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Cervical Cytopathology in women attending rural area at Tertiary Care Hospital

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Abstract

Aims and Objectives: Cervical cancer has always been a growing concern in developing countries like India. Prevent ability at pre malignant/pre invasive stages has yearned the need for studying screening methods in detail. This study recapitulates the importance of PAP smear as affordable, sensitive screening method and need for repetitive and continuous testing in preventing invasive cancer.

Material and Methods: The prospective study spanning for a year (July 2015 to June 2016) consisted of 1990 patients who presented with various gynecological symptoms. All patients were screened by cervical smear stained with PAP stain. Evaluation of the smears carried out by cytopathologist as per The 2001 Bethesda reporting system.

Results: 1990 patients study showed inflammatory lesion 1164 (58.49%), metaplasia 46 (2.31%), LSIL 10(0.50), HSIL 4(0.20%), SCC 12(0.60%), ASCUS 72 (3.62%), AGUS 2 (0.1%), atrophy 52(2.61%), inadequate for evaluation 238(11.97%) and 390(19.6%) didn't show any significant pathology. Majority of the patients in our study had non neoplastic inflammatory lesions. Neoplastic lesions (premalignant and malignant) were observed in 100 (5.02%) patients and were seen in 41-70 years age group.

Conclusion: The cervical neoplasia is common in 41 -70 years, and they can be subjected to repeated Pap screening program to detect the early lesions (dysplasia) and treated appropriately to prevent cervical cancer.

Keywords: Cervical Neoplasia, Screening, Cervical Pap smear, The Bethesda system

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Introduction

According to National cancer registry program in India, Cervix and Breast cancers in females account for over 50% of all cancer deaths in India. Cervical cancer is the second most common cancer in India in women accounting for 22.86% of all cancer cases. GLOBOCAN 2012 data stipulates there are 1.23 lakh new cases and 67,500 deaths registered annually.[1,2] The age-standardized incidence rates of cervical have ranged from 16-55 per 100,000 women in different regions of India.[3]

The development and progression of cervical cancer is pronounced by premalignant stages known as dysplasia (Low and High grade). These premalignant lesions are treatable and progression to cervical cancer can be prevented.[4] PAP smear as a standard screening test was introduced in 1941 for cancer related malignant and premalignant changes and hormone or drug related inflammatory changes in cervix. The reporting was based on 2001 The Bethesda system.[5]

The current study aims at finding out the target population who are the appropriate candidates for screening of cervical smear and who can be benefited by implementing available early therapeutic strategies.

Materials and Method

The present study was conducted at Kamineni Institute of Medical Sciences, Narketpally for a period of one year from July 2015 to June 2016; Total 1990 patients in the age range of 15-70 with varied gynecological presentations like vaginal discharge, bleeding per vagina or mass per vagina were screened using PAP smear. Clinical findings were recorded, procedure explained in detail and smear taken by trained technician using modified Ayers wooden spatula, inserted and rotated 360 inside cervix. Both ecto and endo cervix were sampled. The collected material smeared on to the slides, labeled, fixed in 95% ethyl alcohol immediately and subsequently stained by pap stain.

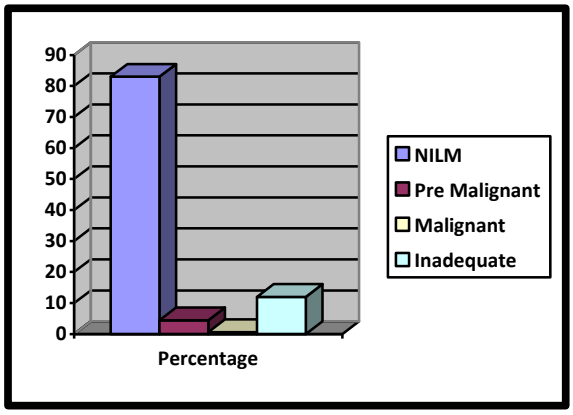
Results

Out of 1990 cervical smears (Table 1) screened, 58.49%, showed inflammatory lesion (1164/1990), atrophy was noted in 2.61% (52/1990), 2.31% (46/1990) showed squamous metaplastic cells, 3.62% (72/1990) exhibited ASCUS (Fig. 2A), 2 smears showed AGUS, 10 smears showed LSIL (Fig. 2B), 4 smears demonstrated HSIL (Fig. 2C) and SCC (Fig. 2D) was found in 12 smears. However, 11.97% (238/ 1990) of smears were inadequate and were in evaluable and 19.6% (390/1990) didn't show any remarkable pathology (Table 2; Fig. 2). The majority of the smears showed inflammatory changes, mostly non-specific inflammation followed by specific inflammation by candidal(Fig. 1B) and trichomonad infections (Table 2;

Fig. 1C). 100 (5.02%) smears showed premalignant and malignant lesions. Premalignant and malignant lesions were observed frequently in 41-70 yrs age group. (Table 3) The premalignant lesions comprise of ASCUS (3.62%), LSIL(0.50%), HSIL(0.20%), AGUS(0.1%). However malignant lesions (SCC) was seen in 0.60% of the smears. The Epithelial Cell Abnormality (ECA) rate that is the total of ASCUS, LSIL, HSIL, and carcinoma was seen in 5.02% of smears screened.

