



A STUDY OF CERVICAL PAP SMEAR IN A TERTIARY HOSPITAL.

Pathology

Jagriti Singh Govt. Medical College & Hospital, Jammu

Anu Mangoch* Govt. Medical College & Hospital, Jammu *Corresponding Author

ABSTRACT

Cervical cancer is the leading cause of morbidity and mortality among women in developing countries. Cervical cancer is readily preventable & can be diagnosed at the pre cancerous stage with adequate & repetitive cytological screening by Papanicolaou (Pap) smears. This retrospective study was conducted between April 2016 to March 2018. The aim of the study was to evaluate all the cervical smears done during this period to study the spectrum of lesions affecting cervix. A total of 104 cervical smears were obtained from female subjects aged 20 to 75 years suspected with abnormalities. The smears were subjected to Pap smear test and interpreted according to Bethesda system of classification 2001. The subjects were grouped based on age as 20-45 years, 46-55 years, 56-65 years and 66-75 years and the age wise distribution of various types of cervical lesions were noted. Out of 104 pap smears examined, unsatisfactory / inadequate smears were 3(2.8%) which were excluded from the study. From the remaining 101 smears, 87(86.1%) were negative for intra epithelial lesions or malignancy, 13(12.8%) showed intraepithelial lesions and 1(0.9%) atrophic smear. ASCUS(12.8%) was the most commonly found intraepithelial cell abnormality seen in our study. ASCUS, AGUS and LSIL were more frequent in postmenopausal age group. Pre malignant and malignant lesion of cervix can be diagnosed with pap smear. The present study showed higher incidence of intra epithelial lesions in post menopausal women compared to other age groups.

KEYWORDS

Cervical cancer, pap smear, ASCUS, NILM, Bethesda.

INTRODUCTION

Cervical cancer is one of the prevalent causes of death among women in developing countries. It is the 4th leading cancer among women worldwide & the second most prevalent cancer in women aged between 15 to 44 years.¹ According to the National Institute of Health factsheet, cervical cancer accounts for about 300000 across world per year.² Every year in India, 1,22,844 women are diagnosed with cervical cancer and 67,477 die from the disease.^{3,4}

Cancer of the cervix is readily preventable by early detection and appropriate timely treatment of its precursor lesions by simple Pap smear screen test. But women usually present to the clinic only when they have symptoms such as pain, discharge and / or abnormal bleeding.⁵

Cytology is a simple and inexpensive diagnostic method and is therefore useful especially in areas with limited resources. Even though the Pap smear test alone does not have a high sensitivity and specificity, it is the most commonly used test in screening programmes.⁶ The diagnostic utility of cervicovaginal cytology (Pap test) as a first line of investigation has assumed importance in screening of cervical cancer. It is simple, safe, cost effective and reliable technique.^{6,7}

The 2001 Bethesda System terminology reflects important advances in biological understanding of cervical neoplasia and cervical screening technology and is most widely used system for describing Pap smear results.^{7,8} This study was done to evaluate the pattern of cervical Pap smear cytology at GMC, Jammu.

MATERIAL & METHODS

This retrospective study was conducted in the Department of Pathology, GMC Jammu on all the Pap smears received between April 2016 to March 2018. Relevant clinical details including age and presenting complain was obtained from requisition forms. A total of 104 cervical Pap smears were reported in the study period. After receiving the slides fixed in 95% ethanol they were stained by Papanicolaou stain by Cyto technician. Slides were then mounted with DPX (Distrene dibutyl phthalate xylene) and examined by two pathologists.

Staining procedure:

1. Hydrate in 95% alcohol for 2 minutes & in 70% alcohol for 2 minutes.
2. Rinse in water for 1 minute.
3. Stain in Harris's hematoxylin for 5 minutes.
4. Rinse in water for 2 minutes.
5. Differentiate in 0.5% aqueous Hydrochloric acid for 10 seconds

6. Rinse in water for 2 minutes.
7. 'Blue' in Scott's tap water substitute for 2 minutes.
8. Rinse in water for 2 minutes.
9. Dehydrate in 70% alcohol for 2 minutes.
10. Dehydrate in 95% alcohol for 2 minutes.
11. Stain in OG 6 for 2 minutes.
12. Rinse in 95% alcohol for 2 minutes.
13. Stain in EA 50 for 3 minutes.
14. EA 50 (36) eosin yellowish 3 min
15. Rinse in 95% alcohol for 1 minute.

Smear adequacy: Two clusters of well-preserved endo cervical glandular and / or squamous metaplastic cells, with each cluster composed of at least five cells.

Inclusion criteria: Patients presenting with complaints of vaginal discharge, lower abdominal pain, pelvic inflammatory disease, post coital bleeding, inter menstrual spotting, post menopausal bleed.

