Pap smear examination- its utility in various cervical lesions

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Abstract

Introduction: The leading cause of death in Indian women is cervical malignancy. The rate of mortality can be reduced by early detection by a sensitive method like cervical cytology.

Aim: The aim of this study was to explore various non-infectious, benign and malignant cervical lesion and to establish the utility of pap smear examination in screening cervical lesions.

Materials and Methods: This study was carried out at a tertiary care hospital during January 2013 to June 2013. Two hundred and ten pap smears were screened for various lesions. The age group ranged from 18 years to 70 years.

Results: Out of 210 pap smears examined, predominant age group was in between 20-40 years. The inflammatory lesions accounted for 94.3% and premalignant and malignant lesions for 5.7%.

Conclusions: Pap smear examination is an easily available and cost effective method for screening various cervical lesions.

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Introduction

The most common leading cause of mortality and morbidity in women worldwide is cervical cancer and according to national cancer registry, the leading cause of death in women of developing countries like India is cervical malignancy.[1] In developing countries, there are 1.7 million cases of cervical cancer and 5-13 million cases of precancerous lesions.[2] Hence this malignancy should be prevented by early detection using various screening methods.

Pap smear examination, done routinely is the most sensitive test for screening cervical malignancies and these smears are usually reported by TBS (The Bethesda System -2001).[3] Cytological smears were embraced as an ideal screening test for pre-invasive lesions, which, if treated, would be prevented from developing into invasive cancer.[4] The Pap test is considered by many to be the most cost effective cancer reduction program ever devised.[5] Due to early detection of cancers and precancerous conditions, the mortality rate due to the cervical cancer has declined in the recent years.[6] The incidence of cervical cancer has decreased significantly since 1960, however there is increase in age specific rates, particularly those aged 25-29 years. This rise in incidence could be due to predisposition to risk factors.[7] This study was conducted to know the age related incidence of cervical lesions and mode of presentation.

Materials and Methods

This is a retrospective study done at a tertiary care hospital during January 2013 to June 2013. A total of 210 cases were screened. The relevant histories about the cases were tabulated. Modified Ayres spatula was used for preparing smears. Both ectocervix and endocervix were sampled by rotating the spatula at 360^0. The material obtained was put on the slides and smears prepared which were fixed in 95% ethanol and stained with Papanicolaou and Hematoxylin and Eosin stain. The slides were mounted with DPX (Distrene Dibutyl Phthalate Xylene) and examined under microscope. The reporting was done using the guidelines of The 2001 Bethesda system.

Results

Among 210 cases screened in this study, maximum number of cases was seen in 2nd and 3rd decade (58.57%) as depicted in Table 1. The minimum age was 18 years and maximum age was 70 years.

The most common symptom presented was leucorrhoea (50.48%) followed by irregular bleeding (22.86%) as shown in Table 2. Inflammatory lesions were seen in most cases of white discharge.

The most common type of lesions were inflammatory (76.9%), followed by normal smears (17.14%) and epithelial abnormalities (5.71%) as shown in table 1. The inflammatory lesions were seen predominantly in 2nd and 3rd decade, while epithelial abnormalities were seen in fifth decade. There was preponderance of inflammatory lesions when compared to premalignant and malignant lesions with ratio of 16.5:1.

Table 1: Age wise distribution of various lesions

Age/lesion	10-20	21-30	31-40	41-50	51-60	61-70	Total	Percentage
Normal	4 (1.9%)	15 (7.14%)	6 (2.86%)	11 (5.24%)	0	0	**36**	**17.14%**
Inflammatory							**160**	**76.19%**
Acute/chronic inflammation	13(6.19%)	39(18.57%)	48(22.86%)	29(13.81%)	12(5.71%)	4(1.9%)	145	69.05%
Papillary endocervicitis	0	2 (0.95%)	0	0	0	0	2	0.95%
Trichomonas	0	4 (1.9%)	3 (1.43%)	0	0	0	7	3.33%
Candida	0	2 (0.95%)	0	1 (0.48%)	0	0	3	1.43%
Atrophic	0	0	0	3 (1.43%)	0	0	3	1.43%
Epithelial abnormalities							**12**	**5.71%**
AGUS	0	0	0	1 (0.48%)	0	0	1	0.48%
ASCUS	1 (0.48%)	1 (0.48%)		3 (1.43%)	0	0	5	2.38%
LSIL	0	0	0	2 (0.95%)	0	0	2	0.95%
HSIL	0	0	3 (1.43%)	0	0	0	3	1.43%
SCC	0	0	0	1 (0.48%)	0	0	1	0.48%
Unsatisfactory	0	0	0	2	0	0	**2**	**0.95%**
Total	18	63	60	53	12	4	**210**	100%