Table 1: Common Findings in Pap Smear Study

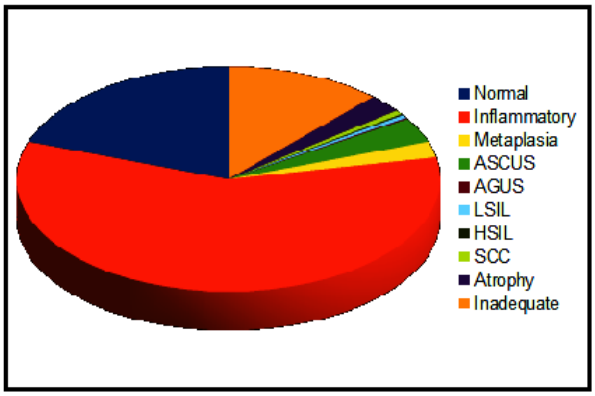
	Total Number of Cases	Percentage (%)
NILM	1652	83.01%
Premalignant	88	4.42%
Malignant	12	0.60%
Inadequate	238	11.97%
Total	1990	100



Bar diagram depicting the distribution of cervical pap smear diagnostic entities

Table 2: Common Cytological findings in PAP Smears

	Total number	Percentage
Normal	390	19.6
Inflammatory	1164	58.49
• Non specific	1096	55.07
• Candida	36	1.81
• Trichomonas	32	1.61
Metaplasia	46	2.31
ASCUS	72	3.62
AGUS	2	0.1
LSIL	10	0.50
HSIL	4	0.20
SCC	12	0.60
Atrophy	52	2.61
Inadequate	238	11.97
Total	1990	100%



Pie diagram depicting different PAP finding in percentages

Table 3: PAP Smear finding with respect to the Age

Findings	Total number	15-30	%	31-40	%	41-50	%	51-70	%
Normal	390	166	8.3%	136	6.8%	66	3.3%	22	1.1%
Inflammatory	1164	485	24.4%	503	25.4%	115	5.8%	61	3.1%
Metaplasia	46	26	1.3%	8	0.4%	6	0.3%	6	0.3%
ASCUS	72	14	0.7%	16	0.8%	22	1.1%	20	1%
AGUS	2	-	-	-	-	2	0.1%	-	-
LSIL	10	0	-	4	0.2%	6	0.3%	0	-
HSIL	4	0	-	2	0.1%	2	0.1%	0	-
SCC	12	0	-	4	0.2%	2	0.1%	6	0.3%
Atrophy	52	0	-	2	0.1%	16	0.8%	34	1.7%
Inadequate	238	120	6%	80	4.0%	26	1.3%	12	0.6%
Total	1990	811	40.7%	755	38%	263	13.2%	161	8.1%

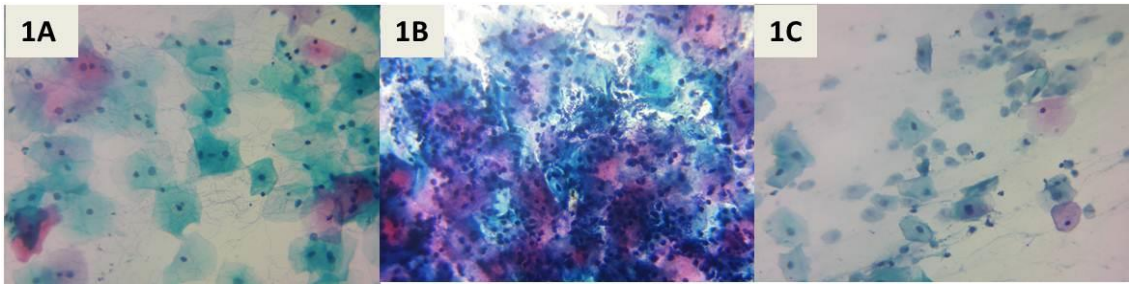


Fig. 1A: Photomicrograph of PAP Smear showing leptothrix; B: Candida; C: Trichomonas(40x)

