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THE BLEEDING TRUTH: A TISSUE-LEVEL STUDY OF UTEROCERVICAL PATHOLOGIES IN WOMEN ACROSS DEMOGRAPHICS

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Abstract:

Background:

Abnormal Uterine Bleeding (AUB) represents a complex and widespread gynecological concern that spans all reproductive age groups. Characterized by deviations in the volume, duration, or frequency of menstrual bleeding, AUB not only disrupts physiological rhythms but also impairs social, emotional, and occupational well-being. Accounting for approximately 30% of gynecological outpatient consultations, it remains one of the leading clinical presentations prompting medical evaluation and is frequently associated with the need for surgical management.

The 2011 FIGO classification system (PALM-COEIN) has brought much-needed clarity to the diagnosis and categorization of AUB, distinguishing between structural (PALM) and non-structural (COEIN) causes. Structural causes include polyps, adenomyosis, leiomyomas, and malignancies, while hormonal imbalances, coagulopathies, and iatrogenic factors make up the non-structural group. AUB in perimenopausal women often signals underlying pathologies like fibroids, hyperplasia, or even malignancy. Histopathological evaluation—particularly endometrial biopsy—remains a cornerstone in diagnosing these conditions, guiding appropriate and timely management.
This study explores the histological spectrum of uterocervical lesions in women with AUB and examines the influence of sociodemographic factors on these presentations.

Materials and Methods:

This cross-sectional observational study was conducted over eighteen months in the Pathology Department of a Kolkata medical college, evaluating ninety-three symptomatic individuals with abnormal uterine bleeding (AUB). Following ethical approval, data on demographics, clinical history, and investigations were collected. The study included women over 18 with AUB, while excluding

those with ovarian, endocrine issues, or coagulopathies. Socioeconomic status was assessed using the Kuppuswamy scale, which considers education, occupation, and income to classify individuals into socioeconomic classes.

Result & Conclusion:
This study examined endometrial and cervical pathologies linked to abnormal uterine and cervical bleeding. Key findings show that most participants were in the 35-40years age group with a varied socioeconomic status varied. Most had unremarkable findings. Endometrial thickness was mostly between 5-10 mm, and with fibroids as common findings.
Histopathology showed simple hyperplastic endometrium as the commonest findings in the endometrial biopsy.

Key words: AUB, socio economicstatus, endometrium, cervix, Kuppuswamy scale

I. Introduction:

Abnormal uterine bleeding (AUB) represents a significant health concern for women across various age demographics. It is defined as any deviation in the quantity or timing of menstrual flow when compared to a woman's typical menstrual cycle[1]. AUB can present in several forms, including excessively heavy menstrual bleeding, increased frequency of menstrual periods, or unexpected bleeding between cycles. Recognizing the complexity of AUB is essential, as it may result from a broad range of causes, including hormonal fluctuations and anatomical abnormalities, necessitating a thorough assessment and appropriate management to ensure optimal health outcomes for affected individuals.
Virtually, every woman will at some point in her lifetime experience episodes of bleeding that are perceived as abnormal.
Menstrual irregularities can lead to discomfort, inconvenience, and disruption of healthy social and physical lifestyles, representing a significant source of morbidity for millions of women around the globe[2].
Menstrual irregularities represent one of the most frequent concerns prompting women to seek gynecological consultation. These irregularities account for approximately 30% of patients attending outpatient gynecological services. The prevalence of menstrual irregularities ranges from 10% to 30%, reflecting variability across different demographic and population groups[3,4].
Chronic AUB was defined as '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' according to FIGO 2011 consensus.[4]

Menstrual disorders represent a significant health concern, accounting for approximately 19.1% of the 20.1 million annual visits to gynecology clinics[5,6]. Additionally, about 25% of gynecological surgeries are performed to manage abnormal uterine bleeding (AUB). As a clinical condition, AUB can impose considerable physical, psychological, and social stress on affected women, leading to economic losses due to absenteeism from work and adversely affecting their overall quality of life[7].
Historically, the clinical approach to menstrual abnormalities has been hampered by inconsistencies in nomenclature and classification, resulting in a fragmented understanding of this critical issue. In 2011, the International Federation of Obstetricians and Gynecologists (FIGO) introduced a standardized nomenclature and classification system for AUB, encapsulated in the acronym PALM-COEIN. This system facilitates a comprehensive framework for categorizing various menstrual complaints. According to the PALM-COEIN classification, AUB can be categorized into distinct entities: (AUB-P) for polyps, (AUB-A) for adenomyosis, (AUB-L) for leiomyomas, (AUB-M) for malignancy and hyperplasia, (AUB-C) for coagulopathy, (AUB-O) for ovulatory dysfunction, (AUB-E) for endometrial causes, (AUB-I) for iatrogenic factors, and (AUB-N) for cases not otherwise

