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Study of cervical smears by conventional method using Bethesda System 2014 for reporting: a study of 620 cases

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Abstract
Aim: *The aim of the study is to evaluate the abnormal cytological entities detected by cervical Pap smear, to classify the cytological findings according to the recently recommended Bethesda system and to discuss the significance of Pap smears screening programs.*
Materials and Methods: *The present study was done over a period of one year from January 2015 to December 2015, in the Department of Pathology, M. Y. Hospital, Indore. During this period, a total of 620 pap smears obtained from females were examined. Slides were reported according to The 2014 Bethesda System.*
Results: *In the present study, 620 pap smears were analyzed, out of which normal smears 141 (22.74%), Bengin cellular changes 435 cases (70.16%) and epithelial cell abnormality 13 cases (2.10%) are appreciated.*
Conclusion: *Pap smear is a highly effective screening method for screening cervical lesions. The 2014 Bethesda system has helped to accurately classify the cervical lesions making the screening of cervical cancer more precise. Pap smear is simple, less expensive diagnostics tool suitable for implementation in India.*
Keywords: *Cervical cancer, Pap smear, Bethesda system.*

Introduction

Cervical cancers are the second most frequent type of female cancer, responsible for about 5% of cancer deaths in females' worldwide.[1] Cervical cancer is one of the leading cancers in women with an estimated 500,000 new cases every year, of which 80% occur in developing countries.[2] In India it is estimated, that the number of cases are over 140,000.[3] Cervical cancer occurs at early age and strikes at the reproductive period of a woman's life. The incidence rises in 30–34 years of age and peaks at 55–65 years, with a median age of 38 years (age 21–67 years).

Prevention of cervical carcinoma requires early detection and eradication of the precursor lesion. The current method of using cytological smear in

screening for precursor lesion of cervical carcinoma has significantly reduced the mortality and morbidity of cervical carcinoma.[4] In industrialised countries screening for cervical cancer is based on the presence of cytomorphologically abnormal epithelial cells in cervical smears.[5] These cytopmorphologically abnormal epithelial cells are best demonstrated by the Papanicolaou test. The Bethesda System for reporting cervical cytology was developed at an NCI workshop in 1988, and was first used in 1991. In 2001, it was further updated to improve the utility and understandability of results.[6] Now, currently The 2014 Bethesda System has been introduced, which is used for reporting cervical smear in our study. The Papanicolou screen ("Pap smear") is the most commonly performed cancer screening test world-wide nowadays [7]. The Pap test is a simple procedure in which a small sample of cells is collected from the cervix and examined under a microscope. The test detects both precancerous lesions and early stage cancer[8].

Material and Method

The study was conducted over a period of one year at a tertiary care center, M.Y.H. Hospital, Indore. Pap smears were collected from the females attending the Gynaecology OPD having various symptoms related to lower genital tract and/or having unhealthy looking cervix. Complete history including complaints, type of discharge, personal and marital history was noted. Material was collected from the ecto-cervix by cervical scrapping with the help of an Ayre's wooden spatula and from endocervix with cytobrush and immediately smeared on a clean glass slide. Smears were stained by Papaniculuo method and reported according to The 2014 Bethesda system[9].

Result

Table no. 1 Analysis of Pap Smear

Pap Smear		No. of cases	Percentage
Total Smears		620	100.00
I.Adequacy of smears	1. Satisfactory for evaluation	589	95.00
	2. Unsatisfactory for evaluation	31	5.00
II. General catagorization			
A. **Normal smears**		141	22.74
B. **Benign cellular changes**	Acute inflammatory smear	307	49.52
	Non specific inflammatory lesion	94	15.16
	Bacterial vaginosis	23	3.71
	Trichomonas vaginalis	5	0.81
	candidiasis	1	0.16
	Squamous metaplasia	2	0.32
	Reactive changes	1	0.16
	Atrophy	2	0.32
C. **Epithelial cells abnormality**		13	2.10
	Atypical glandular cells of undetermine significance [AGCUS]	2	0.32
	Atypical epithelial cells of -Atypical squamous cells undetermined significance [ASCUS]	6	0.97
	Low grade squamous intraepithelial lesion (HPV/mild dysplasia /CIN I . [LSIL]	2	0.32
	High grade squamous intraepithelial lesion [HSIL]	2	0.32
	Malignancy	1	0.16

Table No. 1 shows that in the present study, 620 pap smears were analyzed, out of which normal smears 141 (22.74%), Bengin cellular changes 435 cases (70.16%) and epithelial cell abnormality 13 cases (2.10%) are appreciated.

