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SPECTRUM OF EPITHELIAL ABNORMALITIES IN CERVICAL PAP SMEARS:2 YEARS STUDY IN BIHAR

Pathology

Dr. Hemant Kumar Sharma*   Graded Specialist, MD, Pathology, MH Danapur C/O 56 APO *Corresponding Author

Dr. Shivani Prashar   MH Danapur C/O 56 APO

ABSTRACT

Cervical cancer related morbidity and mortality is increasing in developing countries. This study was carried out in Bihar due to high prevalence of various causative factors. We studied 654 pap smears and analysed various epithelial abnormalities and compared them with other studies with similar sample size.

Summary: This study was carried out in 199 bedded zonal Hospital. 654 Cervical Pap smears were collected, stained with Pap stain and analysed as per the Bethesda system 2001 for Pap smears reporting. Maximum patients were from 31-40 years of age. 94.5% of all smears were abnormal, out of which 90% smears were inflammatory. Total 4.28% smears showed various epithelial abnormalities, out of which 2.7% Patients had Atypical Squamous Cells of Undetermined Significance. In our study, we had more patients with abnormal smears and inflammatory lesions which stress the need for better hygiene and sanitation, availability of adequate water and education and mandatory mass screening in developing countries to prevent cervical cancer related deaths.

KEYWORDS

Cervical Cancer, Bethesda System, Pap smear Screening, Epithelial Abnormalities

Introduction: Cervical cancer is one of the most common cancer in women and major cause of mortality and morbidity in women worldwide. GLOBOCON 2012 report estimated 528,000 new cases and 266,000 deaths due to cervical cancer annually. Around 85% of these cases were detected in developing countries and makes cervical cancer commonest cause of cancer related deaths. In India, cancer statistics reveal 123,000 new cases with 67,000 deaths with 5-year prevalence of 3,09,000 cases of Cervical Cancer[1]. Due to increasing gender equality in society, increase in life expectancy and better socioeconomical and healthcare opportunities , female population in general and middle aged and older age group are increasing steadily which are more prone to develop cervical cancer. Incidence of cervical cancer rises in 30-34 years and peaks at 55-65 years with median age of 38 years (age 21-67 years) [2]. Anatomically, Uterine Cervix is divided in to Ectocervix, lined by Squamous epithelial cells and Endocervix, lined by glandular cells. Majority of Cervical Cancer are Squamous Cell Carcinoma develops in Ectocervix while few Patients have Adenocarcinoma in Endocervix. Etiologically, Majority of cervical cancer are caused due to infection by Human Papilloma Virus (HPV) along with high prevalence of various other factors like Illiteracy, low socioeconomic status, Chronic genital infection , poor hygiene, early menarchy, late menopause ,multiple sexual partners, Smoking and Malnutrition are also contributory in increasing incidence of cervical cancer in developing countries. Incidence of cervical cancer can only be prevented by strictly implementing primary prevention like routine screening and preventive measures for early detection and increasing awareness about factors causing cervical cancer. Various population based mass screening methods like Cervical cytology by Pap stain, Liquid based Cervical cytology, Automated Cervical screening techniques, Visual examination by applying Acetic acid and Lugol's Iodine at affected area are available for peripheral health care facilities[3]. However, most commonly used method is Cervical Pap smear study by 2001 The Bethesda System because of its high sensitivity, cost effectiveness in identifying probable cases, ease of study and easy categorization of all suspected cases of cervical cancer[4]. This retrospective study was carried out in a 199 Bedded zonal hospital with high dependency of resource poor areas in Bihar. Aim of this study was to analyse the spectrum of epithelial abnormalities detected in cervical cancer screening in Bihar to reduce Cervical cancer related morbidity and mortality

Materials and Methods

Retrospective study was carried out by analysing 654 Cervical Pap smears at a 199 bedded hospital in Bihar from August 2015 to August 2017. Majority of patients were from low socioeconomic and educational background with poor hygiene standards . All smears were taken from Squamo-columnar Transition Zone by conventional Ayre's Spatula by trained personnel, fixed with 95% Ethyl alcohol and stained with Pap stain. All smears were analysed for various age specific parameters between 21 yrs-70 yrs on continuous variable as per 2001 The Bethesda system of Reporting of Cervical Pap smears and data was analysed using Microsoft Excel 2010

Results

Out of total 654 Pap smears studied, 30 smears were found unsatisfactory due to various reasons like obscuring Inflammation and hemorrhage. Remaining 624 smears were analyzed for various age specific pathologies as per 2001 The Bethesda system of classification of Pap smears. Age specific analysis of data revealed 42.51% (278/654) were from 31-40 yrs age (Table 1).

