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Clinicopathological evaluation of women with postcoital bleeding

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Abstract

Aim-To determine the percentage of postcoital bleeding and study the correlation between demographic data, clinical findings, cytology, colposcopy and histopathological reports among women with postcoital bleeding.

Materials and Methods: Women ≥18 years of age with postcoital bleeding attending the gynaecology OPD were included in the study. After proper consent, physical and gynaecological examinations were done in 100 patients with postcoital bleeding. Liquid-based cytology was taken from all patients, and colposcopy and cervical biopsy were done when indicated.

The percentage of women with postcoital bleeding in this study was 0.115%. The study identified various causes of postcoital bleeding among women, in which 28 cases were linked to inflammation, 17 cases to infections, and 5 cases had unknown causes (idiopathic). Additionally, 25 cases are non-cancerous (benign), 5 cases show early signs of potential cancer (premalignant), and 20 cases involve confirmed cancerous cells, highlighting the diverse reasons behind postcoital bleeding. The study establishes a significant correlation ($p = 0.02$) between pap smear results and cervical biopsy outcomes in 100 women with postcoital bleeding. A significant correlation ($p = 0.002$) was observed between colposcopy grading and cervical biopsy results. This study establishes the correlation between cervical biopsy results with final diagnoses, 45 women underwent biopsy, revealing a range of pathologies. Among cases diagnosed with inflammation, chronic inflammation, and focal dysplasia were noted. Benign diagnoses predominantly consisted of polyps, while premalignant cases included one carcinoma in situ. All 19 malignant cases were confirmed as invasive cancer on histopathological examination (HPE), underscoring cervical biopsy's significance as the gold standard for confirming malignancy, supported by a significant p-value of 0.00 at the 95% Confidence Interval.

Conclusion- All women experiencing post-coital bleeding should undergo a comprehensive assessment, including pelvic examination followed by a pap smear, colposcopy, and biopsy if necessary. If a cervical smear appears normal in women with post-coital bleeding, it does not necessarily exclude the presence of cervical intraepithelial neoplasia or invasive cancer. Post-coital bleeding should be considered a potentially alarming sign of increased risk for invasive cervical cancer and cervical intraepithelial neoplasia. Timely workup and intervention are recommended.

Keywords: Postcoital bleeding; Pap smear; Gynaecological examination; Cervical intraepithelial neoplasia; Cervical cancer

1. Introduction

Post coital bleeding defined as vaginal bleeding unrelated to menstruation that occurs after sexual intercourse and is a common but often overlooked gynaecological symptom. While it can be associated with benign conditions in many cases, such as cervical ectropion or cervical polyp, or infections. Post coital bleed may also be a harbinger of serious

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underlying pathology, including cervical cancer or pre-cancerous lesions [1]. Its incidence is estimated to range from 0.7% to 9% in reproductive-aged women, with variability depending on population and healthcare access [2]. It is a relatively recurrent symptom and multifactorial in women. Spontaneous resolution has been noted in 51% of naturally menstruating premenopausal women after two years, with no subsequent signs of recurrence [3]. About 30% of women experiencing postcoital bleeding also encounter abnormal uterine bleeding, while 15% report dyspareunia [4].

Most women with post coital bleeding will have a benign condition such as cervical polyp, ectropion, urogenital atrophy or cervicitis secondary to chlamydial infection. However post coital bleeding can also be associated with cervical cancer and understandably causes anxiety in women presenting with this symptom [5]. The prevalence of cervical cancer in women with post coital bleeding is 3-5.5%, and the prevalence of CIN is 6.8-17.8% [6]. Post coital bleeding is reported as the chief presenting symptom in 11% of women diagnosed with cervical cancer [7]. It's important to know that cervical cancer can be prevented by regular Pap smear tests, planned gynaecological examinations, HPV tests, Colposcopy and cervical vaccines [8].

Recent studies have emphasized the importance of a thorough clinical evaluation in all cases of postcoital bleeding, particularly due to its potential association with high grade CIN 2/3 and invasive malignancies. The integration of HPV testing, colposcopy and cytological assessment has improved diagnostic accuracy and early detection rates. Furthermore, updated guidelines by organisations such as ACOG and FIGO highlight the necessity of considering post coital bleeding as an alarm symptom, especially in women over 35 or those with persistent bleeding [9].

Aims and objectives

To determine the percentage of postcoital bleeding in women visiting the gynaecology OPD in Lok Nayak Hospital, New Delhi.

To determine the association between demographic characteristics, clinical presentation, and physical examination findings with histopathology of various conditions causing postcoital bleeding.