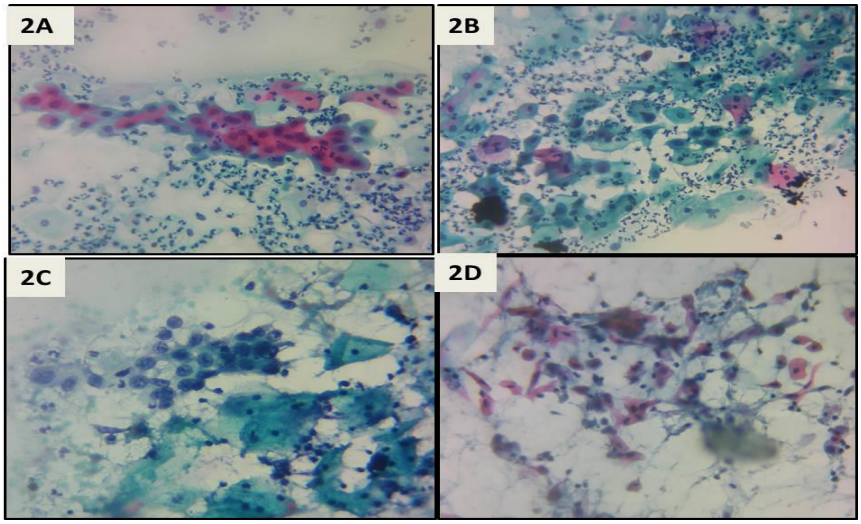


Fig. 2A: Photomicrograph of PAP Smear showing ASCUS; B: LSIL; C: HSIL; D:SCC(40x)

Discussion

According to National Cancer Registry of India, cancers of uterine cervix and breast are the leading malignancies seen in females of India. The standard screening test for cervical cancer[6] and premalignant lesions is Papanicolaou (Pap) smear apart from aiding in the diagnosis of inflammatory conditions including the identification of infective organism, hormone related benign epithelial changes and changes due to therapeutic agents. Conventional Pap smear, liquid based Pap cytology, automated cervical screening techniques, visual inspection of cervix after Lugol's Iodine and acetic acid application, speculoscopy, cervicography are the various screening test for cervical cytology. HPV plays a vital role in the molecular pathogenesis of cervical cancer and sensitivity of Pap screening can be enhanced with simultaneous HPV-DNA testing. Our study contributes to the assessment of current levels of cervical screening utilities and identifying the importance of cost effective screening method, Pap smear, targeting rural populations in the communities.

In our study, the mean age of patients with abnormal smears was 36 years. The Vaginal discharge was the most common presenting complaint. We observed 1652 cases (83.01%) of negative for intraepithelial lesion or malignancy with non-specific inflammation 1096 cases (55.07%) as the pre-dominant whereas other studies revealed 95% and 74.3% cases of NILM respectively.[7,8] The Epithelial Cell Abnormality (ECA) rate,[9,10] that is the total of ASCUS, LSIL, HSIL, and carcinoma diagnosis varied between 1.5 and 12.60% in various studies. The percentage of ECA is 1.87-5.9% in India, 2.3-6.6% in US and 1.6-7.9% in middle east.[11] The ECA rate of 5.02 % in our study is comparable to a Kuwait study that reported 4.3%, in contrast ECA was 1.2% in another recent study. The plausible explanation behind this may be because of their cultural traditions and great concern regarding their health check-ups and less likelihood of having multiple sexual partners. ASCUS was the most common (72(3.62%)) ECA noted in our study which is similar to other study. In the current study 0.50% had LSIL, while 0.20% had HSIL. In contrast, a Saudi Arabian Study[12] reported 4.9% frequency of SIL (high and low grade squamous intraepithelial lesion). In our study the premalignant and malignant lesions of cervix were observed in 41–70 years age group.

World Health Organization (1992) recommends screening every woman once in her lifetime at 40 years,[6] however our study demonstrated higher incidence of ASCUS which is a precursor for dysplasia and cancer during 31-40 years. Hence the screening of Pap smear should be started much early that is by 30 years which is further supported by the American Cancer Society (ACS) recommendation of all women

screening should start after 3 years of beginning of coitus. They also recommend Pap screening every 1-2 years, for women who have crossed the age of 30 years and women who had 3 consecutive normal Pap results must be screened after 2-3 years. More than the pap smear screening, the Liquid Base Cytology (LBC) increases the sample quality and is more advantageous.[13]

In a review study conducted by Silva G.G et al[14] showed a lower rate of unsatisfactory smear with LBC when compared with conventional smears, some of the study showed a difference of up to 10% with that of conventional cytology. The sensitivity and specificity are higher for LBC than conventional cytology.

In a similar comparative study by Sharma J et al[15] there was a statistically significant difference between LBC and conventional cytology with context to representativeness, inflammation, hemorrhagic background and organisms while all other features were same. But the LBC had a advantage of less screening time, clean background and better spread of cellular elements. They also suggest that in developing countries like India with poor resources and high cost of LBC, conventional cytology is better option with trained persons for pap screening.

In a comparative study by Singh V.S et al[16] on LBC and conventional cytology preparation in Indian setting showed similar findings in epithelial abnormalities and infection conditions, while the percentage of unsatisfactory smears significantly lower. The LBC have advantage of availability of LBC sample to perform HPV testing. They also emphasize that cost-effectiveness of LBC have to be studied in Indian with benefits and drawbacks associated with shift to LBC.

Conclusion

The importance of PAP smear in target population, rural community in India is elucidated in our study. PAP is simple, low cost, liquid based screening method to detect early non-invasive cancerous changes. Community health awareness campaigns, training medical and paramedical staff and large scale PAP screening programs should be undertaken to reduce the incidence of invasive cervical malignancy. We strongly suggest the ACS recommendations to initiate screening at an early age of 21 years.

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