

Original Research Article

Significance of papanicolau smear in STD clinic of a tertiary care teaching hospital

R. Manipriya, K. Deepa*, C. L. Chitra

Department of Dermatology, Madras Medical College, Chennai, Tamil Nadu, India

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***Correspondence:**

Dr. K. Deepa,

E-mail: deepaderm@gmail.com

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ABSTRACT

Background: HPV infection is one of the common STI's in females with a majority of patients being asymptomatic and sub-clinical. It is often associated with STI's and can be a great source of morbidity to patients. Pap smear is one of the effective screening tests for genital HPV infections and HPV induced neoplasia. The aim of the study was to assess the epithelial abnormalities and associated STI's in study group using Pap smear.

Methods: 500 female patients above the age of 19 years with vaginal sexual exposure were evaluated with the history, clinical examination, and genital speculum examination, ELISA for HIV and Pap smears.

Results: Among the total 500 pap smears, the normal study was found in 148 pap smears (29.6%), abnormal pap smear results in 46 smears (9.2%) and inflammatory smear was found in 306 smears (61.2%). Among the 306 inflammatory smears, 7.6% smears had predominant monocytes and lymphocyte population, 11.8% smears had neutrophils predominantly. 68.9% showed a mixed population of inflammatory cells. Among the total number of abnormal pap smear study, atypical squamous cells was found in majority that is 33 (6.6%), next was carcinoma 4 (0.8%), high grade and low grade squamous intraepithelial lesions contributed 3 (0.6%) and 6(1.2%) each to the abnormal pap smear study results. Commonest associated STI was bacterial vaginosis.

Conclusions: Early screening and detection of dysplasia will reduce the morbidity and mortality associated with carcinoma cervix.

Keywords: Cervical intra epithelial neoplasia, Mild (I), Moderate (II), Severe (III), Abnormal cervical cytology of undetermined significance

INTRODUCTION

Human papilloma virus (HPV) is one of the most common causes of STI's in the world. Genital HPV, a known cause of cervical cancer is a very common sexually transmitted disease. 70% of human genital papilloma virus (HPV) infections are subclinical. HPV plays a pivotal role in the development of squamous cell carcinoma and adenocarcinoma of the genital tract. Genital HPV infection which is often subclinical may be detected during cervical smear test, i.e., PAP smear. This

test is the most effective screening programme and has an effective role in cancer reduction programme.^{1,2}

PAP smears useful in detection of organisms like, *Trichomonas vaginalis*, budding yeasts, *Actinomyces* and helps in diagnosing STI's like herpes genitalis by studying cellular changes. In bacterial vaginosis there will be a shift in flora i.e., reduction in lactobacilli. Grading of squamous intraepithelial lesion by Bethesda system 2001. LSIL (low grade squamous intraepithelial lesion) encompass mild dysplasia (CIN I) and Koilocytes.

HSIL (high grade squamous intraepithelial lesion) encompass lesions moderate (CIN II) and severe dysplasia (CIN III) and carcinoma insitu.³⁻⁵

Lactobacilli

The normal vaginal flora is predominantly colonized by lactobacilli. The lactobacilli are gram-positive, rod-shaped bacillus. They are commensal.

Atypical squamous cells of undetermined significance

Vacuolated cells resembling atypical cells with mature cytoplasm (suggestive of Koilocytes), atrophic squamous cells, parakeratosis with atypicality.

Aim

To study the epithelial cell abnormality and to study the associated STIs.

METHODS

A group of 500 female patients attending STD OPD was randomly selected. The study was conducted during the period from January 2013 to April 2016. All the women aged 19 and above after vaginal sexual exposure were included. Women below 19 years, females before vaginal intercourse, pregnant women, lactating women, females during their menstrual cycle, women who had a total hysterectomy were excluded.