2. Materials and Methods

A cross-sectional study was conducted after obtaining ethical clearance from Institutional Ethics Committee among women of age ≥18 years attending Gynaecology OPD in the Department of Obstetrics and Gynaecology at Maulana Azad Medical College and Lok Nayak Hospital from September 2022- February 2024. Sexually active women of age ≥18 years with postcoital bleeding were included in the study and pregnant women, women who underwent hysterectomy, diagnosed case of carcinoma cervix and postcoital tear were excluded. A complete history including high-risk factors, menstrual history, gynaecological history, medical history like any bleeding disorder, and current medication were taken. A detailed clinical and gynaecological examination was done including per speculum, pervaginal and per recital examination.

A liquid based cytology (LBC) was taken and was reported using the Bethesda system. Colposcopy was considered if there were any suspicious lesions on the cervix or if the LBC report showed some abnormality.The grade was calculated by SWEDE score for classifying the colposcopy findings. Grade I was given a score of 0-4, Grade II was 5-6 and Grade III was from 7-10 depending upon the acetic acid uptake, iodine staining, vessels, margins, and the size of the lesion. A score of 0-4 indicates normal cervix or low-grade lesion (CIN1), a score of 5-6 indicates high-grade and non-invasive lesions (CIN2+), and a score of 7-10 indicates high-grade lesions with suspected invasion.If indicated, a biopsy was taken and sent for histopathology. After a thorough clinical and histopathological examination, the diagnosis was made and the percentage of diagnosed benign, premalignant, and malignant lesions was noted.

3. Observations and Results

The study was conducted in the Department of Obstetrics and Gynaecology, Maulana Azad Medical College, and Associated Lok Nayak Hospital during the period from September 2022 to February 2024. Approximately, 86900 women attended the Gynaecology OPD out of which 100 women met the inclusion criteria and were included in the study. The percentage of women with postcoital bleeding was 0.115%. The clinicopathological evaluation of 100 women with complaints of postcoital bleeding was done to find out the diagnosis.

Table 1 Demographic details of the study patients

Age	Frequency (n=100)	Percentage (%)
21-30	22	22.0
31-40	36	36.0
41-50	30	30.0
51-60	12	12.0
Body mass index (BMI)		
<18.4	0	0
18.5-22.9	18	18.0
23-24.9	21	21.0
25-29.9	56	56.0
>30	5	5.0
Residence		
Rural	57	57.0
Urban	43	43.0
Religion		
Hindu	44	44.0
Muslim	56	56.0
Education		
Illiterate	75	75.0
Pre-school	9	9.0
Primary	6	6.0
Secondary	7	7.0
Graduation	2	2.0
Post-graduation	1	1.0
Socio- economic status		
Lower	29	29.0
Upper lower	51	51.0
Lower middle	17	17.0
Upper middle	3	3.0
Upper	0	0
High risk factors		
Multiple sexual partners	1	1.0
Poor hygiene	99	99.0
Multiparity	88	88.0
Smoking	4	4.0
OCP use	15	15.0

Immunocompromised state	5	5.0
Low socio-economic status	70	70.0
Parity (P)		
Nullipara	6	6.0
Primigravida	8	8.0
Multigravida	86	86.0
Contraception		
None	60	60.0
Barrier methods	6	6.0
Oral contraceptive pills	15	15.0
Intrauterine devices	7	7.0
Tubal ligation	12	12.0
Past history		
Hypertension	13	13.0
Diabetes	7	7.0
Thyroid disorder	6	6.0
Tuberculosis	6	6.0
Seizure disorder	1	1.0
Heart disease	1	1.0
Poliomyelitis	1	1.0
History of blood transfusions	2	2.0
Other malignancy	1	1.0
cholecystectomy	2	2.0
Tonsillectomy	1	1.0
Family history		
Chronic medical illness	2	2.0
Not significant	97	97.0
History of malignancy	1	1.0
Personal history		
Reduced appetite	3	3.0
Altered bladder habits	1	1.0
Drug abuse	4	4.0
Not significant	93	93.0

In this study group, the most affected age group with postcoital bleeding was 31-40 years. Among 100 patients with postcoital bleeding, 56% belonging to the overweight group (25-29.9), 75% were illiterate and 51% belonged to the upper lower class group. The common high risk factors in this study was poor hygiene, multiparity and low socio-economic status. Around 86% were multigravida, 60% did not use any contraception methods and 12% used oral contraceptive pills. In this study group, 13% had hypertension, 7% had diabetes, 1% had history of malignancy and 1% had family history of malignancy. Majority of them no significant family and personal history. [Table-1]

