



Original Research Article

Cytomorphological spectrum of cervical smears in a tertiary hospital

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ABSTRACT

Introduction: Cervical cancer is one of the leading causes of mortality and morbidity in women worldwide. Invasive cervical carcinomas are preceded by a stage in which the abnormal cells are confined to the epithelium (Intraepithelial stage). Women can be routinely screened for intraepithelial stage with cervical cytology smears and hence invasive stage can be prevented by early diagnosis. Cervical cytology smears also an useful tool in aiding the diagnosis of infectious and inflammatory conditions of the cervix.

Objectives: To evaluate the cytomorphological spectrum of cervical smears referred to a tertiary hospital.

Materials and Methods: It is a retrospective observational study. Clinical data and pap smear cytology reports were obtained from the archives during the period of May 2018-May 2019(1 year study). All smears were reported as per "Bethesda system of reporting cervical cytology " 2001.

Results : A total of 1241 cases were examined. The age group of patients ranged between 18yrs to 75 yrs. A total of 1203 cases (97%) were reported as Negative for intraepithelial lesions/malignancy, out of which 124 cases(0.1%) showed vaginal candidiasis, 56 cases (0.05%) were reported as Trichomonas vaginalis infection, 321 cases (0.26%) as Bacterial vaginosis, 1 case of HSV infection associated changes, 67 cases(0.05%) were reported as inflammatory smears. 38 cases showed abnormality, out of which 29 cases were of ASC-US, 3 cases of LSIL, 3 cases were reported as HSIL, 2 cases as Squamous cell carcinoma and 1 case with adenocarcinoma cervix.

Conclusion: Cervical inflammatory lesions (including infections) and neoplastic lesions (includes intraepithelial and epithelial malignancies) can be diagnosed by Cervical cytological smears.

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1. Introduction

World wide data shows that cervical cancer is the second most common cancer in women, comprising of approximately 12% of all cancers. Approximately 85% of women who died due to cervical cancer belonged to low- and middle-income countries.¹ All invasive cervical carcinomas are preceded by a stage in which the abnormal cells are confined to the epithelium (Intraepithelial stage). A continuous range of morphological abnormalities exists among these lesions which provide a rough indication of the likelihood of evolving into invasive carcinoma if left

untreated. This intraepithelial stage can be diagnosed with cervical cytology smears and invasive stage can be prevented by early diagnosis through routine screening. Cervical cytology smears also help in diagnosing infections and inflammatory conditions of the cervix. This study aims at portraying the morphological spectrum observed which include inflammatory, infective, premalignant and malignant lesions over a period of one year in a tertiary care hospital

2. Objectives

To evaluate the cytomorphological spectrum of cervical smears referred to a tertiary hospital.

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3. Materials and Methods

The retrospective study was carried out at J.J.M medical college and Chigateri government hospital, Davangere during may 2018-may 2019 (1 year study), total 1241 patients were screened. Smears with inadequate sample were excluded from the study.

The patients were in the age range of 18yrs-75yrs, who presented with complaints of vaginal discharge were included. Smears were taken from ectocervix and endocervix. Slides were prepared by conventional method, labeled, fixed in 95% ethyl alcohol immediately and subsequently stained by Papanicolaou stain (PAP stain). After staining, slides were mounted, screened and reported by 3 cytopathologists according to the 2001 Bethesda system.

The data obtained were entered in Microsoft excel format and were used for statistical analysis. The total number of smears, age wise distribution and distribution according to case were entered. Percentages were calculated.

4. Results

A total of 1241 cases were reported during may 2018-may 2019. The age of the patients ranged from 18-75 years with mean age group of 46.5 years.

The category of Negative for Intraepithelial Lesion or Malignancy (NIL/M) were also found to have the following findings:

1. Reactive cellular changes associated with inflammation (67 cases)
2. Candidiasis (124 cases)
3. Trichomonas vaginalis infestation (56 cases)
4. Bacterial vaginosis (321 cases)
5. Herpes simplex viral infection (1 case)

Epithelial cell abnormalities had the following findings

1. Atypical squamous cell of unknown significance (ASCUS)-29 cases
2. Low grade squamous intraepithelial lesion (LSIL)-3 cases
3. High grade squamous intraepithelial lesion (HSIL)-3 cases.
4. Squamous cell carcinoma-2 cases.