Examination procedures

The clinical examination consisted of local inspection of external genitalia for any growth, swelling or ulcer. This was followed by visualization of the vagina and cervix with a non-lubricated speculum. A thorough genital examination was done using Cusco’s self-retaining bivalve speculum, and the abnormalities in the vulva, vagina, and cervix were noted. The amount, odor, color and consistency of vaginal discharge were noted. The discharge was labeled scanty if it was insufficient to collect on the speculum; moderate, if it was sufficient to collect on the speculum and profuse if it was visible at the introitus even before speculum insertion. The vaginal pH was measured directly using pH indicator strips against the lateral vaginal wall or over speculum blade. Firstly, specimens for cervical cytology were obtained from ectocervix with a wooden spatula rotated 360° and from endocervix with a cytobrush. Slides were fixed immediately with spray fixative. Vaginal swabs were collected for vaginal pH, whiff test, and wet mount microscopy. Next, the ectocervix was wiped clean with large cotton swabs. Endocervical specimens were obtained using the cotton swab for gram stain and gonococcal culture. Screening for HIV antibody using an ELISA technique was performed. Serological screening for syphilis was routinely performed. Papanicolaou

staining was done. Collected data were mentioned in frequency and percentage.

RESULTS

Among the total 500 pap smears, the normal study was found in 148 pap smears (29.6%), abnormal pap smear results in 46 smears (9.2%) and inflammatory smear was found in 306 smears (61.2%) (Table 1).

Table 1: Prevalence of abnormal, normal and inflammatory Pap smear.

	Frequency	Percentage (%)
Normal	148	29.6
Abnormal	46	9.2
Inflammatory	306	61.2
Total	500	100

Table 2: Prevalence of inflammatory smears having monocyte and lymphocyte populations.

	Frequency	Percentage (%)
Normal	148	29.6
Abnormal	46	9.2
Inflammatory smear	211	42.2
Inflammatory smear (Monocytes)	38	7.6
Inflammatory smear (Lymphocytes)	57	11.4
Total	500	100

Among the 306 inflammatory smears, 38 (7.6%) smears had predominant monocytes, and lymphocyte population, 57 (11.8%) smears had neutrophils predominantly. Other smears 211 (68.9%) showed a mixed population of inflammatory cells (Table 2).

Table 3: Various grades of abnormal Pap smear.

	Frequency	Percentage (%)
Not applicable	454	90.8
HSIL	3	0.6
CA	4	0.8
AT	33	6.6
LSIL	6	1.2
Total	500	100

Among the total number of abnormal pap smear study (46) results, atypical squamous cells was found in majority that is 33 (6.6%), next was carcinoma 4 (0.8%), high grade and low grade squamous intra epithelial lesions contributed 3(0.6%) and 6 (1.2%) each to the abnormal pap smear study results (Table 3).

Table 4: Prevalence of abnormal Pap smear among vaginal discharge.

Diagnosis	Normal	Abnormal	Inflammatory	Total
STD	42	33	144	219
	19.1%	15%	65.7%	100%
Others	36	11	82	129
	27.9%	8.5%	63.5%	100%
Non venereal	70	2	80	152
	46%	1.3%	52.6%	100%
Total	148	46	306	500

Table 5: Prevalence of abnormal Pap smear among vaginal discharge.

Diagnosis	Normal	Abnormal	Inflammatory	Total
Bacterial vaginosis	5	17	63	85
	5.6%	20%	75.1%	100%
Candidiasis	6	3	15	24
	25%	12.5%	62.5%	100%
Trichomoniasis	7	0	16	23
	30.4%	0%	69.5%	100%
Other vaginal discharge	15	10	29	54
	28%	18.5%	53.7%	100%
Other STD's	9	3	21	33
	27.2%	9%	63.6%	100%
Cervicitis	19	57	5	81
	23.4%	70.3%	6.1%	100%
Pelvic inflammatory disease	17	25	6	48
	35.4%	52%	12.5%	100%
Non-venereal	70	2	80	152
	46.1%	1.3%	52.6%	100%
Total	148	46	306	500

Out of 500 cases, 348 (69%) patients had any one or more sexually transmissible infection. 152 (31%) patients had non-venereal diseases (Table 4).

Out of 152 patients with non-venereal diseases, 70 (46%) had normal cervical cytology, 2 (1%) patients had abnormal cervical cytology, consistent with ASCUS, 80 (53%) had the inflammatory smear.