classified[4]. This standardized approach has been widely recognized and adopted within the medical community, fostering more effective diagnosis and management of menstrual disorders.
The "PALM" classification system is utilized to identify structural anomalies within the genital tract, which can be diagnosed through visual examination, imaging techniques, or histopathological analysis. In contrast, the "COEIN" classification addresses non-structural abnormalities[7,8,9]. This classification framework has demonstrated considerable utility in the diagnosis and management of cases of abnormal uterine bleeding (AUB). Approximately 25-30% of women experience some degree of abnormal bleeding prior to menopause, with anovulatory bleeding accounting for roughly 80% of these cases[10,11]. Perimenopausal AUB typically indicates an underlying organic pathology of the genital tract, such as fibroids, polyps, adenomyosis, or endometrial hyperplasia, often attributable to hormonal fluctuations[12]. A thorough evaluation of these patients necessitates meticulous investigation aimed at delineating the cause and nature of the bleeding, with particular emphasis on excluding organic pathologies, particularly malignancies of the genital tract. Endometrial biopsy represents a crucial intervention that provides significant insights into the etiology of bleeding abnormalities and guides subsequent management strategies. Given that many perimenopausal women may experience anovulation, it is essential to rule out endometrial hyperplasia or malignancy. Histopathological patterns of the endometrium in this demographic can range from secretory endometrium to hyperplastic and cystic glandular hyperplasia. With each successive anovulatory cycle, the endometrium undergoes proliferation under the influence of estrogen, unopposed by progesterone, leading to increased severity and degree of hyperplasia. This process can culminate in hyperplasia with atypia and, ultimately, uterine malignancy. Dilatation and curettage are simple yet cost-effective diagnostic procedures for identifying uterine pathology[13,3].
This study was undertaken to investigate the endometrial and cervical pathologies associated with abnormal uterine and cervical bleeding in affected patients.

II. Objective:

a) To study the endometrium and cervical pathologies involved in abnormal uterine and cervical bleeding in relation to their sociodemographic status among patients attending the gynaecology and obstetrics department of a Kolkata medical college.
b) To calculate the proportions of different uterine and cervical pathologies by histopathological evaluation.
c) To determine any association of the histopathological findings with the sociodemographic status.

III. Materials and Methods:

This observational descriptive study with a cross-sectional design was conducted over eighteen months in the Pathology Department of a Kolkata medical college. Ninety-three symptomatic individuals with abnormal uterine bleeding were evaluated. After obtaining ethical approval, data were collected using a proforma covering patient demographics, clinical history, and investigation details.
Ninety trhree women more than 18 years of age with AUB were the study population. Their endometrial and cervical biopsy sample coming to histopathology lab were evaluated. Women with ovarian, endocrine causes and women with coagulopathies were excluded from the study.
The most commonly used scale for determining the socio economic status of an urban family, the Kuppuswamy scale used here. The parameters it takes into account are education, occupation, and income of the individual. A score is assigned and according to the total score, the person is placed in the appropriate socioeconomic class.
The Kuppuswamy Scale

Total Score	Socioeconomic Class
26-29	Upper Class
16-25	Upper Middle
11-15	Lower Middle
5-10	Upper Lower
Below 5	Lower

IV. Observations and Results:

This study involving ninety three women more than 18years of age with abnormal vaginal bleeding focused on endometrial and cervical pathologies related to abnormal uterine and cervical bleeding. Most participants were aged 35-40 years (32.3%), with a mean age of 38.10 ± 11.46 years. A significant portion belonged to the upper-lower class (29%) and were multiparous (58.1%).

Pap smears indicated candida infection (14.0%), inflammatory changes (9.6%), and trichomonas infection (6.5%), while abnormal cytological findings (ASCUS, HSIL, AGUS, LSIL) were observed in a small percentage (1-2.2%). Most participants (59.1%) had an endometrial thickness of 5-10 mm, with a mean thickness of 7.08 ± 2.75 mm. Common findings included fibroids (18.3%), endometrial hyperplasia (16.1%), and bulky uterus (16.1%).

Histopathological results showed simple hyperplastic endometrium (22.6%) to be the commonest condition. Most participants (95.7%) showed no increased vascularity.

The study suggests that endometrial carcinoma and leiomyoma are found in upper socioeconomic classes, potentially linked to hormonal use, while cervical carcinoma and simple hyperplasia are more common in lower classes due to lifestyle factors. Additionally, neoplastic lesions appear more frequently in younger age groups compared to existing studies.