The Glandular cell abnormalities had 1 case of adenocarcinoma

5. Discussion

In developing countries non communicable diseases are emerging as an important health problem which demands appropriate control programme before they assume epidemic propagation.²

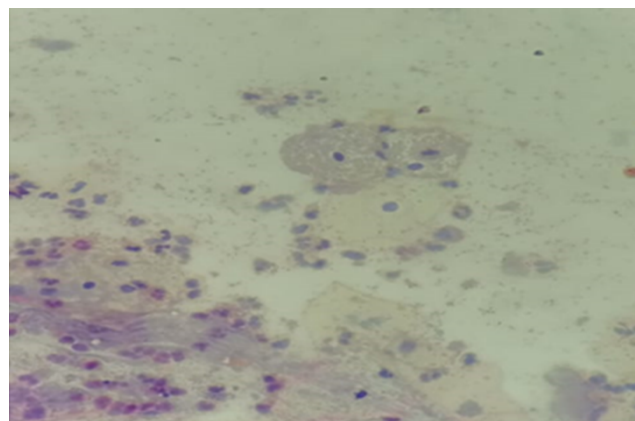


Fig. 1: Photomicrograph showing superficial squamous cells with inflammatory cell infiltrate and clue cells suggestive of Bacterial Vaginosis (PAP stain x10)

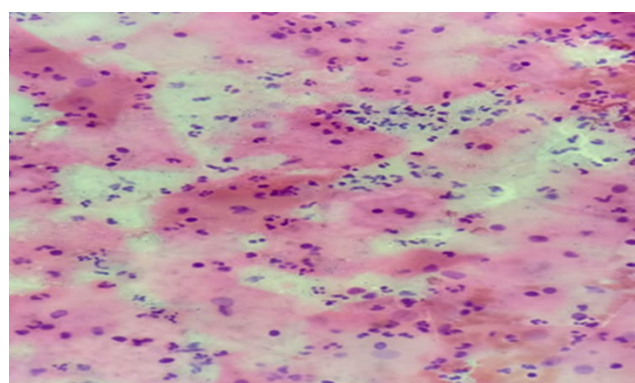


Fig. 2: Photomicrograph showing yeast form of candida which appear as pink color oval, regular and encapsulated (PAP stain x10)

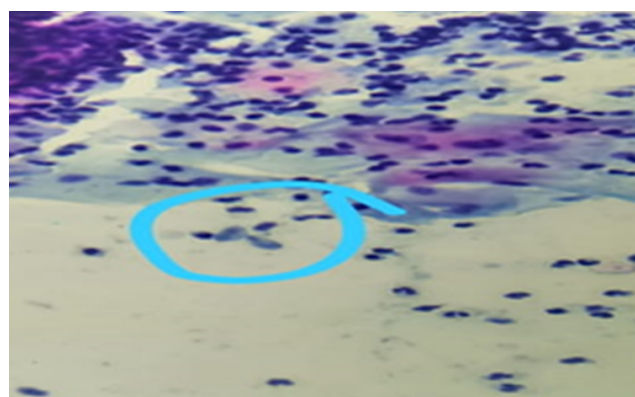


Fig. 3: Photomicrograph showing pear shaped organisms which have undulating membrane and a flagella. The background is dirty with dense neutrophilic infiltrate. (PAP stain x40)

Table 1: Distribution of various types of cervical lesions on PAP smears with respect to age group