Exclusion criteria: Unsatisfactory / inadequate smear.

Reporting: The Bethesda system 2001 was used for reporting the findings of cervical cytology.

RESULTS :

In our study a total of 104 Pap smears were analysed. Out of 104 Pap smears, 101 were adequate for evaluation whereas 3(2.9%) were inadequate for evaluation due to low cellularity and obscurement by inflammatory cells and blood and thus were excluded from the study.

The age of the patients ranged from 20 to 75 years. Majority (70.2%) of the Pap smears were from reproductive age group 20-45 years, followed by 46-55 years (17.3%), 56-65 years (9.9%), 66-75 years (1.9%). The most common presenting complain was vaginal discharge (55.7%) followed by lower abdominal pain (17.3%), pelvic inflammatory disease (9.6%), post coital bleed (8.6%), inter menstrual spotting (5.7%) and post menopausal bleed (2.8%). In our study, among 101 Pap smear analysed, 87 (86.1%) were negative for intra epithelial lesions or malignancy, which included 84 (83.1%) cases of non specific inflammatory lesions, 2 (1.9%) cases of candida infection and 1 (0.9%) case of trichomonas infection. 3 (2.9%) smears showed LSIL, 3 (2.9%) were HSIL, 6 (5.9%) were ASCUS, 1 (0.9%) smear was AGUS and 1 (0.9%) smear showed atrophic changes. ASCUS was seen to be the most common epithelial cell abnormality in our study.

DISCUSSION:

Cancer of uterine and breasts are leading malignancies seen in females of India. There should be an effective mass screening programme

aimed at specific age group for detecting precancerous condition before the progress to invasive cancers.^{3,9} Conventional cervical cytology is the most widely used cervical cancer screening test in the world and cytology screening programme in several developed countries have been associated with impressive reductions in cervical cancer burden.¹⁰ However the screening coverage in India is 2.6-5% and it is mainly an opportunistic screening. Even though the cancer registries show decline in cervical cancer incidence, it is mainly urban statistics. In rural areas cervical cancer still ranks number one in India.¹¹ The WHO recommends that in developing countries, women aged between 18-69 years should be screened for cervical cancer every 3 years.⁶

In our study the age of the patient ranged from 20 to 75 years and the predominant population was in the reproductive age group (70.2%). These findings were similar to studies done by Bamanikar et al, Pudasini S et al, Hirachand et al, Ranabhat et al and Bukhar et al.^{5,7,12-14}

There were no cases below 20 years of age in our study which is similar to studies done in mid western part of Nepal by Ranabhat et al and Bangladesh by Yeasmin S et al.^{13,15} Study done by Pudasini S et al and Renuka N et al had 0.6% and 0.7% cases from patients below 20 years of age respectively.^{7,16} In contrast to this and our study the number of cases of Pap smear below 20 years of age was quite high (11.7%) in a study done by Haider G et al in Pakistan.¹⁷

Getting adequate material in Pap smear might be difficult sometimes. There were 3 (2.9%) cases of unsatisfactory smear in our study. Studies done in Kathmandu by Hirachand et al, in Pakistan by Bukhari et al and in India by Renuka N et al revealed 0.3%, 1.8% and 1.2% cases of unsatisfactory smear respectively.^{12,14,16}

Negative for intra epithelial lesion or malignancy was seen in 86.1% of cases which correlates well with study done by Bamanikar et al (88.9%) and Pudasini S et al (87.9%).^{5,7} In studies done by Waghela et al and Saha et al negative for intraepithelial lesion or malignancy was seen in 47% and 50.6% respectively.^{18,19} Epithelial cell abnormalities represented 12.8% cases in our study. Analogous to our findings, study done by Sharadamani GS et al and Bisht M et al also reported 12.8% and 14.8% epithelial cell abnormalities respectively.^{1,20} However, a lot of variation was also seen in several other studies (1.8, 0.5, 1.7, 1.8, 10.3, 5.6, 2.0, 1.2 and 13.6%).^{3,7,13,16,19,21-24} LSIL 2.9% seen in our study was similar to study done by Narasimha et al (2.7%) and study done by Ball MS et al (2.7%).^{25,26} HSIL was seen in 2.9% cases of our study which correlates with the study done by Beinton et al (2.6%) and Narasimha et al (2.5%).^{25,27} ASCUS was seen in 5.7% cases in our study which is comparable to study done by Narasimha et al (4.1%), Beinton et al (6.9%) and Karuma et al (6.0%).^{25,27,28} AGUS in our study was found to be the least prevalent (0.9%) intraepithelial lesion. This finding was concurrent with studies done by Sharadamani GS et al and Velu et al.^{1,29}