Table 2 Clinical presentation and gynaecological examination findings in the patients

Clinical presentation-symptoms	**Frequency (n=100)**	**Percentage (%)**
Lower abdominal pain	35	35.0
Dyspareunia	9	9.0
Discharge per vaginum	28	28.0
Something coming out of vagina	7	7.0
Heavy menstrual bleeding	11	11.0
Abnormal uterine bleeding	6	6.0
Postmenopausal bleeding	6	6.0
Burning micturition	9	9.0
Infertility	3	3.0
Others	12	12.0
Amount of postcoital bleeding		
Spotting	33	33.0
Mild (superficially stained single pad)	36	36.0
Moderate (single pad-half soaked)	15	15.0
Heavy (single pad-3/4th to fully soaked)	16	16.0
Per-abdomen examination		
Uterus not palpable	94	94.0
Uterus palpable	4	4.0
Cystic mass palpable	2	2.0
Per speculum examination		
Cervix normal	7	7.0
Cervical ectropion	22	22.0
Cervical hyperthrophy	29	29.0
Cervical polyp	19	19.0
Cervical growth	22	22.0
Uterovaginal prolapse	1	1.0
Vagina		
Healthy	88	88.0
Unhealthy	12	12.0
Discharge		
Present	34	34.0
Absent	66	66.0
Bleeding		
Present	39	39.0
Absent	61	61.0

Per vaginal examination		
Cervix		
Normal	16	16.0
Bulky	42	42.0
Polyp	21	21.0
Growth	14	14.0
Flushed with vagina	2	2.0
Prolapse	1	1.0
Cervical motion tenderness		
Absent	83	83.0
Present	17	17.0
Bilateral fornix		
Bilateral fornix free	81	81.0
Bilateral fornix fullness	19	19.0
Parametrium		
Involved	18	18.0
Free	82	82.0
Pelvic side wall		
Involved	10	10.0
Free	90	90.0

In this study , majority had normal physical examination finding except for 11% who were known case of hypertension on treatment,5% who had pallor and 2% had tachycardia. Among the 100 patients with postcoital bleeding, majority of them (36%) had mild bleeding. On Per Speculum examination, Most of the study subjects had an abnormal-looking cervix, 29% had cervical hypertrophy, 22% had cervical ectropion, whereas 19% had a cervical polyp and 22% had growth in the cervix. Around 7% had normal-looking cervix and 1% had uterovaginal prolapse,, bleeding is present in 39% and discharge in 34% .[Table-2]

Table 3 Liquid based cytology (LBC), Colposcopy, cervical biopsy reports and diagnosis of the patients

LBC Reports	**Frequency (n=100)**	**Percentage (%)**
NILM	73	73.0
ASCUS	9	9.0
LSIL	4	4.0
HSIL	11	11.0
AGC	0	0.0
Malignant cell	3	3.0
Colposcopy findings		
Grade 1(0-4)	5	5.0
Grade 2(5-6)	2	2.0
Grade 3(7-10)	3	3.0

Cervical biopsy findings		
Chronic inflammation	7	7.0
Endocervical polyp	9	9.0
Adenomyomatosis polyp	3	3.0
Cervical fibroid	3	3.0
Focal dysplasia	3	3.0
Carcinoma in situ	1	1.0
Moderately differentiated carcinoma	2	2.0
Keratinizing squamous cell carcinoma	1	1.0
Non –keratinizing squamous cell carcinoma	13	13.0
Adenocarcinoma	1	1.0
Mixed malignant mullerian tumor	1	1.0
Diagnosis		
Inflammatory	28	28.0
Infection	17	17.0
Idiopathic	5	5.0
Benign	25	25.0
Premalignant	5	5.0
Malignant	20	20.0