Cyto diagnosis	Age<40yrs	Age>40yrs	% of total
NILM	434 cases	200 cases	51.08%
NILM with Inflammatory changes			
Candidiasis	108 cases	16 cases	10.0%
Trichomonas infection	45 cases	11 cases	4.51%
Bacterial vaginosis	262 cases	59 cases	25.86%
HSV	01 cases	-	0.08%
Reactive cellular changes associated with inflammation	48 cases	19 cases	5.39%
ASCUS	09 cases	20 cases	2.33%
SIL			
LSIL	01 case	02 cases	0.24%
HSIL	-	03 cases	0.24%
Carcinoma			
Squamous Cell Carcinoma	-	02cases	0.16%
Adenocarcinoma	-	01 case	0.080%

NILM-Negative for intraepithelial lesion/malignancy; ASCUS-Atypical squamous cell of undetermined significance ; SIL-Squamous intraepithelial lesion; HSIL-High grade squamous intraepithelial lesion; LSIL-Low grade squamous intraepithelial lesion.

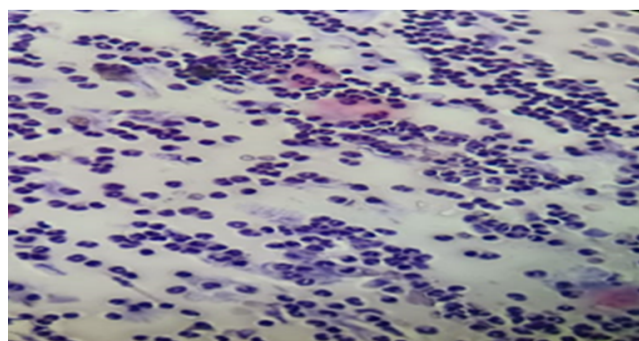


Fig. 4: Photomicrograph showing inflammatory smear with dense neutrophilic infiltrate (PAP stain x10)

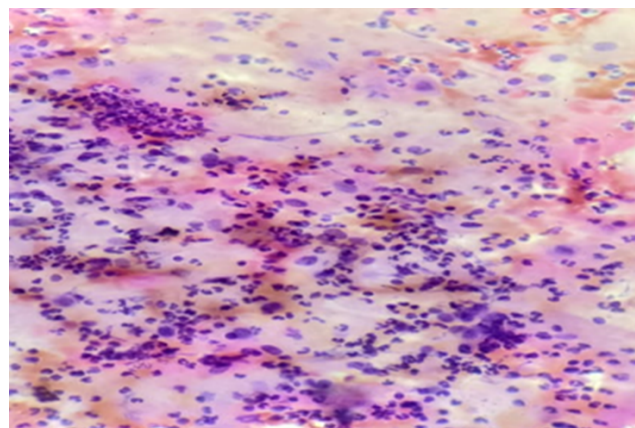


Fig. 6: Photomicrograph of ASC-US showing nuclear enlargement of superficial and intermediate squamous cells with mild atypia and mild nuclear hyperchromasia. (PAP stain x10)

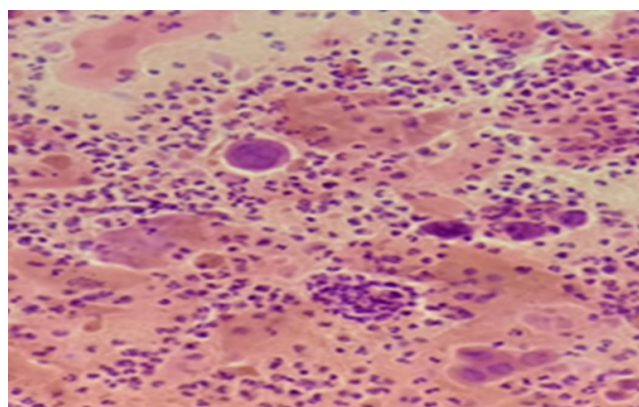


Fig. 5: Photomicrograph showing herpes simplex virus infection which appears as large eosinophilic intranuclear inclusion. (PAP stain x40)