Atrophic changes were seen in 0.9% cases in our study which correlates well with study done by Tailor HJ et al (1.3%),³ although studies done in Nepal by Pudasini S et al, in India by Patel MM et al, in Bangladesh by Yeasmin S et al and in Pakistan by Khan MS have shown 2.4%, 2.2%, 3.0% and 3.1% respectively.^{7,8,15,30}

ASCUS was seen to be the most frequent intraepithelial lesion reported in our study. This finding is analogous to the study done by Sharadamani GS et al and Tailor HJ et al.^{1,3} It was also seen to be more frequent in post menopausal age group. We also noted in our study that early stages of dysplasia like AGUS and LSIL were predominant among women belonging to the post menopausal age group. HSIL was seen in both post menopausal as well as reproductively active age groups. This finding is similar to study done by Sharadamani GS et al.¹ The American Cancer Society recommends that all women should begin cervical screening after 3 years of beginning of Coitus. It is also recommended that every 1 to 2 years women who have crossed the age of 30 years and having three consecutive normal Pap results may be screened after 2 years.⁸ Our study showed that pre malignant lesions are more common in post menopausal age group and thus, the chances of developing cervical cancer are more in this age group. By conducting health camps, increasing health awareness and performing Pap smear screening programme the incidence of cervical carcinoma can be decreased. However, the present study was restricted to our

centre only and no further follow up of the cases was done. Still we believe that this study has highlighted some of the important aspects related to cervical cancer in our set up.

CONCLUSION

Pap smear tests are inexpensive and affordable for the patients. It is a rapid test and test reports are available quickly i.e., on the same day. Moreover, the procedure does not require any specialist or expert for smear collection. Early detection of pre cancerous lesions or malignancy help in prompt treatment at early stages & prolonging life expectancy, thereby reducing morbidity and mortality due to cervix carcinoma.

Table 1 : Cervical pap smear findings according to 2001 Bethesda System

Interpretation /Result	Number of cases	Percentage(%)
Negative for intraepithelial lesion or malignancy	87	86.1%
- Non specific inflammation	84	83.1%
- Candida infection	2	1.9%
- Trichomonas infection	1	0.9%
Positive for intraepithelial lesion or malignancy	13	12.8%
- Low grade squamous intraepithelial lesion(LSIL)	3	2.9%
- High grade squamous intraepithelial lesion(HSIL)	3	2.9%
- Atypical squamous cells of undetermined significance (ASCUS)	6	5.9%
- Atypical glandular cells of undetermined significance(AGUS)	1	0.9%
Atrophy	1	0.9%

Table 2 :Age wise distribution of various cytological findings

Age group (years)	Atrophic smear	Non specific inflammatory smear	Specific inflammatory smear	ASCUS	AGUS	LSIL
20-45	-	64	3	2	-	2
46-55	-	10	-	3	1	3
56-65	1	8	-	1	-	-
66-75	-	2	-	-	-	-

Table 3 :Distribution of patients according to chief complaint

Chief Complaint	Number of patients	Percentage (%)
Vaginal discharge	58	55.7%
Pain	8	17.3%
Pelvic inflammatory disease	10	9.6%
Postcoital bleed	9	8.6%
Intermenstrual spotting	6	5.7%
Post menopausal bleed	3	2.8%

REFERENCE:

- Sharadamani G.S. & Anusha N. / Spectrum of Cervical Lesions Detected by Pap Smear: An Experience from a Rural-Based Tertiary Care Teaching Hospital. Indian Journal of Pathology: Research and Practice 2017;6(2):435-438.
- NIH Fact Sheets - Cervical Cancer [Internet]. [cited 2017 Mar 18]. Available from: <https://report.nih.gov/nihfactsheets/viewfactsheet.aspx?csid=76>.
- Tailor HJ, Patel RD, Patel PR, Bhagat VM. Study of cervical pap smears in a tertiary care hospital of south Gujarat, India. Int J Res Med Sci. 2016; 4(1):86-8.
- Verma A et al. A study on cervical cancer screening in symptomatic women using Pap smear in a tertiary care hospital in rural area of Himachal Pradesh, India, Middle East Fertil Soc J (2016), <http://dx.doi.org/10.1016/j.mefs.2016.09.002>.
- Bamanikar SA, Baravkar DS, Chandanwale SS, Dapkekar P. Study of Cervical Pap Smears in a Tertiary Hospital. Indian Medical Gazette. 2014;250-254.
- Kalyani R, Sharief N, Shariff S (2016) A Study of Pap Smear in a Tertiary Hospital in South India. J Cancer Biol Res 4(3): 1084.
- Pudasini S, Prasad KBR, Rauniyar SK, Pathak R, Pande K1, Koirala S, Kafle S. Cervical pap smear- A prospective study in a tertiary hospital. Journal of Pathology of Nepal (2015) Vol. 5, 820- 23.
- Patel MM, Pandya AN, Modi J. Cervical pap smear study and its utility in cancer screening to specify the strategy for cervical cancer control. Natl J Community Med 2011;2:49-51.
- Kalkar RA, Kulkarni Y. Screening for cervical cancer: an overview. Obstet Gynecol India. 2006;56(2):115-122.
- WHO/ICO Information Centre on HPV and Cervical Cancer (HPV Information Centre). Summary report on HPV and cervical cancer statistics in India. 2007.
- Aswathy S, Quereshi MA, Kurian B, Leelamoni K. Cervical cancer screening: Current knowledge & practice among women in a rural population of Kerala, India. Indian J Med Res. 2012; 136: 205-210.
- Hirachand S, Bajracharya J, Pradhanang S, Lama S. Detection of abnormal cervical cytology in papanicolaou smears in a tertiary care center. J Nepal Med Assoc 2013;52:462-465.
- Ranabhat SK, Shrestha R, Tiwari M. Analysis of abnormal epithelial lesions in cervical

