

Detection of Abnormal Cervical Cytology by Papanicolaou Stained (PAP) Smears in Chandrapur District

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ABSTRACT- Abnormal cervical cytology includes lesions of the cervix caused due to various infections, hormonal disturbances, premalignant and malignant conditions. Screening of all the symptomatic women complaining of vaginal discharge, irregular menstrual bleeding, dyspareunia, post-coital bleeding or post-menopausal bleeding is necessary for detection and also to pick up any aberration in cervix epithelium i.e. dysplasia or early cervical cancer.

Key-Words: Negative for Intraepithelial Lesion or Malignancy, Atypical Squamous Cell of Undetermined Significance, Low grade Squamous Intraepithelial Lesion, High grade Squamous Intraepithelial Lesion, Squamous Cell Carcinoma

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INTRODUCTION

Papanicolaou's observation in 1943, that abnormal cell exfoliated from the cervix can be used to diagnose preinvasive cancer ^[1] was a landmark achievement in cancer control. Since then cervical and vaginal cytology has expanded in depth and dimensions-by implementing widespread screening programs, from detection of premalignant and malignant lesions to the development of colposcopy guided biopsy and various methods for treating precursor lesions, from refining diagnostic criteria for defining newer diagnostic techniques and establishing the role of the HPV in cervical carcinogenesis and lately to the development of the automated screening device. ^[2]

On a global basis, cervical cancer is responsible for approximately 2% of the total (weighted) years of life lost. ^[3]

No doubt it stands tall today worldwide as the second most common cancer in females (breast cancer being the first) and the third most common cause of female cancer death. ^[4,5]

Screening of all the symptomatic women complaining of vaginal discharge, irregular menstrual bleeding, dyspareunia, post-coital bleeding or post-menopausal bleeding is necessary for detection and also to pick up any aberration in cervix epithelium i.e. dysplasia or early cervical cancer.

MATERIALS AND METHODS

The present study was carried out in the Department of Pathology, during the period of 01/01/2015 to 31/12/2015. Women attending gynecology OPD of Government medical college, Chandrapur were included in this study. Detailed history of age, religion, presenting complaints, past history, obstetric history, and contraceptive history were taken.

Materials Required:

- | | |
|------------------------------------|-----------------------|
| 1. Clean glass slide | 6. Diamond pencil |
| 2. Ayre's spatula | 7. Sim's speculum |
| 3. Anterior vaginal wall retractor | 8. Biofix spray |
| 4. Koplin's jar | 9. Papanicolaou stain |
| 5. Cover slip | 10. Mounting medium |

Labeling of slides: Slides were labeled with diamond

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pencil as per serial number.

Sampling: Specimen was collected prior to bimanual examination. Cervix was visualized with the help of normal saline moistened speculum as lubricant gel was known to induce artefactual changes in a PAP smear.^[6] The longest portion of Ayre's wooden spatula was introduced into the external os and rotated through 360⁰, maintaining firm pressure to obtain material encompassing the whole circumference of the transformation zone. The spatula was withdrawn carefully. The cellular material was spread on the slide in a circular movement to cause uniform spread of cells.

Fixative: The slide was fixed with Biofix spray immediately to avoid artefact. It was allowed to dry. Alternative method of fixation was with 95% ethyl alcohol.

Staining method: Papanicolaou stain

Reporting of smear: Evaluation of smear was done as per the Bethesda System (TBS) 2001 for reporting of smears.

RESULT

Total 1014 cervical smears were obtained from patients who attended Obs / Gynaec OPD. The smears were stained with Papanicolaou stain using the RAPID-PAP™ method, screened and then reported as per The Bethesda System (TBS) 2001.

Table 1: Distribution of smears based on Adequacy of Specimen

Sr. No.	Adequacy	No. of cases	Percentage (%)
1.	Satisfactory	944	93.10
2.	Unsatisfactory	70	6.90
	Total	1014	100

Out of the total 1014 smears, 944 (93.10%) were satisfactory. The satisfactory smears were further evaluated.

Table 2 : Distribution of cases according to age

Sr. No.	Age group (yrs)	No. of cases	Percentage (%)
1.	21–30	208	22.03
2.	31–40	456	48.30
3.	41–50	242	25.64
4.	51–60	18	1.91
5.	61–70	14	1.48
6.	> 71	06	0.64
	Total	944	100

All the cases in the present study were in between the range of 21–72 years. Maximum number of cases i.e. 456 (48.30%) were from the age group 31–40 years, followed by 242 (25.64%) cases in the 41–50 years age group.