In the study population, the Liquid-Based Cytology (LBC) was reported in all cases and 73 cases had Negative for Intraepithelial Lesion or Malignancy (NILM), indicating no abnormal cells were detected, 9 had Atypical Squamous Cells of Undetermined Significance (ASCUS), 4 cases of Low-Grade Squamous Intraepithelial Lesion (LSIL) and 11 cases of High-Grade Squamous Intraepithelial Lesions (HSIL), indicating varying degrees of abnormal cell changes that may require further evaluation. No cases of Atypical Glandular Cells (AGC) were reported, but 3 cases of Malignant Cells were detected. In the present study, colposcopy was done on 10 women among 100 study population, out of which 50% had Grade-I findings, 20% had Grade-II findings and 30% had Grade-III findings on colposcopy. Cervical biopsy was done in 45 (45%) out of 100 study populations. Out of 45 cervical biopsies, 7% had chronic inflammation, 15% had polyps, 9 had endocervical polyps, 3 had adenomyomatous polyps and 3 had cervical fibroids. Focal dysplasia was detected in 3 cases, carcinoma in situ was found in 1 case and 19 cases were found to be malignant. Among 19 malignant cases, moderately differentiated carcinoma is seen in 2 cases, 13 cases had non-keratinizing squamous cell carcinoma, moderately differentiated carcinoma in 2 cases, and adenocarcinoma in 1 case. Also, one rare finding which is mixed malignant Mullerian tumor was reported in 1 case.

Among the study group, 28 cases exhibited signs of Inflammatory conditions, suggesting potential inflammation-related causes. Infection was detected in 17 cases, indicating the presence of infectious agents contributing to the bleeding episodes. 5 cases were diagnosed as Idiopathic, signifying that the cause of bleeding remains unclear despite evaluation. Additionally, 25 cases were classified as Benign, denoting non-cancerous origins, while 5 cases were identified as Premalignant, indicating abnormal cell changes with potential for cancer development. Finally, Malignant conditions were identified in 20 cases, highlighting the presence of cancerous cells as a significant contributor to postcoital bleeding among these women.

Table 4 Sensitivity, specificity, positive predictive value (PPV), and negative predictive value [NPV] of LBC and colposcopy for premalignant and malignant lesions

Procedure	LBC (premalignant)	LBC (malignant)	Colposcopy (premalignant)	Colposcopy (malignant)
Sensitivity	50%	85%	50%	100%
Specificity	53.7%	84%	25%	50%
PPV	9.5%	81%	25%	50%
NPV	91.7%	87.5%	50%	100%
P-value	0.88	0.000	0.540	0.221

In the study, the sensitivity and specificity of LBC for detecting premalignant lesion was found to be 50% and 53.7% respectively. The positive predictive value (PPV) was 9.5% and the negative predictive value (NPV) was 91.7%. The accuracy of LBC for detecting premalignant lesion was 51.1%.

The sensitivity and specificity of LBC for detecting malignant lesion was found to be 85% and 84%. The PPV and NPV was 81% and 87.5% respectively and the overall accuracy was 84.5%. With 95% confidence interval, the p-value was 0.000 which was significant.

The sensitivity of colposcopy was 50%, specificity 25%, PPV was 25% and NPV was 50% for detecting premalignant lesions.

The sensitivity of colposcopy was 100%, specificity 50%, PPV was 50% and NPV was 100% for detecting malignant conditions.

Table 5 Comparison of high risk factors between the two groups with normal and abnormal pathology

Demographic details	Benign	Premalignant/malignant	P-value
Age in years	36.5±8.06	47.12±8.98	0.001
Multiparity	64(85.3%)	24(96.0%)	0.155
Socio –economic status	46(61.3%)	24(96.0%)	0.001
Smoking	1(1.3%)	3(12%)	0.018
Multiple sexual partners	1(1.3%)	0	0.562
OCP intake	14(18.7%)	1(4%)	0.075

Women with premalignant/malignant conditions tend to be significantly older (mean age of 47.12 years) compared to those with benign conditions (mean age of 36.5 years) and it was statistically significant (p = 0.001). There was a higher proportion of multiparity among women with premalignant/ malignant conditions (96.0%) compared to those with benign conditions (85.3%), but the difference is not statistically significant (p = 0.155). A significantly higher percentage of women with premalignant/malignant conditions (96.0%) had a lower socioeconomic status compared to those with benign conditions (61.3%). The difference was statistically significant (p = 0.001). Women with premalignant/ malignant conditions reported taking oral contraceptive pills (4.0%) were compared to those with benign conditions (18.7%), and no significant association was found (p = 0.075). A significantly higher percentage of women with premalignant/ malignant conditions (12.0%) reported smoking habit compared to those with benign conditions (1.3%). The difference was statistically significant (p = 0.018). The difference in the proportion of women reporting multiple sexual partners between the benign and premalignant/malignant groups was not statistically significant (p = 0.562).