Table no.1 Age wise Pap smear findings (n=654)

S No	Age (in yrs)	ASCUS	AGC	LSIL	HSIL	Sq cell Ca	Inflammation	Inadequate Smears	Total Smears	Percentage of cases (%)
1.	21-30	-	-	-	-	-	118	01	119	18.19
2.	31-40	10	-	04	-	-	244	20	278	42.51
3.	41-50	04	-	02	02	-	151	15	174	26.61
4.	51-60	03	-	00	-	-	67	00	67	10.70
5.	61-70	01	-	01	01	-	10	00	13	01.99
Total cases		**18**	**-**	**07**	**03**	**-**	**590**	**36**	**654**	**100**

ASCUS-Atypical Squamous cells of undetermined significance, AGC-Atypical Glandular Cells, LSIL-Low grade Squamous intraepithelial lesion, HSIL-High Grade Intraepithelial Lesion Sq Cell Ca-Squamous Cell Carcinoma

Mean age of patient was 38 yrs .Total 94.5% (618/654) Pap smears showed abnormal results including inflammation and epithelial abnormalities. Inflammation was seen in 90.2% (590/654) smears. Further analysis of these smears showed inflammation due to *Trichomonas Vaginalis* and *Candida* and non specific inflammatory changes . Out of all smears, 4.3% (28/654) showed various Epithelial abnormalities. Maximum patients showing epithelial abnormality were from 31-40 years (Table 2).

Table no.2 Epithelial Abnormalities (n=28)

S No	Category	Number of Cases
1.	ASCUS	18
2.	AGC	00
3.	LSIL	07
4.	HSIL	03
5.	Squamous Cell Carcinoma	00
	Total	28

Atypical Squamous Cells of undetermined significance (ASCUS) were seen in 64.3% (18/28) of all smears. Low Grade Squamous Intraepithelial lesion (LSIL) was seen in 25% (7/28) patients while 10.7 % (3/28) patients had High grade Squamous Intra epithelial lesion (HSIL). No obvious case of Atypical Glandular Cells (AGC) or Squamous cell carcinoma was detected in all 28 cases showing epithelial abnormalities (Table 5).

Discussion

Invasive Cervical cancer is preceded by well defined premalignant lesion knows as Cervical Intraepithelial lesions(CIN). Progression from CIN to Invasive carcinoma can be prevented by studying cervical cytology at regular intervals by using Pap Smears screening of at risk female population. Most of the patients with cervical cancer report late in the health care facility due to lack of awareness, lack of health facility, social stigma and most importantly, most of the cases being asymptomatic till late stages. Presenting symptoms for which patients comes to hospital is spotting after regular menstrual periods or menopause, bleeding per vaginum and in late stages and mass coming out of cervix. Early diagnosis of FIGO (International Federation of Gynaecology and Obstetrics) Stage 1A1 and 1B Cervical cancer patients have higher survival rates of 80-90% compared to later stages III-IV survival rates of 20-50% [5]. According to The International Agency for Research on Cancer (IARC), strict implementation of screening test have reduced cumulative incidence of Cervical Cancer in North America, Europe and Scandinavian Countries[6]. Although mass screening by Cervical Pap Smears is available since long time, its proper implementation in developing countries could not be achieved so far due to Lack of awareness, Disoragnised health care delivery, widespread cultural barriers, Personal beliefs and poor communication between women and physicians resulting in denial of their own susceptibility to cervical cancer risk and testing benefits [7]. This retrospective study was carried out in Bihar because of High prevalence of socioeconomical and etiological causative factors[8]. Risk of development of Invasive cervical cancer and for dysplasia and Carcinoma in situ increased by 100 % and 60% respectively in low social class compared high social class and can be attributed to infection by HPV and inadequate access to screening programmes [9]. Vast majority of people in Bihar stay in rural area and illiterate. Percentage of illiteracy is even higher in females. They lack even basic facility to maintain personal hygiene like water supply and toilets. Child marriage rates are also well above national average[10]. Also, healthcare facility are mainly concentrated in state capital Patna and people from all over Bihar have to travel long distances to get even basic medical facility[11]. In our study, majority of patients never underwent pap smear testing. Although patients did have symptoms like post menopausal bleeding, chronic cervicitis and mass per vaginum, they were unaware of cervical cancer and its presenting symptoms.

