Spectrum of cytological patterns in cervical PAP smears in a tertiary care center of Western region of Nepal

Pragya Gautam Ghimire[1], Durga BC Rawat[2], Kavita Sinha[3], Kamar Jahan[4], Richa Shrestha[5]

[1] Assistant Professor, Department of Pathology, Nepalgunj Medical College, Banke, Nepal
[2] Lecturer, Department of Obstetrics and Gynaecology, Nepalgunj Medical College, Banke, Nepal
[3] Assistant Professor, Department of Obstetrics and Gynaecology, Nepalgunj Medical College, Banke, Nepal
[4] Lecturer, Department of Obstetrics and Gynaecology, Nepalgunj Medical College, Banke, Nepal
[5] Lecturer, Department of Pathology, Nepalgunj Medical College, Banke, Nepal

ABSTRACT

Introduction: Cervical cancer is a common health problem in Nepal. There is paucity of data regarding the spectrum of findings in cervical Pap in western Nepal. This study was aimed to study the cytological patterns in cervical Pap smears in patients in a tertiary hospital of Nepal.

Methods: This is a prospective, cross sectional, hospital based study. Clinical features of patients who had presented with Pap smear was noted in a structured proforma. Pap smears were studied by a senior pathologist and reported based on revised Bethesda system (2014).

Results: Most of the cases belonged to 31-40 years 399 (42.8%). Unsatisfactory/ inadequate sample was present in 133(14.05%) with obscuration due to inflammatory exudate being most common cause. Negative for intraepithelial lesion or malignancy rate was noted in 798 (85.54%) with 477(51.2%) being normal findings. Epithelial cell abnormalities were noted in 116 (14.5 %) smears. Low-grade squamous intraepithelial lesion constituted 321(34.5%), High grade squamous intraepithelial lesion 273(29.3 %) and Atypical squamous cells of undetermined significance 153(16.4%) of epithelial cell abnormalities. Squamous cell carcinoma was present in 9(1%) of all reviewed smears. There was no statistical significance between the age and abnormalities of Pap smear (p=0.9).

Conclusions: Pap smear is pivotal in cervical cancer screening in developing countries. It also identifies various inflammatory, infective, benign and malignant pathologies at the earliest thereby decreasing the morbidity and mortality.

Key words: *cervical, cancer; cervical, Pap; screening.*

Correspondence: Dr. Pragya Gautam Ghimire Assistant Professor Department of Pathology, Nepalgunj Medical College, Banke, Nepal, E mail: drpragya@gmail.com

INTRODUCTION

Cervical cancer is a major health problem worldwide with significant morbidity and mortality. There has been a decreasing trend in the incidence of cervical cancer in developed countries with developing countries accounting for greater than 80% of the total cases.[1] Cervical cancer is the principal cause of cancer related deaths in the developing countries. In Nepal, cervical cancer is the most prevalent cancer among Nepalese women with majority diagnosed in advanced stage resulting in high mortality.

Screening for cervical cancer is commonly performed by Papanicolaou (Pap) smear testing which is simple, non-invasive and inexpensive diagnostic tool.[2]

In this study, we identified the spectrum of findings encountered on routine Pap smear in the western region of Nepal.

METHODS

This is a prospective, cross sectional, descriptive, observational hospital based study conducted in the Department of Pathology from August 2016 to July 2018. Ethical approval was obtained from institution review board. Total 933 Pap smears were received during the study period from the Department of Gynaecology as well as from other nearby institutions. Relevant clinical information was elicited and entered into predetermined structured proforma. Pap smears were reviewed by a single senior pathologist and reported according to the revised Bethesda system 2014 for reporting cervical cytology. Data was analysed by SPSS version 21.0. Bivariate correlation was calculated for different age group and abnormal cytological findings and p value ≤ 0.05 was considered clinically significant

RESULTS

A total of 933 Pap smears were evaluated during the study period. The age of the patients ranged from 18 years to 79 years with mean age of presentation of patients being 36.3±9.7 years. Most of the patients were in the age group 31-40 years accounting for 399(42.8%), 269(28.6%) were in the age group 21-30 years and 4(0.4%) were in the age group 71-80 years.
The most common presenting symptoms were discharge per vaginum and lower abdominal pain.

The clinical features of patients are presented in Table 1.

The various pathologies present in our patients are presented in Table 2.
There was no significant correlation between age group and the abnormalities in Pap smear (p=0.9) (Table 2).

Out of 933 Pap smears, 802 (85.95%) were satisfactory for evaluation and 131 (14.05%) were unsatisfactory for evaluation. Most common reason for unsatisfactory evaluation was inadequacy due to obscuration of squamous cells by inflammatory exudates (Table 3).