Table 6 Correlation among Age, per speculum findings, LBC, colposcopy and cervical biopsy

Age in years	**NILM**	**ASCUS**	**LSIL**	**HSIL**	**Total**
21-30	22	0	0	0	22
31-40	28	2	1	5	36
41-50	21	5	1	2	30
51-60	2	2	2	4	12
Correlation of per speculum findings and LBC					
Per speculum Findings	NILM	ASCUS	LSIL	HSIL	Total
Normal cervix	7	0	0	0	7
Cervical ectropion	21	1	0	0	22
Cervical hypertrophy	22	4	1	2	29
Cervical polyp	17	1	1	0	19
Cervical growth	5	3	2	9	22
Uterovaginal prolapse	1	0	0	0	1
Correlation of LBC and cervical biopsy					
Biopsy report	NILM	ASCUS	LSIL	HSIL	Total
Inflammation	5	1	1	0	7
Endocervical polyp	9	0	0	0	9
Adenomyomatous polyp	3	0	0	0	3
Cervical fibroid	2	1	0	0	3
Focal dysplasia	2	1	0	0	3
Carcinoma in situ	0	0	0	1	1
Moderately differentiated squamous cell carcinoma	0	0	1	1	2
Keratinizing squamous cell carcinoma	0	0	0	1	1
Large cell non keratinizing squamous cell carcinoma	2	1	1	8	14
Adenocarcinoma	1	0	0	0	1
Mixed malignant mullerian tumor	0	0	0	0	1
P -value	0.02				
Correlation of colposcopy and cervical biopsy					
Biopsy report	Grade 1	Grade 2	Grade 3	Not applicable	Total
Inflammation	1	1	0	5	7
Endocervical polyp	0	0	0	9	9
Adenomyomatosis polyp	0	0	0	3	3

Cervical fibroid	1	0	0	2	3
Focal dysplasia	1	0	0	2	3
Carcinoma in situ	0	0	1	0	1
Moderately differentiated squamous cell carcinoma	0	0	0	2	2
Keratinizing squamous cell carcinoma	0	0	0	1	1
Large cell non keratinizing squamous cell carcinoma	0	1	0	13	14
Adenocarcinoma	0	0	0	1	1
Mixed malignant mullerian tumor	0	0	0	1	1
P -value	0.002				
Correlation of diagnosis and cervical biopsy					
Biopsy report	**Inflammatory**	**Benign**	**Pre malignant**	**Malignant**	**Total**
Inflammation	2	4	1	0	7
Endocervical polyp	0	9	0	0	9
Adeno-myomatosis polyp	0	3	0	0	3
Cervical fibroid	0	3	0	0	3
Focal dysplasia	1	2	0	0	3
Carcinoma in situ	0	0			1
Moderately differentiated squamous cell carcinoma	0	0	0	0	2
Keratinizing squamous cell carcinoma	0	0	0	0	1
Endocervical carcinoma	0	0	0	1	1
Mixed malignant mullerian tumor	0	0	0	1	1
P-value	0.00				

In the present study, the correlation between pap smear and age in which most of younger women had NILM on pap smear was studied, around 22 women were in the age group of 21-30 years and 28 women belong to 31-40 years, HSIL seen above 30 years of age whereas malignant cell on pap smear seen above 40 years. As age advances there is the likelihood of malignancy. With a 95% Confidence Interval, the p-value was found to be 0.00, and there was a significant association between age and pap smear report.

Correlation between the per speculum findings of the cervix and pap smear report were calculated. Out of 22 women who had cervical ectropion on per speculum findings, 21 had NILM (95.5%) and 1 (4.5%) had ASCUS. Cervical hypertrophy was the most common finding in the study population which was seen in 29 women, out of them majority had NILM that is 22 (75.9%), 4 (13.8%) had ASCUS, 1 (3.4%) woman had LSIL, 2 (6.9%) women had HSIL on pap smear report.Out of 19 patients who had polyp on perspeculum examtination, 17 (89.5%) had NILM,1 (5.3%) had 54 ASCUS, and 1 (5.3%) woman had LSIL. Growth was visualized on per speculum in 22 women who presented with postcoital bleeding, among them 9 (40.9%) had HSIL, 5 (22.7%) women had NILM, 3 (13.6%) had Malignant cells, 3 (13.6%) had ASCUS and 2 (9.1%) had LSIL. Uterocervical prolapse was seen in 1 woman who had postcoital bleeding and had a NILM report.

