ORIGINAL ARTICLE

Clinico-Radiological and Histopathological Study of Endometrial Lesions in Patients Presenting with Abnormal Uterine Bleeding

Swati Pundir[1], Manish Kumar[1], Usha Joshi[2], Sheela Chaudhari[2]

ABSTRACT

Background: Abnormal uterine bleeding [AUB] is one of the most common presentations among women of all age groups. It is 'Bleeding from the uterine corpus that is abnormal in volume, regularity or timing for the majority of last 6 months. Common pathologies include hormonal imbalance patterns, atrophic endometrium, endometritis, endometrial polyp, endometrial hyperplasia and endometrial carcinoma. **Material & Methods:** All specimens of endometrial curettage, biopsy and hysterectomy received in department of pathology GMC, Haldwani from January 2020 to September 2021 , have been included in the study. Specimens were fixed in 10% formalin and processed routinely. Clinical details and endometrial thickness by ultrasonography were recorded and analysed. Microscopic examination was performed after routine and special stains. **Results:** Out of a total of 103 cases, abnormal uterine bleeding was frequently observed in the age group 40 – 49 years, followed by 50 – 59 years. Most common presenting complaint was menorrhagia followed by post menopausal bleeding. Most common histopathological finding was proliferative phase endometrium followed by secretory phase endometrium. The range of endometrial thickness recorded in the proliferative phase was mostly 4-9 mm followed by the secretory phase with 9 – 15 mm. Two cases of endometrial carcinoma were seen after 5th decade onward. All cases of endometrial hyperplasia and carcinoma had an endometrial thickness of more than 15 mm. **Conclusion:** AUB may be the only presenting complaint in patients with malignant or pre-malignant endometrial lesions. Histopathology helps to reach a definitive diagnosis crucial for management.

KEY WORDS: Abnormal uterine bleeding, Endometrial sampling, Endometrial thickness, Endometrial hyperplasia, Endometrial carcinoma.

Introduction

Abnormal uterine bleeding [AUB] is one of the most common complaints of women of all age groups in the gynecology outpatient department. It was redefined by Federation International de'Gynecologie et d'Obstetrique (FIGO) in 2009as 'Bleeding from the uterine corpus that is abnormal in volume, regularity and/or timing that has been present for the majority of the last 6 months[1]. It includes menorrhagia, metrorrhagia, menometrorrhagia, polymenorrhagia, polymenorrhea, continuous vaginal bleeding and intermenstrual bleeding[2].

FIGO has designed the PALM-COEIN (Polyp, Adenomyosis, Leiomyoma, Malignancy and Hyperplasia, Coagulopathy, Ovulatory Disorders, Endometrial Disorders, Iatrogenic Causes, and Not Classified) classification system for causes of AUB in the reproductive years. Common pathologies related to endometrium that can be detected histologically in AUB include hormonal imbalance patterns (disordered proliferative endometrium, non-secretory endometrium with stromal and glandular breakdown, luteal phase defect and pill effect), atrophic endometrium, endometritis, endometrial polyp,

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endometrial hyperplasia and endometrial carcinoma.

Abnormal uterine bleeding (AUB) is a clinical entity of grave importance and may have a significant impact on physical, social, emotional and material quality of life of the affected female[3]. It interferes with her routine activities because of the unpredictable nature and excessive bleeding and can also lead to anaemia. It is reported to occur in 9-14% of women worldwide between menarche and menopause[4].

The various patterns of AUB can be evaluated by histopathology which is the Gold standard for the clinical diagnosis of endometrial pathologies and their management. Our study was done to determine the histopathological patterns of endometrium among women of different age groups presenting with AUB.

Material and Methods

All specimens of endometrial curettage, biopsy and hysterectomy received for histopathological examination in the department of pathology GMC, Haldwani from January 2020 to September 2021, have been included in the study. Specimens were fixed in 10% formalin. In hysterectomy specimens, sections were taken from all the representative areas. The tissue pieces were processed routinely and stained with hematoxylin and eosin. The clinical details were noted along with histopathological findings. Endometrial thickness was determined by ultrasonography.

Inclusion Criteria: All females presenting with abnormal uterine bleeding.

Exclusion Criteria: Bleeding other than endometrial causes, Pregnancy, Age group < 20years

Results

A total of 103 cases of abnormal uterine bleeding (AUB) were included in this study; 58 (56.31%) were of dilatation and curettage (D&C) and 45 (43.69%) of total abdominal hysterectomy (TAH).