Among the benign cellular changes, Acute inflammatory smear constitutes 307 cases (49.52%), Non specific inflammatory lesion 94 cases (15.16%), bacterial vaginosis 23 cases (3.71%), trichomonas vaginalis 5 cases (0.81%), candidiasis 1 case (0.16%), squamous metaplasia 2 cases (0.32%), reactive changes 1 case (0.16%) and atrophy 2 cases (0.32%).

Out of 13 cases of epithelial cell abnormality, 6 cases (0.97%) show Atypical squamous cells of uncertain significance, 2 cases (0.32%) show Atypical glandular cells of uncertain significance, 2 cases (0.32%) show low grade squamous intraepithelial lesions, 2 cases (0.32%) show high grade squamous intra epithelial lesions and 1 case (0.16%) shows invasive carcinoma cervix.

Table No. 2 Age distribution in relation of ASCUS, AGCUS, LSIL, HSIL and SCC

Age (in years)	AGCUS n=2	ASCUS n=6	LSIL n=2	HSIL n=2	SCC n=1	Total
15-20	0	0	0	0	0	0
21-30	0	1	0	0	0	4
31-40	1	2	0	1	0	7
41-50	1	2	2	0	0	7
51-60	0	1	0	1	1	4
61 and above	0	0	0	0	0	0
Total	2	6	2	2	1	13

Table no. 2 shows that maximum cases of LSIL were detected in 41-50 years of age group and maximum cases of HSIL were detected in 31-60 years of age group whereas maximum cases of carcinoma cervix were detected in 51-60 years of age group.

Discussion

In this study, it is concluded that ASCUS (0.97%), AGCUS (0.32%), LSIL (0.32%), HSIL (0.32%) and SCC (0.16%). Our results are in correspondence with the results of Kaustubh Mulay et. al.[10] who concluded 0.64% ASC-US, 0.31% AGCUS, 0.21% LSIL, 0.16% HSIL, and 0.06% invasive cancer; Thamboo TP[11] revealing 0.92% ASC-US, 0.53% LSIL, 0.38% HSIL, and 0.06% invasive cancer; Anita N. Kavatkar[12] who concluded 1.23% ASC-US, 1.23% LSIL and1.23 HSIL; Vassil-akos[13] showing 3.72% ASC-US, 0.82% LSIL and 0.29% HSIL.

Dall' Agnol M[14] showing 3.5% ASC-US, 2.18% LSIL, 0.18% HSIL, and 0.06% invasive cancer; and Elhakeem HA[15] concluding 2.76% ASC-US, 1.3% LSIL, 0.66% HSIL, and 0.33% invasive cancer.

The slight variation in the incidence of epithelial cell abnormality among these studies may be due to the different inclusion and exclusion criteria, environmental, religious and socio-economic status and the conditions like early marriages, multiparity etc.

In the present study, ASCUS (0.97%) is found to be the most common epithelial cell abnormality. Similar results were obtained in other studies which found that ASCUS to be the most common epithelial cell abnormality[16,17]. ASCUS progresses to LSIL, HSIL and SCC. AGUS progresses to adenocarcinoma.[18,19]

Table no. 2 shows that low grade squamous intraepithelial lesion (LSIL) was mainly found in the age group 41-50 years in 2 cases (0.32%). High grade squamous intraepithelial lesion (HSIL) was mainly found in the age group 31-60 years found in 2 cases (0.32%) while Invasive carcinoma cervix was mainly found in the age group 51-60 years in 1 case (0.16%). Sunita A. Bamanikar et.al. [20] (2014) also found the similar results that epithelial cell abnormality are common in 20-75 years of age and likewise Hemali J. Tailor et.al. [21] (2016) concluded the more common age group is 25-70 years for the same. Both the studies shows that the incidence of epithelial cell abnormality are more in higher age in these age range also. The difference in the age

incidence of intraepithelial lesions and carcinoma cervix could be due to wide variation in selection criteria. Statistical analysis reveal that there is significant difference between age difference and also for the most common epithelial abnormality with p value <0.05.

Conclusion

The Papanicolaou smear test is a simple, non-invasive, and a cost-effective method for the diagnosis of cervical and vaginal precancerous and cancerous lesions. The Bethesda system used for cervical cytology is not only a uniform and standard method but also gives descriptive diagnosis that helps the gynaecologist in individualized patient management. The 2014 Bethesda System seems to reduce the number of cervical smear diagnoses of ASC, without causing any impairment in the diagnosis of HSIL thus decreasing the number of unnecessary interventions like cervical biopsy and decreasing the cost, inconvenience, anxiety and discomfort.

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