In the present study, the correlation between the pap smear result with the cervical biopsy was studied. Out of 24 NILM pap smear report, 5 cases had chronic inflammation on cervical biopsy report whereas 14 had a polyp, 2 cases had focal dysplasia and 3 had invasive cancer. Also out of 4 ASCUS reports, 1 had inflammatory changes, 1 had cervical fibroid, 1 woman had focal dysplasia and 1 case had invasive cancer. Among 3 LSIL reports, 1 had inflammation and 2 had invasive

cancer. Out of 11 HSIL reports, 10 had invasive cancer and 1 had carcinoma in situ whereas 3 cases showed malignant cells on the pap smear report and all turned out to be invasive cancer in the histopathology report. The p value in this correlation found out is 0.02, and it is significant.

In the present study, the correlation between the colposcopy grading and cervical findings was done. Among the Grade I colposcopy findings only 3 underwent cervical biopsy out of 5 study population, in which there was 1 case of chronic inflammation, 1 case of focal dysplasia, and 1 case of cervical fibroid with none reported as invasive cancer. Women with Grade II on colposcopy underwent cervical biopsy and results showed that 1 case had chronic inflammation on histopathology finding and 1 had large cell non-keratinizing squamous cell carcinoma while 3 cases belonged to Grade III colposcopy, out of which only 1 underwent cervical biopsy and histopathology report was suggestive of carcinoma in situ. With a 95% Confidence interval, the p-value is 0.002 which is significant, it implies that there is the correlation between the grading of colposcopy findings and cervical biopsy report.

In this study, only 45 women underwent a cervical biopsy which is a histopathological diagnosis. Out of 3 women who were diagnosed with an inflammatory condition, 2 cases reported as chronic inflammation, 1 as focal dysplasia whereas among 21 women who were diagnosed as benign, 4 had chronic inflammation, 15 had polyp, 2 had focal dysplasia with no HPE reported as invasive cancer. Out of 2 who were diagnosed as premalignant, 1 case had carcinoma in situ whereas 1 turned out to be chronic inflammation on HPE Report. Among 19 cases with malignant diagnosis, all the cases were reported as invasive cancer. With a 95% Confidence Interval, the p-value is 0.00, which implies that, there was a significant association between the final diagnosis and HPE report, making cervical biopsy the gold standard for confirmatory diagnosis of a malignant condition.

4. Discussion

This was a cross-sectional study that included women above 18 years of age who came to the gynecology OPD of Lok Nayak Hospital with a chief complaint of postcoital bleeding. In the current study, there was a clinicopathological evaluation of women with postcoital bleeding. In this study, around 86900 women presented to the gynaecology OPD, out of which 100 reported with postcoital bleeding, and the percentage was 0.115%. The prevalence of cervical cancer in women with post-coital bleeding was 3-5.5%, and the prevalence of CIN is 6.8-17.8%. Postcoital bleeding is reported as the chief presenting symptom in 11% of women diagnosed with cervical cancer. Cervical cancer possesses an extended pre-invasive phase, during which timely intervention leads to a decrease in the incidence of this dreadful disease.

The mean age of patients with postcoital bleeding in this study group was 39.27 which is close to the study by Elmizadeh k et al where the mean age of the patients with postcoital bleeding was 37.9 years [8]. The age of the study subjects in the present study ranged between 18 to 60 years. Most of the study population was in the mean age group between 31-40 years (36%). Yarlagadda S et al conducted a prospective and retrospective study of 100 women with postcoital bleeding in which the majority of women were between 31-40 years (57%) [6].

In the present study, 70% belong to low socioeconomic status and among 29 cases from Lower class families, 4 cases had invasive cancer (13.8%), and among 51 cases from Upper Lower-class families, 13 cases (25.5%) had invasive cancer, whereas in Lower Middle-class families among 17 cases, 3 cases were found to be malignant. 75% of 67 cases of invasive cervical cancer were found in low socio-economic status, which is similar to that reported by Himanshi G et al, where a majority (53%) belonged to a low socio-economic group in which high-grade cervical intraepithelial lesions and invasive cancers were more common [10].

In this study majority (88%) of patients with postcoital bleeding were multipara which is similar to the study done by Himanshi G et al where the majority (63%) of women with postcoital bleeding were multipara [10].

In this study, a comparison between high-risk factors and normal/abnormal pathology in women with postcoital bleeding was done, and found that older age significantly correlates with premalignant/malignant conditions compared to benign ones ($p = 0.001$). While multiparity rates are higher in the premalignant/malignant group, this difference lacks statistical significance ($p = 0.155$). Lower socioeconomic status ($p = 0.001$) and smoking ($p = 0.018$) are significantly associated with premalignant/malignant conditions, whereas oral contraceptive pill use and multiple sexual partners show no significant differences between the groups. It has been reported in a study that reproductive and sexual factors such as high parity, sexual intercourse at a young age, multiple sexual partners, smoking, and low socio-economic status are risk factors for cervical cancer [11].