Table 3: Distribution of cases according to Chief complaints

Sr. No.	Complaints	No. of cases	Percentage (%)
1.	White discharge Per vagina	714	75.63
2.	Bleeding Per vagina	96	10.17
3.	Post coital bleeding	10	1.06
4.	Post menopausal bleeding	20	2.12
5.	Others		
	Itching	30	3.18

Burning micturition	10	1.06
Pain in abdomen	64	6.78
Total	944	100

The commonest chief complaint was white discharge in 714 (75.63%) cases. Bleeding per vaginum was the second most common chief complaint in 96 (10.17%) cases. Post menopausal bleeding cases were 20 (2.12%).

Table 4: Distribution of smears as per The Bethesda System (2001)

S. No.	Diagnosis	No. of cases	Percentage (%)
I.	Negative for Intraepithelial Lesion of Malignancy (NILM)	908	96.19
1.	Organisms		
	<i>Trichomonas vaginalis</i>	4	0.42
	Fungal organism	4	0.42
	<i>Bacterial vaginosis</i>	2	0.21
	<i>Actinomyces</i> species	–	–
	<i>Herpes simplex</i> virus	–	–
2.	Other non–neoplastic		
	Reactive changes with inflammation	876	92.80
	Radiation	–	–
	IUCD	–	–
	Atrophy	22	2.33
II.	Epithelial cell abnormalities	36	3.81
1.	Squamous cells		
	ASCUS	12	1.27
	ASC - H	–	–
	LSIL	16	1.69
	HSIL	6	0.64
	SCC	2	0.21
2.	Glandular cells		
	AGUS	–	–
	Adenocarcinoma	–	–
	Total	944	100

- NILM – Negative for Intraepithelial Lesion or Malignancy
- ASCUS – Atypical Squamous Cell of Undetermined Significance
- ASC – H – Atypical Squamous Cell, can't exclude HSIL
- LSIL – Low grade Squamous Intraepithelial Lesion
- HSIL – High grade Squamous Intraepithelial Lesion
- SCC – Squamous Cell Carcinoma
- AGUS – Atypical Glandular Cell of Undetermined Significance

In the present study, out of the 944 satisfactory smears, 908 (96.19%) smears were diagnosed as Negative for Intraepithelial Lesion or Malignancy (NILM) and 36 (3.81%) smears as having epithelial cell abnormalities.

Out of the 908 (96.19%) NILM smears, maximum i.e. 876 (92.80%) showed reactive changes associated with inflammation showing mild nuclear enlargement of squamous cells and plenty of polymorphonuclear leukocytes.

DISCUSSION

The present study was carried out from 01/01/2015 to 31/12/2015. During this period, total 1014 patients attending the OBS/GY OPD complaining of bleeding P/V, discharge P/V, post coital bleeding, post menopausal bleeding, burning micturition or pain in the abdomen were screened for the presence of any precancerous lesions of the cervix.

Table 5: Comparative analysis according to specimen adequacy

Study	Percentage of satisfactory smears
Nipa <i>et al.</i> ^[7]	99.97%
Chhabra <i>et al.</i> ^[8]	87.6%
Burkadze <i>et al.</i> ^[9]	98.6%
Khattak <i>et al.</i> ^[10]	98.67%
Abdullah ^[11]	97.2%
Misra <i>et al.</i> ^[12]	91.9%
Present study	93.10%

A specimen adequacy of the 944 (93.10%) smears in our study is comparable with that of Abdullah and Misra *et al.*^[12], which were 97.2% and 91.9% respectively.

Table 6: Comparative analysis according to age

Age in Yrs.	Chauhan <i>et al.</i> ^[13]		Nipa <i>et al.</i> ^[7]		Misra <i>et al.</i> ^[12]		Present study	
	No.	%	No.	%	No.	%	No.	%
21–30	11	8.30	14001	26.22	9157	27.31	208	22.03
31–40	66	50	14168	26.54	11205	33.42	456	48.30
41–50	35	26.5	7760	14.53			242	25.64
51–60	13	9.80	3408	6.38	12681	37.82	18	1.91
61–70	7	5.40	1134	2.12			14	1.48
>71	-	-	282	0.53			6	0.64

Chauhan *et al.*^[13] found maximum cases 66 (50%) in 31-40 years age group.