Cases were divided into 5 age groups. The maximum frequency of AUB was observed in 40-49 years age spectrum (61.17%) followed by 50 – 59 years (17.48%) while the minimum was seen in 20-29 years (1.94%) (Figure 1).

Menorrhagia (28.16%) was the most common complaint of patients in our study followed by post-menopausal bleeding (25.24%). An age specific comparative analysis of the clinical presentations revealed that menorrhagia was most common in 40-49 years age group (21 cases) and Post-menopausal bleeding in 50- 59 years (17 cases) (Figure 2).

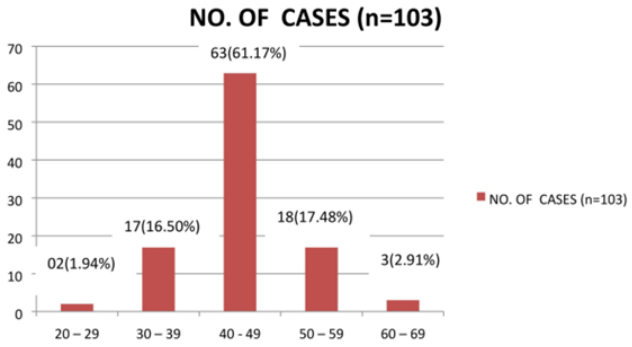

Figure 1: Distribution of abnormal uterine bleeding (AUB) casesaccording to the age group in years (n=103)

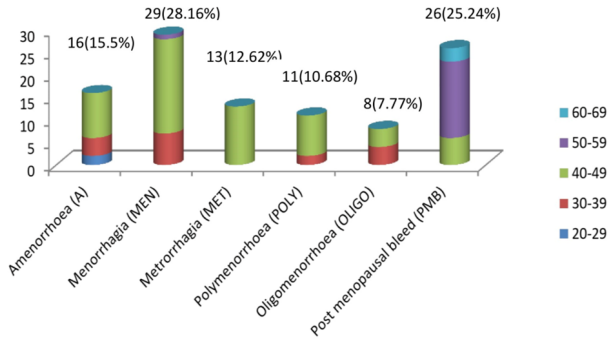

Figure 2: Clinical presentation of cases of AUB according to age group in year (n=103)

The most common endometrial patterns seen on histopathology were the normal physiological phases of menstrual cycle - proliferative (29.12%) and secretory endometrium (26.21%) respectively. Disordered proliferative endometrium was the most common pathology seen (23.31%). Minimum cases reported were of tuberculous endometritis and Atypical Hyperplasia / Endometrioid Intraepithelial Neoplasm (0.97% each). 5 cases were Nondiagnostic (Table 1).

Age specific comparative analysis showed that the incidence of endometrial hyperplasia and malignancy were more common in perimenopausal and postmenopausal age groups. Tubercular endometritis was seen in younger age group(< 30 years) (Table 1)

Table 1: Distribution of different endometrial patternsin cases of AUB according to age group.(n=103)

Histopathological lesions	20-29 years	30-39 years	40-49 years	50-59 years	60-69 years	Frequency (%)
Proliferative phase	00	04	20	05	01	30(29.12%)
Secretory phase	01	08	12	06	00	27(26.21%)
Disordered proliferative phase	00	03	17	04	00	24(23.31%)
Cystic Atrophy	00	00	02	00	00	2(1.94%)
Endometrial polyp	00	01	04	01	00	6(5.83%)
Endometritis	00	00	03	00	00	3(2.91%)
Hyperplasia without Atypia	00	00	02	00	00	2(1.94%)
Atypical Hyperplasia	00	00	00	00	01	1(0.97%)
Tuberculous endometritis	01	00	00	00	00	1(0.97%)
Non Diagnostic	00	01	03	01	00	5(4.86%)
Endometrial carcinoma	00	00	00	01	01	2(1.94%)
Total (%)	02(1.94%)	17(16.50%)	63(61.17%)	18(17.47%)	03(2.92%)	103(100%)

Maximum number of cases reported (50.49%) had an endometrial thickness of 4 – 9 mm, out of which 28 were of proliferative phase. 31 cases (30.10%) were those with an endometrial thickness ranging from 9 – 15 mm, of which 25 were in secretory phase. 7 cases (6.79%) were reported with an endometrial thickness of >20mm of which 2 cases were of endometrial carcinoma (Table 2)

Discussion

Abnormal uterine bleeding (AUB) is a challenging issue encountered in women of different age groups in Gynecological OPD. Histopathological evaluation of endometrium with radiological correlation plays a pivotal role in the diagnosis and management. The present study includes a total of 103 cases presenting with complaints of Abnormal uterine bleeding, out of which 58 (56.31%) samples were of Dilatation and curettage (D and C) and 45 (43.69%) of total abdominal hysterectomy (TAH) .