In the present study, on per speculum examination, 29% had cervical hypertrophy, 22% had cervical ectropion, 19% had a cervical polyp, and 22% had growth in the cervix. Around 7% had a normal cervix, and 1% had uterovaginal prolapse. In the study done by Himanshi G et al, 55% had cervical erosion,36% had cervical hypertrophy, and 6% had cervical polyps [10]. Ramadevi E et al reported that cervical erosion was seen in 59%, 16% had cervical congestion,6% had hypertrophy with congestion, 12% had hypertrophy with erosion, and cervical polyp was found in 5% of cases [12].

In the present study, the Liquid-Based Cytology (LBC) findings reveal cervical abnormalities including NILM (73%), ASCUS (9%), LSIL (4%), and HSIL (11%), with 3 cases of Malignant Cells detected. Pap smears play a crucial role in identifying these abnormalities, especially in patients with postcoital bleeding, highlighting the importance of Pap smears in detecting cervical abnormalities, particularly in patients with postcoital bleeding. In Yarlagadda S et al, NILM was seen in 62%, LSIL in 22%, HSIL in 12%, and carcinoma in 4% of women [6]. In the study by Himanshi G et al,15% had normal cytology, 6% had LSIL, 7% had HSIL, and 9% had malignant cells on cytology [10].

In the present study, the correlation between pap smear and age was studied, in which most of younger women had NILM on pap smear, around 22 women in the age group of 21-30 years and 28 women belong to 31-40 years, HSIL seen above 30 years of age whereas malignant cell on pap smear seen above 40 years. In the study done by Yarlagadda S et al, patients of the young age group (26-35) had NILM and LSIL, and 20.25% had HSIL and carcinoma in women above 36 years [6].

In the present study, Colposcopy was performed in 10 women which was indicated (abnormal pap smear with suspicion of malignancy), revealing Grade-I findings in 50%, Grade-II in 20%, and Grade-III in 30% of cases based on the SWEDE score classification system. Yarlagadda S et al, 56% had benign inflammatory lesions in colposcopy, 24% had low-grade lesions, 14% had high-grade lesions, and 6% had invasive carcinoma [6]. Himanshi G. et al reported 30% of women with normal colposcopy findings, 46% with Grade I,7% with Grade II, and 17% with Grade III lesions in their study [10].

The study also compared the results obtained with a pap smear and colposcopy. 1 woman with NILM on pap smear presented Grade III colposcopy results, while among 6 with ASCUS, 5 displayed Grade I colposcopy outcomes and 1 showed Grade III. 1 case of LSIL in pap smear yielded Grade II colposcopy, while 2 HSIL cases resulted in one Grade II and one Grade III colposcopy finding. A study done by Raksha S et al reported that out of 51 cases of inflammatory findings on cytology,28 (67%) had inflammatory findings on colposcopy, 11 (32%) had CIN1, and 12(55%) were CIN2 and CIN3. Out of 6 cases reported as LSIL,4 were CIN1 and 2 were CIN2 and CIN3. Out of 2 cases of HSIL, 2 were reported as CIN2/3 [13].

In the current study, a cervical biopsy was done in 45 (45%) out of 100 study populations. Out of 45 cervical biopsies, findings included chronic inflammation in 7 cases, polyps in 15 cases (including 9 endocervical, 3 adenomyomatous, and 3 cervical fibroids), and focal dysplasia in 3 cases. Additionally, one case of carcinoma in situ and 19 malignant cases were identified, reflecting varied pathological findings in cervical biopsies, with one rare finding among malignant cases, which is a mixed malignant Mullerian tumor. In the study by Gupta M et al, histopathological examination of post coital bleeding reported 14% cases of CIN1, 5.3% cases of CIN2/3, and no invasive cancer [14]. In a study reported by Elmizadeh K et al,19.6% of patients with postcoital bleeding had normal biopsy report, while 28.2% had cervicitis,13.6% had cervical polyp,33.2% had CIN1, 3.57% had CIN2/3, 1.1% had carcinoma in situ, and 1.1 % had squamous cell carcinoma [8].