Table 2: Frequency distribution of cases according to symptoms

Symptoms	Normal	Inflammatory	LSIL	HSIL	ASC-US/AGUS	SCC	Unsatisfactory	Total	%
Leukorrheoa	15 (7.14%)	88 (41.9%)	1 (0.48%)		1 (0.48%)		1 (0.48%)	106	50.48
Menstrual abnormalities	2 (0.95%)	41 (19.52%)		1 (0.48%)	3 (1.43%)	1 (0.48%)		48	22.86
Post coital bleeding	2 (0.95%)	8 (3.81%)		2 (0.95%)	2 (0.95%)		1 (0.48%)	15	7.14
Post menopausal bleeding	3 (1.43%)	10 (4.78%)						13	6.19
Pain abdomen	6 (2.86%)	3 (1.43%)	1 (0.48%)					10	4.76
Backache		6 (2.86%)						6	2.86
Routine check up	8 (3.81%)	4 (1.90%)						12	5.71
Total	36 (17.14%)	160 (76.19%)	2 (0.95%)	3 (1.43%)	6 (2.86%)	1 (0.48%)	2 (0.95%)	210	100

Table 3 Comparison of lesions with other studies

Study series	Inflammatory and benign lesions	Premalignant and malignant lesions
Mandakini et al (n-995)	940(94.5%)	55(5.5%)
Bhojani et al (n-400)	363(90.75%)	37(9.25%)
SaniaTanveer et al (n-300)	288(96%)	12(4%)
Sabina et al (n-500)	490(98.3%)	10(1.7%)
Neelima et al (n -221)	200(90.5%)	21(9.5%)
Present study (n-210)	198(94.3%)	12(5.7%)