Nipa *et al.* found maximum cases 14168 (26.54%) in 31-40 years age group.

In the present study, maximum cases i.e. 456 (48.30%) were in the age group of 31–40 years, which correlates with the study of Chauhan *et al.*^[13] and Nipa *et al.*^[7]

Table 7: Comparative analysis according to Chief complaints

Chief complaints	Chauhan <i>et al.</i> ^[13]		Chhabra ^[8]		Misra <i>et al.</i> ^[12]		Present study	
	No.	%	No.	%	No.	%	No.	%
White discharge	-	-	1032	56.95	1152	13.7	714	75.63
Menstrual irregularities	83	62.8	732	40.32	355	4.2	116	12.29
Post coital bleeding	-	-	-	-	46	0.5	10	1.06
Pain in abdomen	-	-	48	2.64	-	-	64	6.78
Prolapse	2	1.5	-	-	-	-	-	-

Misra *et al.* ^[12] reported that white discharge per vaginum as the commonest chief complaint in 1032 (56.95%) cases and 1152 (13.7%) cases respectively. The commonest chief complaint of white discharge per vaginum found in 714 (75.63%) cases in the present study correlates with the studies by Chhabra and Misra.

Table 8: Comparative analysis of smears diagnosed as NILM

Study	Burkadze <i>et al.</i> ^[9]	Abdullah ^[11]	Misra <i>et al.</i> ^[12]	Present study
NILM (%)	94.51	95.33	51.22	96.19

Burkadze reported 94.51% of NILM smears in his study. Similarly, Abdullah reported 95.33% of NILM smears in her study. Our study reported 96.19 % NILM cases-a finding comparable with the studies of Burkadze and Abdullah.

Table 9: Comparative analysis of smears diagnosed as LSIL & HSIL

Diagnosis	Burkadze <i>et al.</i> ^[9]	Khattak <i>et al.</i> ^[10]	Abdullah ^[11]	Misra <i>et al.</i> ^[12]	Present study
LSIL (%)	26.3	1.69	1	5.50	1.69
HSIL (%)	12	0.60	0.55	1.60	0.64

Burkadze, Khattak, Abdullah and Misra reported 900 (26.3%), 6 (1.69%), 56 (1%) and 1867 (5.50%) cases of LSIL respectively. Burkadze, Khattak, Abdullah and Misra reported 496 (12%), 2 (0.60%), 21 (0.55%) and 571 (1.6%) cases of HSIL respectively. In the present study, 1.69% cases of LSIL and 0.64% cases of HSIL were reported. Our study correlates with the study of Khattak.

Table 10: Comparative analysis of smears diagnosed as SCC

Diagnosis	Burkadze <i>et al.</i> [9]	Khattak <i>et al.</i> [10]	Abdullah [11]	Misra <i>et al.</i> [12]	Present study
SCC (%)	0.4	0.3	0.37	0.6	0.21

Burkadze reported 20 (0.4%) cases of SCC out of total 4188 cases.

Khattak reported 1 (0.3%) case of SCC out of total 300 cases.

Abdullah reported 21 (0.37%) cases of SCC out of total 5590 cases.

Misra reported 219 (0.6%) cases of SCC out of total 33528 cases.

Two cases of SCC (0.21%), which we reported in the present study, correlates with Khattak.

CONCLUSIONS

The majority of women (75.63%) attending the Obs/Gyn OPD presented with the complaint of white discharge. The most cases detected as reactive changes with inflammation, which were 876 (92.80%). Epithelial cell abnormalities were diagnosed in 36 (3.81%) cases. Out of these, SCC was seen in 2 cases. (0.21%). High incidence of epithelial abnormality could be attributed to increasing age. Clinically, healthy cervix is not a criterion for excluding women from abnormal cervical cytology. In the present study, 12 (1.27%) cases of ASCUS and 16 (1.69%) cases of LSIL were diagnosed. Epithelial abnormalities are more commonly found in women belonging to post menopausal age group. Thus, Papanicolaou smears (Pap test) provide a simple, basic and inexpensive technique for detection of early cancers and precancerous lesion in otherwise asymptomatic women. The Bethesda System 2001 for reporting cytology is found to be very useful as it mentions clearly regarding specimen adequacy, provides an effective communication interface among cytologist and clinician for patient evaluation whenever needed.

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