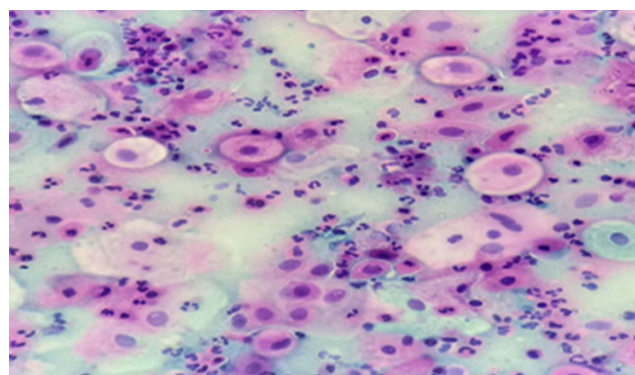


Fig. 7: Photomicrograph of LSIL showing superficial cells and intermediate cells in sheets, mildly increased nucleocytoplasmic ratio, nuclei show evenly distributed granular chromatin with slightly irregular margins. (PAP stain x10)

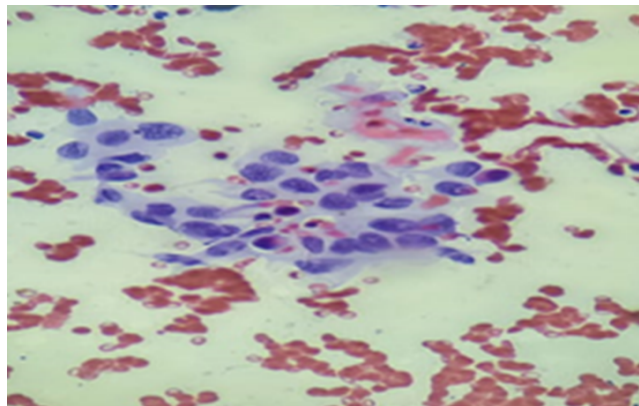


Fig. 8: Photomicrograph of HSIL showing parabasal cells in syncytial aggregates, these cells have high nucleocytoplasmic ratio, karyomegaly, coarse granular cytoplasm, irregular nuclear margins and lacy cytoplasm. (PAP stain x10)

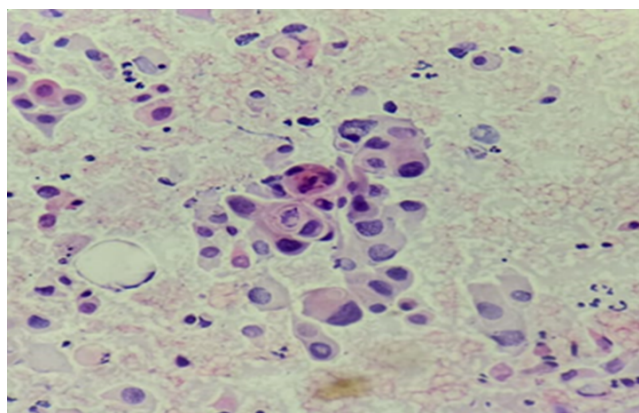


Fig. 9: Photomicrograph of Squamous cell carcinoma showing neoplastic cells arranged in dyscohesive clusters and in singles, these cells have high nucleocytoplasmic ratio, karyomegaly hyperchromatic nucleus with irregular nuclear margins and scant cytoplasm. Tadpole cells seen. Background shows necrosis. (PAP stain x10)

Our study showed that there were 45.67% benign and inflammatory conditions, 2.3 % of premalignant lesions (ASCUS) which may progress to malignancy .048% of LSIL & HSIL cases and 0 .24 % Of frank malignancies in the form of squamous cell carcinoma and adenocarcinoma. ASCUS turned out to be positive for LSIL in 20 cases on biopsy.

ASCUS was found to be highest in age group >40years and percentage of it correlated with the other studies done by Amne. E. Radar et al, Shazli N. Malik et al²⁻⁵

In our study, inflammatory lesions were more common in females <40years of age and premalignant and malignant lesions were more in females >40years of age.