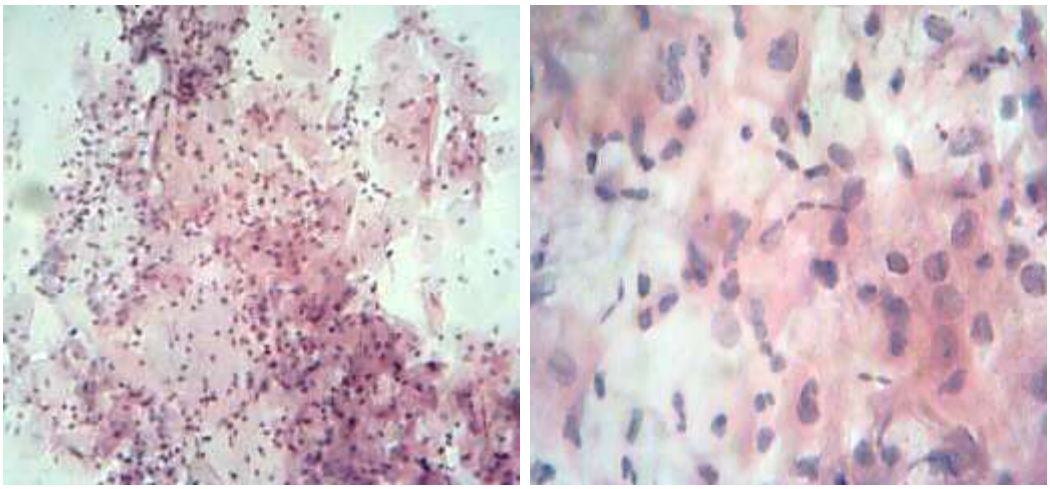

Fig. 1: Candidal cervicitis showing pseudohyphae of candida H&E 100X & 400X

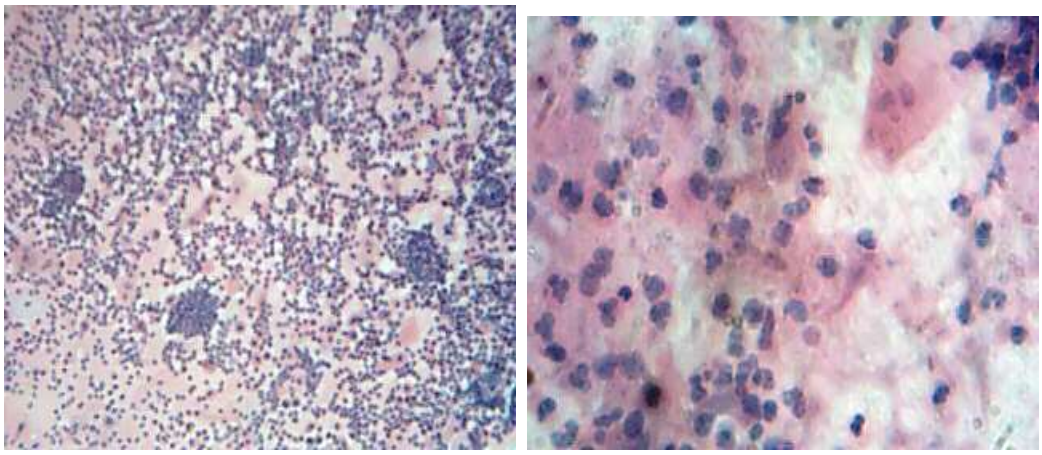

Fig. 2: Trichomonas cervicitis: Showing BB shots, neutrophils adherent to squamous epithelial cells (H & E 100X & 400X

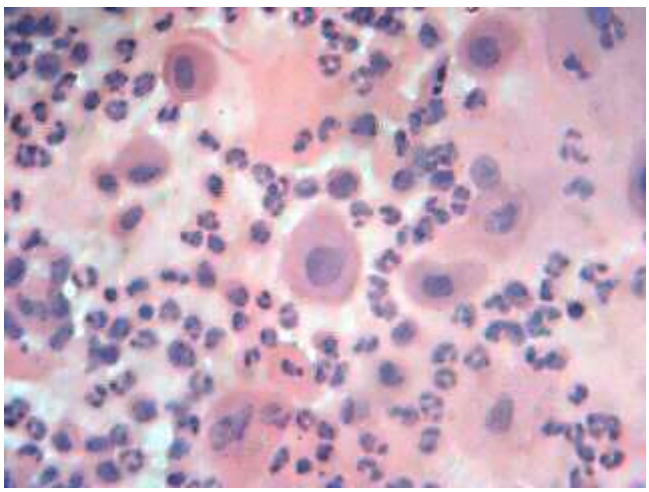

Fig. 3: Low grade squamous intraepithelial lesion (LSIL) showing epithelial cells with high N/C ration & normochromic chromatin pattern H & E 400X

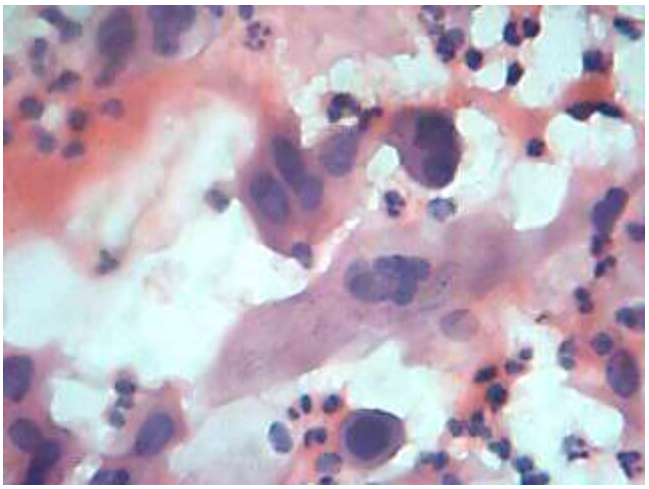

Fig. 4: High grade Squamous intraepithelial lesion (HSIL) showing round to oval cells, high N/C ration, irregularly distributed chromatin

