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SPECTRUM OF CERVICAL LESIONS ON PAP SMEAR IN WOMEN AT A TERTIARY CARE HOSPITAL

Pathology

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ABSTRACT

Background: Cervical cancer is the fourth most common cancer in women globally. Human papilloma virus (HPV 16 and HPV 18), a sexually transmitted oncogenic virus is now recognised as the main cause of cervical cancer. The Pap smear is a simple and effective screening procedure used to detect precancerous or cancerous cells in the cervix. **Methods:** This study was an observational cross sectional study in Department of Pathology, at tertiary healthcare centre in South Gujarat over a period of one year from August 2023 – August 2024. Cytological findings of all cases were recoded.**Results:** Out of 2009 Pap smears, 1964 cases (97.7%) were categorized into NILM (negative for intraepithelial lesion or malignancy) and 45 (2.3%) into epithelial abnormalities. The age group of 41-50 years showed highest frequency of various epithelial abnormalities. **Conclusion:** By proper implementation of Pap screening, the incidence of invasive cervical malignancy can be prevented. The Bethesda system (2014), provides a standardized framework for reporting cervical cytology results. Cervical cancer incidence, mortality and survival have markedly declined in the past several decades.

KEYWORDS

Pap smear screening, HPV, The Bethesda System (TBS).

INTRODUCTION

Cervical cancer is the fourth most common cancer in women globally and one of the top three cancers in women aged <45 years worldwide [1]. According to GLOBOCAN 2020 estimates, India reported approximately 123907 (18.6%) new cases of cervical cancer and 77348 deaths per year [2]. India accounting for 20.5% of worldwide incidence of cervical cancer and 22.6% mortality rate [2]. Human papilloma virus (HPV 16 and HPV 18) is now recognised as the main cause of cervical cancer [3]. Low age at marriage, early age at first intercourse, high parity, poor genital hygiene, multiple sexual partners raise the risk of HPV infection [4]. The Pap smear, also known as the Papanicolaou test, is a simple and effective screening procedure used to detect precancerous or cancerous cells in the cervix. According to ACS guidelines for cervical cancer screening, it is recommended that screening should begin at 25 years and cease at 65 years of age. ACOG recommended Pap smear screening starting at 21 years age until the age of 65 years and should be repeated at 3-year interval [5]. The purpose of present study was to study the role of Pap smear in evaluating the spectrum of pre-malignant, malignant as well as non-neoplastic lesions of cervix.

METHODS

Present study was an observational cross-sectional study conducted in Department of Pathology, at a tertiary care hospital affiliated to medical college in South Gujarat over a period of 1 year from August 2023 – August 2024.

Total 2009 smears were received in Cytology section, Pathology Department along with their requisition form from Department of Obstetrics and Gynaecology (where smears were collected and fixed). A detailed clinical history, clinical examination was noted and Pap staining was done. Ethical clearance for the study was obtained from the Human Research Ethics Committee of the Medical College & Hospital of the present study setup.

All data were entered in excel sheet. Results were expressed in numbers, percentage, figures and photographs.

Assessment and reporting of cytological smears were made according to The Bethesda System 2014.

RESULTS

Out of 2009 smears, 1964 cases (97.7%) were categorized into NILM (negative for intraepithelial lesion or malignancy) and 45 (2.3%) into epithelial abnormalities (Table1).

Majority of women were in 31-40 years age group comprising of 750 cases (37.3%).

Table 2 showing relation between epithelial abnormalities and age group. The age group of 41-50 years showed highest frequency of various epithelial abnormalities.

Most of the women with epithelial abnormalities presented with complain of post-menopausal bleeding; and per speculum findings were hypertrophied cervix, cervical erosion, cervical growth, cervix bleed on touch and uterine prolapse.

Out of 2009 cases studied for cytology, 156 cases were sent for histopathological examination (table 3).

Cytological and histopathological findings showed adequate concordance (98.7%).