- pap smears in Mid-Western Nepal. *Journal of Pathology of Nepal* 2011;1:30-33.
14. Bukhari MH, Saba K, Qamar S, Majeed MM, Niazi S, Naeem S. Clinicopathological importance of papanicolaou smears for the diagnosis of premalignant and malignant lesions of the cervix. *J Cytol* 2012;29:20-25.
 15. Yeasmin S, Begum T, Begum LN, Ahmed ASMM, Osman B. Pap smear study and its utility in cervical cancer screening in a tertiary care hospital in Chittagong, Bangladesh. *Chattagram Maa-O-Shishu Hospital Medical College Journal* 2014;13:17-19.
 16. Renuka N, Sultana A. Cytopathological study of cervical smear: a hospital based retrospective study. *Medical Journal of Islamic World Academy of Sciences* 2014;22:42-49.
 17. Haider G, Parveen Z, Anjum F, Munir A. Pap smear, an important screening tool to detect precancerous stage of carcinoma of cervix. *J Ayub Med Coll Abbottabad* 2013;25:26-27.
 18. Vaghela BK, Vaghela VK, Santwani PM. Analysis of abnormal cervical cytology in papanicolaou smears at tertiary care center- a retrospective study. *IJBAR* 2014;5:47-49.
 19. Saha K, Sengupta M, Mistry CJ. Cytological findings of conventional cervical papanicolaou smear in a tertiary care hospital. *Global Research Analysis* 2011;3:2:149-51.
 20. Bisht M, Agarwal S, Upadhyay D. Utility of Papanicolaou test in diagnosis of cervical lesions: a study in a tertiary care centre of western Uttar Pradesh. *Int J Res Med Sci*. 2015; 3(5):1070-6.
 21. Nair RV, Shwetha BR, Manju A, Solanke PV. Papanicolaou (Pap) test screening in a tertiary care teaching hospital in South India. *IJMSCI* 2015;2:1260-5.
 22. Selhi PK, Singh A, Kaur H, Sood N. Trends in cervical cytology of conventional pap smears according to revised Bethesda system: a study of 638 cases. *IJRRMS* 2014;4:16-20.
 23. Rizvi JH, Rasool S, Ghazali B, Jamal A. Screening for cervical cancer by pap smear. *JPMA* 1988;38:229-31.
 24. Verma I, Jain V, Kaur T. Application of Bethesda system for cervical cytology in unhealed cervix. *J Clin Diagn Res* 2014;8:26-30.
 25. Narasimha A, Vasavi B, Kumar H, Sapna M. An audit of Pap smear cytology. *J South Asian Federation Obstet Gynecol*. 2011; 3: 121-124.
 26. Manjit Singh Bal, Rishu Goyal. Detection of abnormal cervical cytology in Papanicolaou smears *J Cytol*. 2012 Jan-Mar; 29(1): 45-47.
 27. Beinton A, Palintasa, Barrett Conner. Estrogen depressive symptoms in postmenopausal women. *J of Obst and Gynecol* 1986;80(1):30-33.
 28. Karuna, Gaspanal V, Van Dan Brule R. The clinical profile and cervical cytomorphology. *Indian journal of pathol. Microbiol.* 2003;46(2):78.
 29. Velu AR, Srinivasamurthy BC, Balamurugan M. Clinicopathologic significance of Papanicolaou smear study of postmenopausal women in a rural tertiary care center. *Clin Cancer Invest J*. 2015; 4(2):147-151.
 30. Khan MS, Raja FY, Ishfaq G et al. Pap smear screening for pre cancerous conditions of the cervical cancer. *Pak J Med Res* 2005;44:111-3.