The most common venereal disease was bacterial vaginosis 85 (24%). Among 85 patients 5 (5%) patients had normal cytology, 63 (74%) had the inflammatory smear, and 17 (20%) had abnormal cytology. Out of 17 smears 11 patients had smear consistent with ASCUS, 2 had smear consistent with HSIL, 3 with LSIL and 1 patient smear consistent with carcinoma.

Candidiasis was diagnosed in 24 (6.8%) patients. Out of them 6 (25%) had normal study, 15 (62.5%) of them had inflammatory smear and 3 (12.5%) had abnormal study. 2 of them had finding consistent with ASCUS and 1 patient had smear consistent with HSIL.

23 patients were diagnosed having trichomoniasis. 7 (30%) had smear study of normal cytology. No patients had abnormal cytology and 16 (69.5%) patients had inflammatory smear.

54 (15%) patients were diagnosed as having abnormal vaginal without any specific demonstrable organism. Out of 54, 29 (53.7%) patients had inflammatory smear, 15 (28%) had normal study and 10 (18.5%) patients had abnormal smear study. 8 patients were consistent with ASCUS and 2 patients had LSIL (Table 5).

14 (4%) patients had herpes genitals. Out of them, 3 (21.4%) patients had normal Pap smear study, 9 (64.2%) patients had inflammatory smear and 2 (14.2%) had abnormal cytology consistent with ASCUS.

13 patients had retroviral disease of whom 11(84.6%) had inflammatory smear. One (7.6%) patient had normal study and one (7.6%) patient had abnormal smear consistent with carcinoma. 2 patients had anogenital warts. Out of them 1 had normal study and another had inflammatory smear study. 4 patients were diagnosed having syphilis. All those 4 had normal cervical cytology.

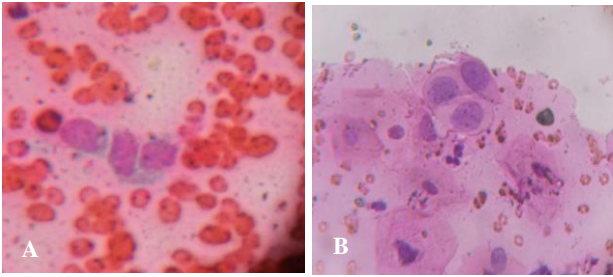


Figure 1: (A) HSIL; (B) Atypical cells.

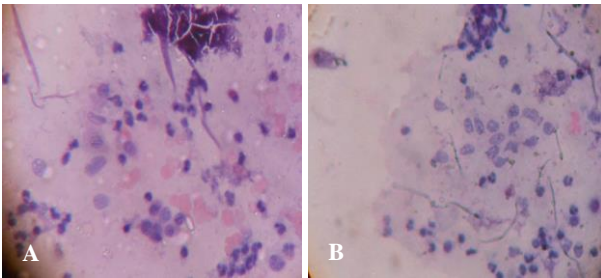


Figure 2: (A) Atypical squamous cells of undetermined significance (AUSCUS); (B) LSIL.

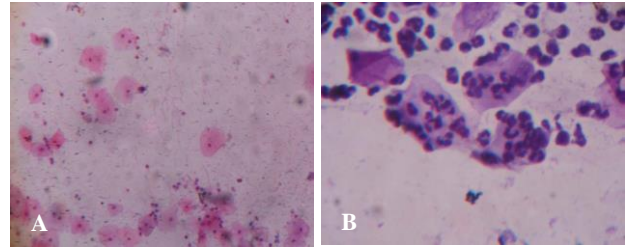


Figure 3: (A) Candidal pseudohyphae in low power; (B) Clue cells.

81 patients were diagnosed having cervicitis. Out of them 19 patients had normal cytology, 57 patients had inflammatory smear, 5 patients had abnormal study in which 4 smears consistent with ASCUS and 1 smear was consistent with LSIL.

48 patients were diagnosed having pelvic inflammatory disease. Out of whom 17 (35.4%) patients had normal cytology, 25 (52%) had inflammatory smear, 6 patients had abnormal cytology in which 4 patients had smear consistent with ASCUS and 2 had smear conclusive of carcinoma (Table 6).

Table 6: Prevalence of abnormal Pap smear among other STD's.