There are various screening tests for cervical cancer like Pap smear, Liquid pap cytology, automated cervical

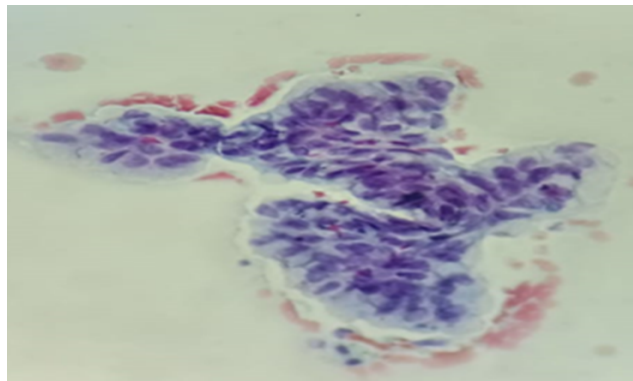


Fig. 10: Photomicrograph showing adenocarcinoma. Tumor cells are seen arranged in cluster and vague glandular pattern, there is marked increase in nucleocytoplasmic ratio, nucleus is round to oval moderately pleomorphic and having prominent nucleoli and scant cytoplasm. (PAP stain x4 0)

screening techniques, visual inspection of cervix after Lugol's Iodine and acetic acid application, speculscopy, cervicography. Out of all these, exfoliative cytology has been regarded as the gold standard for cervical screening programs.⁶

If Pap screening is associated with HPV-DNA testing, then the sensitivity is increased.² World Health Organisation 1992 recommended screening every women once in her life time at 40 years.⁷

The American Cancer Society recommends that all women should begin cervical cancer screening after 3years of being sexually active. It is also recommended every 1-2 years in women who have crossed the age of 30years and Women who have had 3 consecutive normal pap results may be screened after 2-3 years.

Our study was seen to be in accordance with the study conducted by Atla B et al⁸ and Balaha M H et al⁹ whereas the studies conducted by Das et al,¹⁰ Pun RG et al¹¹ and Rawat K et al¹² showed maximum number of smears having negative for intraepithelial lesion or malignancy with lesser prevalence of inflammatory, intraepithelial lesion and frank carcinomas. The discrepancies with these studies could be due to the sample size which were comparatively higher in these studies and also the study period in the study conducted by Rawat et al and Pun RG et al were longer than the present study.

6. Conclusion

Cervical inflammatory lesions (including infections) and neoplastic lesions (includes intraepithelial and epithelial malignancies) can be diagnosed by Cervical cytological smears easily, efficiently and cost effectively by using Bethesda Nomenclature. Similar studies with larger sample size and longer study period are required to know much representative data of the community for early

Table 2: Comparison with other studies

	Das et al	Pun RG et al	Rawat K et al	Atla B et al	Balaha M H et al	Present study
Total cases	5025	1999	1768	356	1171	1241
NILM	90.97%	94.25%	92%	64%	46.7%	51.08
NILM with inflammation	-	-	-	-	46.29%	-
Candidiasis	-	0.03%	-	-	-	10.0%
Trichomonas infection	-	0.01%	-	-	-	4.51%
Bacterial vaginosis	-	0.12%	-	-	-	25.86%
HSV	-	-	-	-	-	0.08%
Inflammatory	0.9%	0.04%	54%	-	1.7%	5.39%
ASCUS	0.01%	4.5%	1.3%	0.03%	-	2.33%
SIL	-	-	0.28%	-	2.9%	-
LSIL	0.01%	0.85%	0.79%	0.09%	0.09%	0.24%
HSIL	0.01%	0.15%	0.45%	0.01%	0.69%	0.24%
CARCINOMA						
Squamous Cell Carcinoma	0.02%	0.2	0.17	-	0.34%	0.16%
Adenocarcinoma	0.0001%	-	0.23%	-	-	0.080%

NILM-Negative for intraepithelial lesion/malignancy; ASCUS-Atypical squamous cell of undetermined significance; SIL-Squamous intraepithelial lesion; HSIL-High grade squamous intraepithelial lesion; LSIL-Low grade squamous intraepithelial lesion.

diagnosis, better management and for development of national programs or policies to reduce the morbidity and mortality associated with cervical carcinoma.

7. Source of funding

None.

8. Conflict of interest

None.

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