In our study, majority of the cases (63; 61.16%) belonged to the age group of 40-49 years. A similar observation was made by Doraiswami et al.[5] and Damle et al.[6]. This may be explained by the fact that these patients are in their perimenopausal phase during which cycles become short and anovulatory due to a decline in the number of ovarian follicles and high estradiol levels. Contrary to ours, a study by Varun M et al.[7] shows maximum number of cases in the age group of 35-39 years.

Maximum number of our cases (30; 29.12%) were reported as proliferative phase endometrium similar

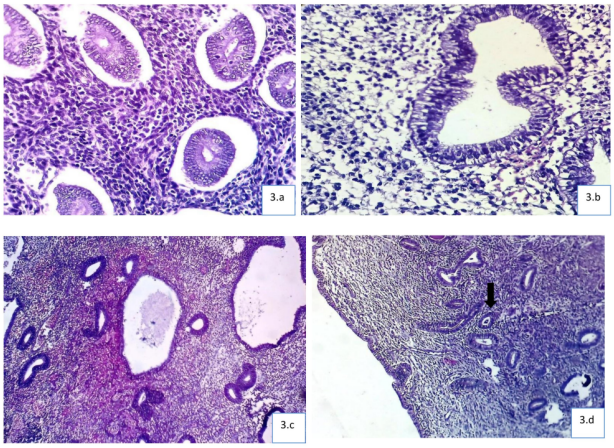

Figure 3: A: Proliferative phase endometrium - shows regularly spaced glands with round contour, pseudo stratification and mitotic figures. [H&E, 400x], B: Early secretory phase - shows endometrial glands with single layer of columnar cells and displaying subnuclear and focal supra nuclear vacuolation. [H&E, 400x], C: Disordered proliferative phase - shows cystically dilated, irregular glands with stromal hemorrhage (stromal crumbling). [H&E, 100x], D: Atrophic Endometrium - shows endometrial glands lined by low columnar to cuboidal cells with one gland having inspissated secretions (Arrow). [H&E, 100x]

to the study by Sur D et al.[8] and Varun N et al.[7]. The shift towards urbanization in Uttarakhand has led to an increase in hormone dependent pathologies. The bleeding in proliferative phase may be due to anovulatory cycles. A significant number of our cases showed a disordered proliferative phase pattern

Table 2: Association of histopathology in cases of AUB with Endometrial Thickness (mm). (n=103)

Histopathological lesions	< 4mm	4-9mm	9-15mm	15- 20mm	>20mm
Proliferative phase	00	28	02	00	00
Secretory phase	00	01	25	01	00
Disordered proliferative phase	00	21	01	01	01
Cystic Atrophy	02	00	00	00	00
Endometrial Polyp	00	00	02	03	01
Endometritis	00	01	01	01	00
Hyperplasia without Atypia	00	00	00	01	01
Atypical Hyperplasia	00	00	00	00	01
Tuberculous endometritis	00	00	00	01	00
Non Diagnostic	03	01	00	00	01
Endometrial carcinoma	00	00	00	00	02
Total (%)	05 (4.85%)	52 (50.49%)	31 (30.10%)	08 (7.77%)	07 (6.79%)

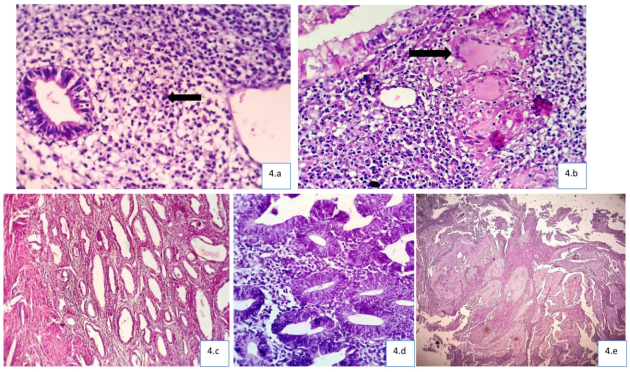

Figure 4: A: Endometritis - shows the presenceof binucleate and mononucleate plasma cells (arrow) [H&E, 100x], B: TuberculousEndometritis - shows tuberculous granuloma, consisting of epithelioid cells,with Langhans-type giant cells (arrow) surrounded by a cuff of lymphocytes. [H&E, 400x], C: Hyperplasia without Atypia - shows variably sized, cystically dilated and closely packed glandswith increased gland to stroma ratio (>3:1) and complex intraluminalcontours. [H&E, 100x], D: Atypical Hyperplasia - shows back-to-backatypical glands. The cells are dysplastic with rounding of nuclei, open nuclearchromatin and prominent nucleoli. [H&E, 400x], E: Endometrial Adenocarcinoma- showing solid pattern with fibrous septa and sheet-like growthof atypical cells devoid of discrete gland formation. [H&E, 100x]

