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Research Article

Study of abnormal cervical cytology in papanicolaou smears in a tertiary care center

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ABSTRACT

Background: Cancer cervix is a leading cause of mortality and morbidity in developing countries like India most probably due to lack of proper screening facilities in the rural and suburban areas or due to the lack of awareness amongst the women of developing countries. Cervical cancer is the fourth most common cancer in the world. Developing countries accounted to about 80% of the global burden. This study was conducted to highlight the importance of Pap smear study in differentiating premalignant and malignant lesions.
Methods: This retrospective study was conducted among 1000 cervical pap smears of women with age group 20 to 75 years coming to the cytology section of pathology department, L.N. Medical College and Research centre, Bhopal, India between the time periods of 1st January 2015 to 31st December 2015. All the smears were reported as per the 2014 Bethesda system.
Results: In this study, maximum cases were of negative for intraepithelial lesion or malignancy 754 cases (75.4%) followed by low-grade squamous intraepithelial lesion with 74 cases (7.4%) (followed by high-grade squamous intraepithelial lesion with 12 cases (1.2%) then atypical glandular cells of undetermined significance 12 cases (1.2%) and minimum number of carcinoma cases 08 (0.8% - including 0.6% of squamous cell carcinoma and 0.2% of adenocarcinoma).
Conclusions: Cervical cytology by Pap smear is an important tool for early detection of premalignant and malignant lesions of cervix. Regular Pap smear screening should be conducted in vulnerable age group.

Keywords: Pap smear, Cervical cancer, Cervical intraepithelial neoplasia, The Bethesda system

INTRODUCTION

The Papanicolaou (Pap) smear was introduced in 1941 and became the standard screening test for cervical cancer and premalignant lesions.[1] Cervical cancer is the most common cancer among women after breast and colorectal cancer in the world, but in developing country like India it is the leading cause of mortality and morbidity. Women in these countries usually present to the clinic only when they have symptoms, such as pain, discharge, and/or abnormal bleeding.[2] Nearly 4 lacks new cases of cervical cancers are diagnosed annually worldwide and 80% of them are diagnosed in the developing countries.[3] Cervical cancers can be prevented through early detection by means of effective screening techniques. Cervical Pap smear is a sensitive test for early screening of the cervical lesion.

Though Pap smear is just a routine screening test, the overall sensitivity in detection of premalignant lesions like high grade squamous intraepithelial lesion (HSIL) is 70-80% and has been proved very effective in differentiating between inflammatory, premalignant and malignant lesions.[4,5] Thus the epithelial changes can be treated, preventing the cervical cancer.[6,7]

In 1988, the Bethesda system of terminology has been introduced to sub-classify the lesions into high grade and low grade squamous intraepithelial lesions (SIL) for Pap smear reporting and some studies reported comparison of various terminologies.[8,9]

Recently the Bethesda System (TBS) 2014 for reporting the results of cervical cytology was developed with introduction of some newer terminology that could provide clear guidance for clinical management.[10]

METHODS

This retrospective study was conducted among 1000 cervical pap smears of women with age group 20 to 75 years coming to the cytology section of pathology department, L.N. Medical College and Research centre, Bhopal between the time periods of 1st January 2015 to 31st December 2015. All the smears were reported as per the 2014 Bethesda system.

RESULTS

The results obtained were recorded as under.

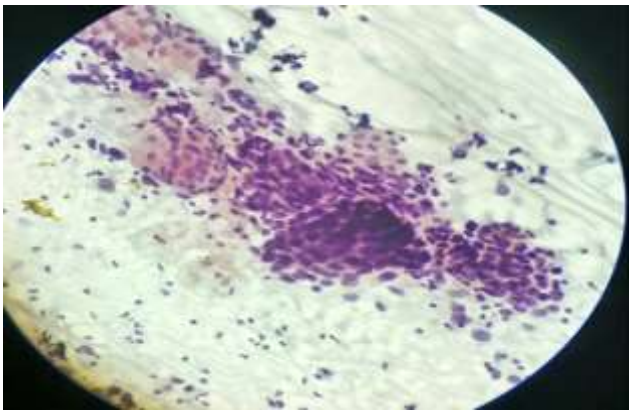

Figure 1: High grade intra epithelial lesion.

Table 1: Age wise distribution of total number of patients.

Age group (years)	No. of cases	Percentage %
21-30	118	11.8%
31-40	340	34.0
41-50	346	34.6
51-60	128	12.8
> 60	68	6.8

Table 2: Findings of Pap smear cytology.