Table 1: Age distribution of study subjects having AUB

Age group	Frequency	Percent
≤30 years	6	6.4%
31-35 years	9	9.7%
35-40 years	30	32.3%
41-45 years	25	26.9%
46-50 years	23	24.7%
Total	93	100%

Table 2: Socio economic status distribution by Kuppuswamy socioeconomic scale

Socioeconomic status	Frequency	Percent
Upper	24	25.8%
Upper middle	8	8.6%
Lower middle	15	16.2%
Upper lower	27	29.0%
Lower	19	20.4%

Table 3: Distribution of parity

Parity	Frequency	Percent
Null	24	25.8%
Primi	15	16.1%
Multi	54	58.1%

Table 4: Distribution Pap smear reports

Pap Smear	Frequency	Percent
ASCUS	1	1.0%
HSIL	1	1.0%
AGUS	2	2.2%
Endometrial cell	2	2.2%
LSIL	2	2.2%
Trichomonas	6	6.5%
Inflammatory	9	9.6%
Candida	13	14.0%
Unremarkable	57	61.3%
Total	93	100%

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Table 5: Distribution of Endometrial Thickness in mm

Endometrial Thickness	Frequency	Percent
<5 mm	24	25.8%
5-10 mm	55	59.1%
>10 mm	14	15.1%
Mean ± SD	7.08 ± 2.75	

Table 6: Distribution of USG findings

USG	Frequency	Percent
Thickened endometrium	2	2.2%
Intramural myoma	7	7.5%
Submucous myoma	10	10.8%
Thickened endometrium	12	12.9%
Bulky uterus	15	16.1%
Endometrial hyperplasia	15	16.1%
Normal	15	16.1%
Fibroid	17	18.3%

Table 7: Distribution of Diseases According To Age Groups in years:

	< 30	31 – 35	36 – 40	41 – 45	46 – 50
Early proliferative with no hyperplasia	2.2 %	2.2 %	5.4%	4.3%	3.2%
Late proliferative with no hyperplasia				2.2 %	4.3%

Secretary endometrium	2.2%	3.2%	10.7%	6.5%	
leiomyoma	2.2 %	3.2%	2.2 %	5.4%	
adenomyosis					1%
Simple hyperplasia	2.2 %	4.3%	8.6%	3.2%	6.5%
Complex hyperplasia				1%	
Endometrial polyp			1%	1%	
Atypical hyperplasia/EIN					3.2%
Type 1 endometrial CA					2.2 %
Type 2 endometrial CA					1%
Cervical carcinoma			2.2 %	1%	2.2 %
Total	8.8%	12.9%	30.1%	24.6%	23.6%

Table 8: Distribution of Vascularity as seen in Doppler

Vascularity	Frequency	Percent
No	89	95.7%
Yes	4	4.3%

Table 9: Distribution of Histopathology

Histopathology	**Frequency**	**Percent**
Early proliferative with no hyperplasia	16	17.3%
Late proliferative with no hyperplasia	6	6.5%
Secretary endometrium	20	21.6%
Atrophic endometrium	3	3.2%
leiomyoma	12	13.0%
adenomyosis	1	1%
Simple hyperplasia	21	22.6%
Complex hyperplasia	1	1.0%
Endometrial polyp	2	2.0%
Atypical hyperplasia/EIN	3	3.2%
Type 1 endometrial CA	2	2.2%
Type 2 endometrial CA	1	1.0%
Cervical carcinoma	5	5.4%

Table 10: Diseases according to Sociodemographic class (No. of cases)

	Upper Class	Upper Middle	Upper Lower	Lower middle	Lower	TOTAL
Early proliferative with no hyperplasia	4	2	1	3	6	**16**
Late proliferative with no hyperplasia	1	1	2	1	1	**6**
Secretary endometrium	4	6	4	3	3	**20**
Atrophic endometrium	1	2				**3**
Leiomyoma	4	2	2	1	3	**12**
Adenomyosis	1					**1**
Simple hyperplasia	8	5	2	4	2	**21**
Complex hyperplasia	1					**1**
Endometrial polyp	1		1			**2**
Atypical hyperplasia/EIN	1	1	1			**3**
Type 1 endometrial carcinoma	1				1	**2**
Type 2 endometrial carcinoma					1	**1**
Cervical carcinoma	0	1		1	3	**5**

V. CONCLUSION

Abnormal uterine bleeding (AUB) is a prevalent gynecological concern with a diverse array of underlying causes, spanning from benign to malignant conditions. Histological evaluation plays a vital role in diagnosing AUB, providing insights that clinical examinations or imaging techniques might overlook. This evaluation helps distinguish between benign, premalignant, and malignant lesions, thereby guiding personalized treatment strategies, including both medical management and surgical intervention.

Histological assessments not only aid in immediate clinical decisions but also enhance early detection of serious conditions, including endometrial and cervical cancers, particularly in high-risk groups like postmenopausal women. My study indicates a higher prevalence of hyperplastic changes in younger individuals, while malignancies are more common in older populations. This may be influenced by factors such as hormone therapy, lifestyle changes, and socioeconomic status, with lower-income groups showing higher cervical carcinoma rates and wealthier individuals having more endometrial malignancies. Overall, premalignant and malignant cases are more frequent among upper-class populations than previously reported.

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