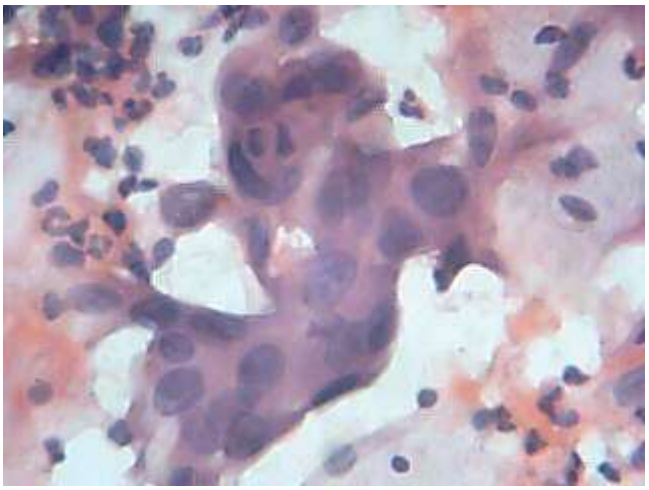

Fig. 5: Squamous cell carcinoma (SCC) showing pleomorphic epithelial cells with high N/C ration H & E 400X

Discussion

With the changes in the life styles and demographic profiles in developing countries, non-communicable diseases are emerging as an important health problem which demand appropriate control program before they assume epidemic propagation. Cancer has been a major cause of morbidity and mortality. Cervical cancer behaves like a sexually transmitted disease epidemiologically. The incidence of cervical cancer is more common in women who have multiple sexual partners[8], or whose partners are promiscuous[9] and is rare in virgins[8]. HPV plays an important role in carcinogenesis and the presence of other risk factors along with HPV infection are important in deciding the outcome of the disease i.e. whether HPV infection will regress or progress to cervical cancers.[10]

The various screening methods have decreased the incidence of cervical malignancy in the past 30 years. WHO recommends screening at 45 years of age as the most reliable approach because it would detect 20% of total cervical malignancies.[11] To prevent cervical malignancies, Pap smear examination is advocated in all women of 21 years of age.[12] As Pap smear examination is most efficient of all methods, it is regarded as gold standard screening method.[13]

Leucorrhoea was the most common presentation in our study. This is similar to the study done by Shanti etal.[6] The most common cytological diagnosis in this study was inflammatory smear with peak in 21-40years. This preponderance could be explained as most of the infections are sexually transmitted. ASC-US was the most common epithelial abnormality followed by HSIL. The epithelial abnormalities were most commonly seen between 41-50years. Inflammatory and benign lesions accounted to 94.3% and premalignant and malignant lesions to 5.7%. Studies done by Mandakini et al, Ranabhat et al, Bhojani et al, Saniatanveer et al, Sabina et al and Neelima et al all showed predominantly inflammatory and benign lesions while premalignant and malignant lesions accounted to <10%.[14-19] The comparison with various studies is depicted in table 3. ASC-US should be diagnosed as it can progress to LSIL,

HSIL or adenocarcinoma.[20-22] In the present study incidence of HSIL increased with age. 80% of all abnormal epithelial lesions were found above 40 years in a study by Ranabhat SK et al.[15] In the study done by Misra et al squamous intraepithelial lesion was found in 7.2% and carcinoma in 0.6% of cases.[23]

In the present study the diagnosis of ASC-US was detected in the age group 21-30 years. Hence, the screening Pap smear examination should start at an earlier age. It is proposed by American society that all women should begin screening for cervical malignancy after 3 years of first sexual intercourse and recommended that women who are above 30 years should be screened for every 1-2 years and screened after 2-3 years if three consecutive pap smears are normal.[14]

Conclusions

The most widely accepted screening method for cervical malignancy is Pap smear examination especially in developing countries like India. Hence screening program like pap cytology that is easily available and cost effective should be formulated. Pap smears can be used to diagnose inflammatory, premalignant and malignant lesions. All suspicious lesions on Pap smear should be followed by repeat Pap smear examination, colposcopy and cervical biopsy.

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