Diagnosis	No. of cases	Percentage
Unsatisfactory for evaluation	60	6.0%
Negative for intra epithelial lesion or malignancy (NILM)	754	75.4%
ASCUS	80	8.0%
LSIL	74	7.4%
HSIL	12	1.2%
Squamous cells carcinoma (SCC)	06	0.6%
AGCUS	12	1.2%
Adenocarcinoma	02	0.2%
	Total	1000

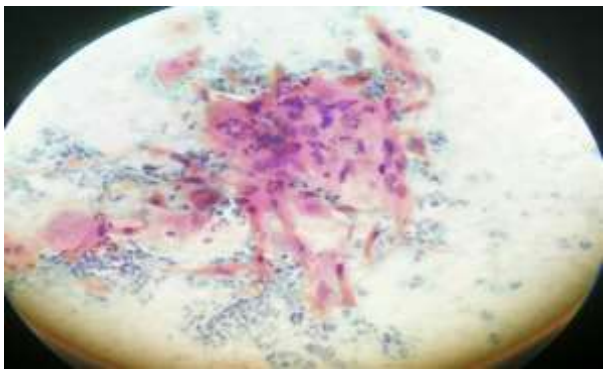

Figure 2: Invasive squamous cell carcinoma.

Table 3: Age wise abnormal findings.

Age group	No. of cases	ASCUS	LSIL	HSIL	SCC	AGCUS	Adeno carcinoma	Total no. of abnormal findings	%
21-30	118	08	04					12	1.2
31-40	340	22	20	06		02		50	5.0
41-50	346	30	34	06	02	08	02	82	8.2
51-60	128	06	14		04	02		26	2.6
> 60	68	14	02					16	1.6
Total	1000	80	74	12	06	12	02	186	18.6

Maximum number of cases (n=754) 75.4% are in the category of NILM (Negative for intraepithelial lesion or malignancy) Cancer incidence found to be 0.8%(n=8). Precursor lesion (intraepithelial lesion) found to be 8.6% (n=86).Rate of epithelial cell abnormality is 18.6%.

DISCUSSION

Cancer of the cervix has been the most important cancer among women in the past two decades.[11] In India the peak age for cervical cancer incidence is 55-59 years.[12] In our study maximum cancer incidence is between 41-60 years. Current data from the National Cancer Registry Program (NCRP) indicates that the most common sites of cancer among women are the breasts and the cervix.[11] The recent NCRP data show that between 2009 and 2011 Aizawl district in the north eastern part of India had the highest levels of cervical cancer at an age-adjusted rate of 24.3.[13] All the older PBCRs showed a statistically significant decline in age-adjusted rate from the 25-34 age group up to 54, although the Barshi registry showed a decline only up to 44 years.[14] Women aged 45 years or above harbor the bulk of premalignant and malignant lesions.[26] Jena et al noted majority of the epithelial cell abnormality in the fourth decade.[30] while Sunita et al noted maximum number of cases of epithelial cell abnormality in women between 31-40 yrs.[28] In our study maximum number of epithelial cell abnormality seen in women age group of 41-50 years.

Table 4: Comparison with other studies.

Studies	No. of cases	Unsatisfactory smear %	NILM %	SIL %	Invasive carcinoma %
Judoo and Ranade [15]	1200	-	65	13.33	0.83
Yajima *et al* [16]	959475	-	-	-	0.10
Beinton *et al* [17]	130	-	59.23	11.15	2.69
Mital *et al* [18]	250	-	12.70	40.65	6.00
Chauhan *et al* [19]	5778	-	69.19	2.28	-
Spinilla *et al* [20]	1483	-	9.64	-	-
Tabrizi *et al* [21]	460	8.30	23.30	12.58	1.66
Thomas *et al* [22]	85	5.88	-	20	-
Karuma *et al* [23]	100	-	-	12	-
Mishra & Panday [24]	764	-	-	11.3	-
Sherwani *et al* [25]	160	-	-	11.2	3.7
Kulkarni AM [26]	640	14.8	72.3	10.5	0.2
Bal MS et al [27]	300	4	88	3.4	1.3
Sunita et al [28]	560	5.71	88.93	2.32	0.72
Verma I et al [29]	125	2.40	68.80	6.4	1.6
Present study	1000	6	75.4	8.6	0.6

The result of present study and their correlation with other workers are discussed below in following paragraphs.

Incidence of nilm, sil and invasive carcinoma are comparable to others studies. In the various studies and sil rate varies from 3% - 13%, and carcinoma incidence from 0.1% - 6%. In our study sil rate is 8.6% and carcinoma incidence is 0.8% comparable to other study.

CONCLUSION

Cervical cancer is one of the most common malignancies in women of developing country like India. The incidence of cervical cancer has been reduced significantly over the decades after the starting of mass screening programs and awareness campaigns promoting Pap smear as an effective tool for early detection of premalignant and malignant lesions of cervix when it is amenable to simple cure and treatment. It is thus recommended that regular pap smear screening should be conducted in vulnerable age group.

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Conflict of interest: None declared
Ethical approval: The study was approved by the institutional ethics committee

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