal ultrasound and hysteroscopy with biopsy, are needed. It has been estimated that endometrial biopsy can detect endometrial abnormalities with an accuracy of up to 96%.[10] Without assessing the histological features of the endometrial biopsy, the diagnosis and therapy methods for AUB are incomplete. An efficient and secure diagnostic step in the assessment of AUB and for the identification of endometrial diseases is the collection of endometrial biopsy tissue through D & C technique.[14]

The current study's finding about AUB being prevalent in women of reproductive age is consistent with earlier studies.[15] The fact that women aged ≤45 years are believed to be in their climacteric period is a probable reason of the greater occurrence of AUB in this age group. Because of the drop in ovarian follicle count and oestrogen level as menopause approaches in women, periods become shorter and sporadic.[16]

In the current study, menorrhagia was the most frequent presentation, followed by polymenorrhea, which is consistent with a number of other investigations.[15,17] On the other hand one study reported polymenorrhea as the most common finding.[18]

In the current study, the most common histological pattern in both age groups was endometrial polyp. None of the polyps showed atypical hyperplasia or carcinoma. In the current study, increasing frequency of polyp with advancing age was observed, which was in accordance with an earlier study.[19] The finding of hormonal imbalance pattern followed by normal cyclical pattern in reproductive-age women was also noted. However, in several studies it was the most common pattern seen.[8]

Evaluation of the endometrium is required in AUB in order to rule out endometrial diseases, including endometrial hyperplasia and EC. Endometrial hyperplasia without atypia is the growth of atypically shaped and sized endometrial glands without a substantial cytological atypia. It is typically identified in women who are in the perimenopause phase and experiencing abnormal, noncyclical vaginal bleeding. It is a result of prolonged oestrogen exposure unopposed by progesterone or progestational agents acting on the entire endometrial field. In a study, endometrial hyperplasia was present in 5% cases with AUB, and the incidence was most common in postmenopausal and perimenopausal age groups.[18] The current study observed inflammatory pathology (endometritis) in 15 cases; 13 in those in the reproductive age group, and 2 in postmenopausal women. This was is in accordance with the earlier report.[18] This could be due to the reason that women in the reproductive age group are more likely to experience caesarean sections, spontaneous and medical abortions, intrauterine devices, and other forms of contraception, making them more susceptible to chronic endometritis.

In the current study, 16 cases showed malignant changes; 12 belonged to women in the postmenopausal group, and 4 in the reproductive group, concluding that endometrial malignancies were common in postmenopausal women.[20]

The current study has limitations as it was a descriptive hospital-based study comprising women with a selected age range over a short period of time. Hence, the findings may not be representative of the community.

Conclusion

The most common endometrial lesion in both groups was endometrial polyp. Malignant changes were more common in postmenopausal women as compared to those in the reproductive age group. Therefore, evaluation of the endometrial lesion is necessary in order to rule out endometrial diseases, including endometrial hyperplasia and EC.

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Author Contribution:

FFA: Principal Investigator, design, concept, project administration, writing IRB, drafting and publishing.
UB: Concept, design, supervised the findings and critically reviewing.
NK: Data acquisition, analysis, interpretation, drafting and revision.
FA: Data collection, statistically analysis and interpretation.
SK: Data acquisition, analysis and drafting.