which lies at one end of the spectrum of proliferative lesions. The other end includes carcinoma with intervening stages of hyperplasia. An earlier stage of presentation due to increased health awareness and accessibility to health care facilities could explain the high incidence of proliferative phase endometrium in our study. Atrophic endometrium was seen predominantly in the 40- 49 years age group. The lower incidence of endometrial carcinoma in this study may be due to the practice of early childbearing and multiparity as well as early intervention. A study conducted by Jetley S et al [9] and Chhatrasal C et al [10] showed a maximum number of cases in the secretory phase endometrium. 5 of our cases were reported as nondiagnostic due to various reasons including less than adequate biopsy, only hemorrhagic material with broken glands and autolysed samples.

In our study, Menorrhagia was the most common complaint (29; 28.16%) similar to findings of Behera et al [11] and Swami et al [12] which is well explained by anovulatory cycles.

In contrast to our study, polymenorrhea and metrorrhagia were the most common bleeding patterns according to Abid M et al [13] and Golecha N et al [14].

A maximum number of our cases belonged to the proliferative phase with an endometrial thickness of 4- 9 mm followed by the secretory phase with an endometrial thickness of 9-15mm. This observation is similar to the findings of Sur D et al [8] and Khanna et al [15]. Contrary to ours, a study done by Pai AH et al [16] showed maximum cases with simple hyperplasia without atypia with endometrial thickness of 11-20mm. In the study by Pillai et al [17], the mean endometrial thickness was 7.45 mm in the proliferative phase and 12.45 mm in the secretory phase which is consistent with our findings. Pillai et al [17], and Aslam et al [18] noted abnormal endometrial histopathology in endometrial

thickness greater than 15 mm which correlates with our findings. In their as well as our study, no major endometrial pathology was detected in endometrial thickness <15 mm.

The endometrial thickness is highly variable and there is no clear definition of an abnormal endometrial thickness as different studies specify different values. In our study, it ranges from 2.3 mm to 24.4 mm. In menstruating women, the endometrial thickness increases gradually and measures 10- 12 mm by the day of ovulation and increases further up to 16 mm by the secretory phase. All the cases of hyperplasia and endometrial carcinoma in the present study were having endometrial thickness of >15 mm similar to Pillai et al [17] and Aslam et al [18].

Thus, our study suggest that endometrial thickness may be normal up to 15 mm depending on the phase of endometrium and findings above this value should raise a red flag sign for further evaluation.

Conclusion

Abnormal Uterine Bleeding (AUB) is one of the most commonly encountered gynecological problems and may be the only presenting complaint in patients with malignant or pre-malignant endometrial lesions.

Our study demonstrates the spectrum of endometrial lesions in patients presenting with AUB in the Kumaon region. Pre malignant and malignant lesions occur mainly after the fourth decade , thus females above this age group must be thoroughly evaluated including regular follow ups.

The present study concludes a significant association between endometrial thickness by Ultrasonography and histopathology in AUB cases. A cutoff value of 15mm or more is observed in cases of hyperplasia and endometrial carcinoma. Therefore, we recommend that USG findings with endometrial thickness of 15mm or above should alarm the clinicians for meticulous assessment to rule out possibilities of endometrial carcinoma and other pre malignant entities.

A definitive diagnosis of AUB could help clinicians to plan successful management timely, thus avoiding complications and radical surgeries. Hence, our study supports the histopathology of endometrial lesions as an important tool in the diagnosis and management of AUB.

Limitations of Study

Due to COVID-19 pandemic, there was a significant decrease in the number of samples received in our department as our hospital was converted into Covid hospital.

The hormonal status of the female patients presenting with abnormal uterine bleeding could not be evaluated due to non-availability of these tests in our institute and since these tests are expensive, they are not affordable to poor patients.

Lack of availability of Immunohistochemistry and molecular study in our hospital hinders further evaluation of malignancies.

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