Figure 1: Distribution of cases according to lesions on per speculum examination

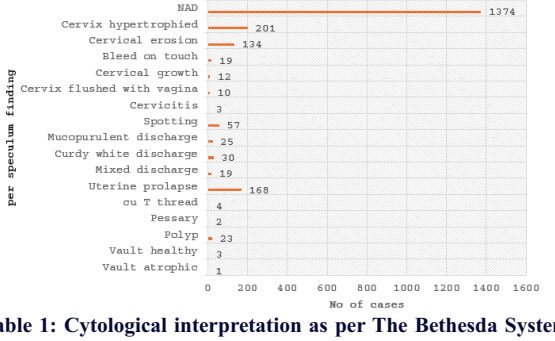


Table 1: Cytological interpretation as per The Bethesda System 2014 for reporting cervical cytology (n = 2009)

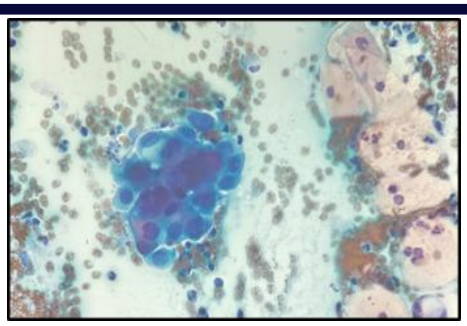
Interpretation as:	No. of patients	Percentage (%)
Negative for intraepithelial lesion or malignancy	**1964**	**97.7**
Normal smears	831	41.3
Non-neoplastic findings	1133	56.4
- Atrophy	85	
-Reactive cellular changes	770	
Organisms		
-Trichomonas vaginalis	26	
-Fungal organisms morphologically consistent with Candida spp.	125	
-Shift in flora suggestive of bacterial vaginosis	397	
-Actinomyces	1	
-Mixed infection	0	
-Cellular changes associated with virus	0	
Epithelial cell abnormalities Squamous cell	**45**	**2.3**
Atypical squamous cells		
– of undetermined significance (ASC-US)	14	0.65
– cannot exclude HSIL (ASC-H)	5	0.3
Low-grade squamous intraepithelial lesion (LSIL)	4	0.2
High-grade squamous intraepithelial lesion (HSIL)	12	0.6
Squamous cell carcinoma	5	0.3
Glandular cell abnormality		
• Atypical Endometrial cells – NOS	1	0.05
• Atypical Endocervical cells – NOS	2	0.1
• Atypical glandular cells - favours neoplastic	1	0.05
• Glandular adenocarcinoma favours endometrial origin	1	0.05
TOTAL	**2009**	**100**

Table 2: Relation between epithelial abnormalities (Premalignant and malignant lesions) and age (n = 45)

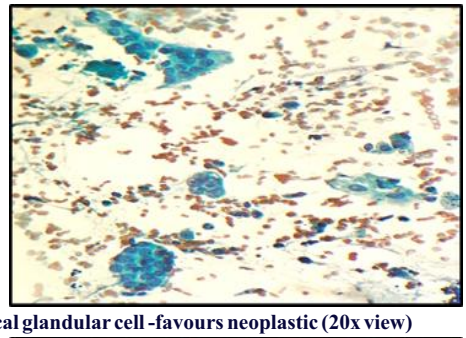
Age (years)	ASCUS	ASC-H	LSIL	HSIL	Atypical endometrial cell - NOS	Atypical endocervical cell NOS	Atypical glandular cell FavoursNeoplastic	SCC	Glandular adeno CA favours endometrial origin
<20	-	-	-	-	-	-		-	-
21-30	2		1						
31-40	5		1	2		2			
41-50	3	2	1	3				2	1
51-60	4	1		3	1		1		
61-70		1	1	3				2	
71-80		1						1	
81-90				1					
Total	14	5	4	12	1	2	1	5	1

Table 3: Correlation of cytological diagnosis with histological diagnosis (n =156)