In the present study, the correlation between the LBC and cervical biopsy was studied. Among 24 NILM pap smear cases, 5 exhibited chronic inflammation, 14 had polyps, 2 showed focal dysplasia, and 3 were diagnosed with invasive cancer. Out of 4 ASCUS cases, the final HPE report is as follows: inflammatory changes, polyps, focal dysplasia, and invasive cancer among 3 LSIL reports; 1 had inflammation and 2 had invasive cancer. Out of 11 HSIL reports, 10 had invasive cancer and 1 had carcinoma in situ, whereas 3 cases showed malignant cells on the pap smear report, and all turned out to be invasive cancer in the histopathology report. In a study done by Yarlagadda S et al, out of 22 women who had LSIL on pap smear,7 had moderate-severe dysplasia, 5 who had HSIL on paps showed Squamous cell carcinoma on HPE report, 4 cases reported as squamous cell carcinoma on cytology and biopsy report [6]. In a study reported by Elmizadeh K et al, out of 189 who had NILM on paps smear, 1 turned out to be squamous cell carcinoma on biopsy report. Out of 63 patients reported as ASCUS, 3 had CIN2/3 in their biopsy report, out of 21 who had LSIL,3 had CIN2/3, 1 had carcinoma in situ, and 1 had squamous cell carcinoma [8].

The sensitivity of LBC for malignancy was 85%, and the specificity was 84.0%. The positive predictive value (PPV) was 81.0%, and the negative predictive value (NPV) was 87.5%. Overall, the accuracy of the LBC test in this study was 84.5% for malignancy. The sensitivity of the LBC was 50%, specificity 53.7%, PPV- 9.5%, NPV- 91.7%, and accuracy 51.1% for pre-malignant conditions. Yarlagadda S et al reported that sensitivity of the pap smear was 71.42%, specificity 86.20%,

PPV-78.95%, NPV-80.64%, and accuracy 80% [6]. A study done in Southern Iran reported the sensitivity, specificity, PPV, and NPV as 47.19%, 64.79%, 88.69%, and 38.46%, respectively. The overall diagnostic accuracy of Pap smear was 82.2% [15].

In the present study, the colposcopy grading and cervical findings were correlated, and it was found that among Grade I, only 3 underwent cervical biopsy, in which there were 1 case of chronic inflammation, 1 case of focal dysplasia, and 1 case of cervical fibroid, with none reported as invasive cancer. In Grade II which was found in 2 cases both underwent cervical biopsy and results showed that 1 case had chronic inflammation on histopathology finding and 1 had large cell non-keratinizing squamous cell carcinoma, while 3 cases belonged to Grade III colposcopy, out of which only 1 underwent cervical biopsy and histopathology report was suggestive of carcinoma in situ. Himanshi G et al reported that out of 70 patients who had a biopsy, 66 patients had well correlation between colposcopy and histopathology [10]. Yarlagadda S et al, compared the results of colposcopy with HPE in which 56 women had benign inflammatory lesions in colposcopy, among which 92.85% had chronic cervicitis with metaplasia, 5.36% had mild dysplasia, and 1.78% had moderate-severe dysplasia. Out of 14 women who had high-grade lesions in colposcopy, 78.57% had moderate-severe cervical dysplasia and 21.42% had invasive squamous cell carcinoma. All the women who had lesions suggestive of carcinoma in colposcopy had invasive squamous cell carcinoma in histopathology also [6].

The sensitivity of colposcopy was 100.0%, specificity was 50%, Positive predictive value was 50.0%. Negative predictive value was 100.0% in the present study for malignant Conditions. For pre-malignant conditions, the sensitivity of colposcopy was 50.0%, the specificity was 25.0%, and the Positive predictive value was 25.0%. The negative predictive value was 50.0% in the present study. Yarlagadda S et al reported the sensitivity of colposcopy was 90.47%, specificity-89.65%, PPV-86.36%, NPV-92.85%, and accuracy-90% [6]. In another study, the sensitivity and specificity of colposcopy were 64.72% and 52.74%, respectively. The PPV and VPV were 76.32% and 95.41%, while the diagnostic accuracy for the detection of premalignant lesions was 96.3% [15].

5. Conclusion

The study found that women with postcoital bleeding are at higher risk for cervical cancer and cervical intraepithelial neoplasia (CIN). It recommends a thorough evaluation, including history, risk factor assessment, pelvic examination, pap smear, colposcopy, and biopsy if needed. A normal pap smear does not rule out CIN or cancer. The bleeding may result from fragile cervical epithelium. Although most cases are not serious, timely workup is important. The study highlights the link between high risk factors (age, low socioeconomic status, OCP use, smoking) and cervical pathology. It supports pap smear and biopsy as key diagnostic tools.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of ethical approval

This study was conducted after obtaining approval from the Institutional Ethics Committee. All procedures followed ethical guidelines, and informed consent was taken from all participants.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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