Diagnosis	Normal	Abnormal	Inflammatory	Total
HSV	3 21.4%	2 14.2%	9 64.2%	14 100%
HIV	1 7.6%	1 7.6%	11 84.6%	13 100%
Syphilis	4 100%	0 0%	0 0%	4 100%
Anogenital warts	1 50%	0 0%	1 0%	2 50%
Cervicitis	19 23.4%	57 70.3%	5 6.1%	81 100%
Pelvic inflammatory disease	17 35.4%	25 52%	6 12.5%	48 100%
Non venereal	70 46.1%	2 1.3%	80 52.6%	152 100%
Vaginal discharge syndrome	33 17.7%	30 16.1%	123 66.1%	186 100%
Total	148	46	306	500

DISCUSSION

During the study period, 500 patients were enrolled for Pap smear study. The percentage of normal Pap smear study among the attendees was 29.6%. The prevalence of the abnormal cervical cytology among the attendees of female STD op was found to be 9.2% (95% C.I). The inflammatory smear constituted 62.1%.

In STD clinics, various studies have reported prevalence rates of squamous intraepithelial lesions or dysplasia ranging from 5% to 11%. This prevalence is reasonably

more than the other family clinics. This study was comparable with the study done by Feldman et al in which 7% had abnormal cervical cytology.⁶ This was also comparable to the study done by Kanno et al.⁷

Kanno et al in which 5.7% of the satisfactory specimens were abnormal.⁷ This was also comparable with the study done by Briggs et al in which 11.4% of prevalence of screening abnormalities was consistent with CIN.⁸ This study was comparable with the study of Feldman et al.⁶ This study was also comparable to study 86 done by Shlay.⁹

Shlay et al in which atypical cells (12.6%) prevalence is within the range of the study.⁹ Among the 46 abnormal pap results 3 (6%) women's had the high-grade squamous intraepithelial lesion.

4 (8.6%) women had findings favoring malignancy. 6 (13%) women's had low-grade squamous Intraepithelial Lesions. 33 women had atypical squamous cells of undetermined significance The prevalence percentage may vary depending on the group studies. In this study in addition to the high-risk group, the normal population has also been included as they are referred for HIV screening from other departments for surgical procedures. These results are comparable to the study done by Lawley et al in which atypical cells are 7.8%, HSIL is 4.1%, and LSIL is 15.5%.¹⁰ Inflammatory smear is seen in 306 patients out of 500 patients. This constitutes 62.1%. This is consistent with the study done by Lawley et al in which the reactive changes were noted in 67.5%.¹⁰ This study is also comparable to the study done by Gupta.¹¹ Inflammatory smear is seen in 306 patients out of 500 patients. This constitutes 62.1%. This is consistent with the study done by Lawley et al in which the reactive changes were noted in 67.5%.¹⁰ This study is also comparable to the study done by Gupta. Ashami et al in which inflammatory cytology is noted in 53%.¹¹ Among the inflammatory smear (306) monocytes were found in 7.6%, and neutrophils were found in 11.8% of cases. This may represent acute on the chronic infections. In this study, the most common condition associated with abnormal cervical cytology was bacterial vaginosis 17/46 (36.9%), next was the other vaginal discharge (negative for trichomonas vaginalis, bacterial vaginosis, and candida) was found in 10 (28.2%) patients. This is consistent with the study done by Shlay et al and Lawley et al in which vaginal discharge is found in 60% of patients.^{9,10} The prevalence of STD among CIN is 71.7%. The prevalence of STD among benign findings are 40%. Out of 80 patients diagnosed with nonvenereal conditions only 2(4.3%) had abnormal cervical cytology. This difference was statistically significant with p value <0.05. This is consistent with the study done by Campbell et al in which the prevalence of STD among CIN is 78% and among benign is 46%.¹²

CONCLUSION

Early screening and detection of dysplasia will reduce the morbidity and mortality associated with carcinoma cervix. Inflammatory Pap smear was found to be 62.1%. This inflammatory Pap smear warrants repeated Pap smear after treating the infection followed by repeat Pap smear in 3 months, and 6 months. Persistent inflammatory cytology warrants further investigations and follows up.

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Conflict of interest: None declared

Ethical approval: The study was approved by the institutional ethics committee

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