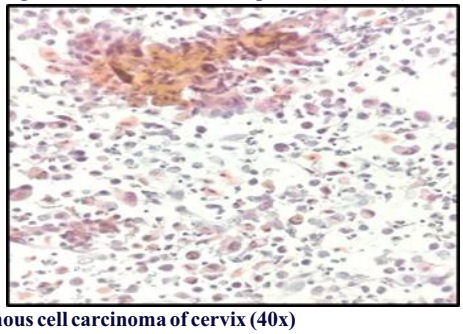
Cytology finding	Total cases	Histopathology finding							
		Chronic cervicitis	LSIL	HSIL	SCC	Polyp	Adeno CA	Leiomyoma	Endometrial Adeno CA
NILM	144	130	2	-	-	8	-	4	-
ASCUS	0	-	-	-	-	-	-	-	-
ASC-H	1	-	-	-	1	-	-	-	-
LSIL	0	-	-	-	-	-	-	-	-
HSIL	6	-	-	1	4	-	1	-	-
SCC	3	-	-	1	2	-	-	-	-
AGC-Neoplastic	1	-	-	-	-	-	-	-	1
Adeno CA(Endometrial origin)	1	-	-	-	-	-	-	-	1
Total	156	130	2	2	7	8	1	4	2



High grade squamous intraepithelial lesion (HSIL)(40x)



Atypical glandular cell -favours neoplastic (20x view)



Squamous cell carcinoma of cervix (40x)

DISCUSSION

In present study majority of cases were in the 31–40-year age group (37.3%) and were found to be similar with the study of Karra et al. [6] (32.3%), Manan P Jadav et al. [7] (42.71%), Agrawal S et al. [8] (32.91%), Chakraborty et al [9] (33.4%) and Umarani MK et al. [10] (33%).

In the present study, majority of the smears (97.7%) were reported Negative for intraepithelial lesion or malignancy. The findings were comparable to those observed by Malpani G et al. [11] (97.96%), Das et al. [12] (97.4%) and Geethu G. Nair et al. [13] (94.87%).

In present study, bacterial vaginosis was the most common infectious lesion, which is comparable with the study of Malpani G et al. [11]. In present study Candida was the second most common infection, which was comparable with the study of Agrawal S et al. [8]. The incidence of Trichomonas vaginalis infection is low, which is comparable with Nikumbh et al [14].

In present study, percentage of atrophic smear reported 4.2 %, which was comparable with the study of Agrawal S et al. [8] (4.17%).

In present study epithelial cell abnormalities were maximum in 41–50-year age group which was found similar with Gaur BS et al. [15], Agrawal S et al. [8] and Malpani G et al. [11].

Histopathological findings were available in only 156 cases. Correlation of these findings with cytology findings was done which shows adequate concordance (98.71) which was comparable with the study of Malpani G et al [11].

CONCLUSION:

Cervical cancer incidence, mortality and survival have markedly declined in the past several decades due to: (1) the success of cervical cancer screening practices, (2) the standardization of The Bethesda System (TBS) for reporting cervical cytology, (3) improvement in the

understanding of the Human Papilloma Virus (HPV) pathogenesis in cervical cancer, (4) the development of appropriate management approaches, (5) due to inclusion of HPV vaccine in the National Immunization Program.

The present study emphasised that Pap smear screening is a cornerstone in the prevention and early detection of premalignant and malignant lesions of cervix. The Bethesda system (2014), provides a standardized and comprehensive framework for reporting cervical cytology results, which enhances clarity, consistency and communication among healthcare providers.

Negative for intraepithelial lesion (NILM) was the predominant cytological finding of this Pap smear study. Most of the screened patients in present study were in the fourth decade of life. Malignancy was more common in fifth decade and intraepithelial lesions/dysplasia was seen mostly in fifth and seventh decade. Inflammatory lesions were more common in younger age group. Pap smear significantly correlates with cervical histology as per this study.

Conflict of Interest: No conflict of interest
Source of Funding: None

Ethical approval: Ethical clearance for the study was obtained from the Human Research Ethics Committee of the Medical College & Hospital of the present study setup.

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