The relative frequency of the various abnormalities noted in the PAP smears are tabulated in Table 4.

Table 1. Clinical features of the patients visiting Gynaecology OPD

Clinical features	Frequency	Percentage
Discharge per vaginum with lower abdominal pain	273	29.3
Discharge per vaginum with or without vulval itching	221	23.7
Lower abdominal pain	245	26.3
Screening/ Previous abnormal Pap	99	10.6
Multiple complaints	49	5.3
Abnormal bleeding per vaginum	46	4.9
Total	933	100

Table 2. Relative frequencies of various abnormalities at different age group.

Age group	Atypical squamous cells of Undetermined significance (ASC-US)	LSIL	HSIL	Squamous cell carcinoma	Atypical endocervical cells (NOS)	Cannot exclude HSIL ASC-H	With features suspicious for invasion	Total
Upto 20	0	1	0	0	0	0	0	1
21-30	6	13	5	3	1	2	0	30
31-40	10	15	17	2	4	2	0	50
41-50	3	8	8	2	1	1	2	25
51-60	0	3	4	1	0	1	0	9
61-70	0	0	0	0	1	0	0	1
Total	19	40	34	8	7	6	2	116

ASC-H: Atypical squamous cells; cannot exclude HSIL, HSIL: High grade squamous intraepithelial lesion, LSIL: Low grade squamous intraepithelial lesion, NOS: Not otherwise specified.

Table 3. Etiological factors for unsatisfactory evaluation in Pap smear

	Frequency	Percentage
Inadequate due to obscuration by red blood cells	24	18.3 %
Inadequate for evaluation due to low squamous cellularity	4	3.1 %
Too many cluster of spermatozoa	2	1.5 %
Obscured by inflammation	101	77.1%
	131	100

Table 4. Relative frequency of various abnormalities

Negative for Intraepithelial lesions or malignancy	686
Non-neoplastic findings	492
Non-neoplastic cellular variations	24
• Squamous metaplasia	0
• Keratotic metaplasia	0
• Tubal metaplasia	0
• Atrophy	24
• Pregnancy associated changes	0
Reactive cellular changes associated with	170
• Inflammation	160
• Lymphocytic (follicular) cervicitis	0
• Radiation	0
• Intrauterine contraceptive device (IUD)	10

Glandular cell status post hysterectomy		
Organisms		99
	• Trichomonas vaginalis	30
	• Fungal organisms morphologically consistent with candida spp.	34
	• Shift in flora suggestive of bacterial vaginosis	26
	• Bacterial morphology consistent with Actinomyces species	1
	Cellular changes consistent with herpes simplex virus	4
	Cellular changes consistent with cytomegalovirus	0
	Mixed fungal and bacterial	4
Epithelial Cell Abnormalities		116
Squamous Cell	Atypical squamous cells	
	• of Undetermined significance (ASC-US)	19
	• Cannot exclude HSIL (ASC-H)	6
	LSIL (encompassing: HPV/ mild dysplasia/CIN I)	40
	HSIL	34
	• With features suspicious for invasion	2
	Squamous cell carcinoma	8
Glandular cell	Atypical endocervical cell (NOS)	7
Total		802

ASC-H: Atypical squamous cells; cannot exclude HSIL, ASC-US: Atypical squamous cells of Undetermined significance, CIN I: Cervical Intraepithelial Neoplasia Stage I, HPV: Human Papilloma Virus, HSIL: High grade squamous intraepithelial lesion, LSIL: Low grade squamous intraepithelial lesion, NOS: Not Otherwise Specified

DISCUSSION

Cervical cancer is a preventable disease. However, it is the most common cause of cancer morbidity and mortality in developing countries including Nepal.[1] According to the World Health Organization, the crude incidence rate of cervical cancer in Nepal is estimated at 24.2 per 100,000 women per year, with 3,504 new cases diagnosed every year and 1,872 deaths.[2] Multiple factors contribute to the high prevalence including poor access to health facilities, poor screening programs, illiteracy, endemicity of other diseases such as tuberculosis, malaria.[1,3]

In the developed countries, screening by Pap smear has significantly decreased the overall prevalence of advanced cervical

cancer and related morbidity/mortality.[1] Cervical cancer screening in Nepal has also been primarily done by Pap smear. However, various constraints as financial and lack of human resources have limited the coverage throughout the country. Pap smear unlike visual inspection after acetic acid application (VIA) is advantageous as not only being limited to cervical cancer screening, but other benign pathologies can also be diagnosed with confidence for timely management.

Limited studies have been done in Nepal regarding the utility of Pap smear in various gynaecological conditions.[4] The Papsmear, however, requires expertise during the process of taking sample as well as reporting by standardized Bethesda nomenclature. It has been noted in our study that unsatisfactory/ inadequate smear was present in 14.05 % of the samples which is quite high compared to other studies.[4,5] This may be due to the poor sampling techniques attributed to untrained/ limited skilled man power, presence of blood. Obscuration with inflammatory exudate was the most common cause for unsatisfactory/ inadequate smear contributing to 77.1 % of the unsatisfactory/ inadequate smear cases in our study.

Majority of patients were in the 30-40 age groups in our study which is in keeping with previous studies.[6]

The incidence rate of Negative for Intraepithelial Lesion or Malignancy (NILM) in Pap smear is variable for various studies ranging from 82.5 % to 98.29%).[4] NILM rate was noted in 85.54% of the total studied smears which is relatively lower than few other studies.[4,5] Normal smears were present in 57.2 % of the total NILM which is significantly higher than other similar studies which report as low as

5.03%.[6]. This may be related to different demographic and etiological factors. Unlike studies by Pun et al, majority of inflammatory smears were non-specific (23.3% of all NILM, 61.77 % of all inflammatory smears).[4] Candidiasis and Trichomonas vaginalis infections accounted to 12.6 % and 11.2 % each of inflammatory smears. These differences in findings may be related to the under/incompletely treated cases.

There has been a variation in the reported rate for Epithelial Cell Abnormalities (ECA) in different countries and even in different parts of the same country. In our study, ECA were noted in 116 smears (14.5 %) among the 802 smears studied which is relatively higher than similar studies performed elsewhere.[7] Among the epithelial cell abnormalities, LSIL constituted 34.5 % of cases followed by HSIL (29.3 %). ASCUS constituted 16.4 % of ECAs and 2.4 % of the total examined smears which is higher than most other studies.[7] Squamous cell carcinoma was noted in eight of 116 ECA cases (6.9%), 1.0 % of the total examined smears which is similar to various studies.

There was no significant correlation between the age group and the various abnormalities in Pap smear.

The clinical behaviour of low grade lesions are unpredictable with many disappearing spontaneously or with treatment but few may also persist or progress. Since these cases have a chance for further abnormalities, a close long term follow up / surveillance of these lesions are warranted.[8]

There are various limitations in our study including small sample size, as well as limited follow up of cases following treatment for evaluation of progression of

disease. Despite of this, our study highlights the commonly encountered cytological abnormality during Pap smear in our regions and helps in defining appropriate management in a resource limited settings as ours.

CONCLUSION

Pap smear is the gold standard in cancer screening wherever resources are available. Cervical pathologies are noted to involve at a relatively younger age group in our region due to multiple factors. It is imperative that cervical screening programs be started at an earlier age than the recent guidelines.

CONFLICT OF INTEREST
None

SOURCES OF FUNDING
None

REFERENCES

1. Denny L. Cervical cancer: prevention and treatment. Discov Med. 2012;14(75):125-31.

2. Gyawali B, Keeling JJ, Teijlingen E, Dhakal L, Aro AR. Cervical cancer screening in Nepal: ethical considerations. Medicolegal and Bioethics. 2015.

3. Gyenwali D, Pariyar J, Onta SR. Factors associated with late diagnosis of cervical cancer in Nepal. Asian Pac J Cancer Prev. 2013;14(7):4373-7.

4. Pun RG, Shrestha J, Awale PJ, Chitrakar N, Jha R, Khadka SS. Cytological pattern of cervical pap smears. Journal of Pathology of Nepal. 2018;8(1):1280-4.

5. Atilgan R, Celik A, Boztosun A, Ilter E, Yalta T, Ozercan R. Evaluation of cervical cytological abnormalities in Turkish population. Indian Journal of Pathology and Microbiology. 2012;55(1):52-5.

6. Das D, Kar A, Rath S, Baliarsingh S, Prusty D, Dash A. Cytological pattern of papanicolaou smears and detection of cervical cancers: An experience from a tertiary care center of eastern zone of India. Oncology Journal of India. 2018;2(2):25-8.

7. Turkish Cervical C, Cervical Cytology Research G. Prevalence of cervical cytological abnormalities in Turkey. Int J Gynaecol Obstet. 2009;106(3):206-9.

8. Behnamfar F, Zafarbakhsh A, Allameh TA. Study of 2 years follow-up of referral patients with abnormal Pap smear. *J Res Med Sci*. 2015;20(12):1147-52.