Statistical comparison with similar studies conducted by Sunita et al[12], Mandakni et al[13] and P Vijaya Lakshmi[14] et al reveal many interesting findings as enumerated in Table 3.

Table no.3 Epithelial Abnormalities (n=28)

S. No.	Pap Smear Report Results	Our Study	Sunita et al	Mandakini et al	P Vijaya Lakshmi et al
1.	Total Number of Patients	654	560	995	200
2.	Maximum number of Patients in age group (in yrs)	31-40	31-40	15-30	45-55
3.	Abnormal Reports	618 (94.5%)	433(77.32%)	681(68.4%)	187 (93.5%)
4.	Inflammatory Smears	590 (90.2%)	403(71.96%)	572(57.5%)	134(67%)

5.	Smears showing Epithelial Abnormality	28(4.28%)	30(5.36%)	50(5.03%)	34(17%)
6.	Smears showing ASCUS	18 (2.7%)	13 (2.3%)	41(4.1%)	5(2.5%)
7.	Smears showing LSIL	07(1.1%)	11 (1.9%)	01(0.1%)	15(7.5%)
8.	Smears showing HSIL	03 (0.5%)	02 (0.3%)	01(0.1%)	12(6%)
9.	Smears showing Squamous Cell Carcinoma	00	03 (0.5%)	07(0.7%)	02(1%)

Low number of smears in our study are similar to other studies and can be attributed to lack of awareness and social stigma in women presenting in Hospital with complaints related to Gynecological symptoms in Bihar. Maximum number of patients in our study were between 31 yrs to 40 yrs which correlates with other studies conducted by Sunita et al and Mandakini et al and stress upon need to start early routine screening of cervical cancer. According to World Health Organization (WHO) guidelines, all women should under go pap smear screening at least once in their lifetime from 30years onwards and priority should be given to all women of 30-49 yrs due to higher risk of developing cervical cancer[15]. Out of all smears studied, 94.5 % smear were abnormal which is higher then other similar studies and can be due to late presentation of patients in Bihar due to lack of organized health care delivery in remote areas. Maximum number of patients with abnormal smears showed Inflammatory changes and can be attributed to lack of personal hygiene, decreased availability of water and practice of open defecation in remote areas[13,16]. Epithelial abnormalities studied included cases of ASCUS, LSIL and HSIL .Majority of patients with Epithelial abnormality showed ASCUS and can be due to HPV infection or severe Inflammation causing reactive atypia. LSIL was seen in 25% cases and HSIL was seen in 10.71% which is similar to other studies. Incidence of Epithelial abnormality was 4.28%, similar to other studies conducted on similar sample size.

In India, Various strategies for mass screening of cervical cancer like five year interval screening, Ten year interval screening and Single life time screening at 45 years have been proposed in the past[17]. But considering the expenditure and resource limitations, a single life time Pap smear screening between 30-49 years have been proved equally effective in detecting premalignant lesions and preventing the development of invasive cervical cancer [18].

Conclusion

Increasing incidence of cervical dysplasia and invasive Cervical cancer can be prevented by spreading awareness and early detection by proper implementation of mass screening programmes. In our study conducted in Bihar, Number of abnormal Pap smears was higher compared to other study with similar sample size. Maximum number of cervical pap smears were inflammatory due to *Trichmononas Vaginalis* followed by ASCUS. Cases of ASCUS could be due to HPV infection or Severe Inflammation. This stresses the need for more social awareness, literacy, provision of safe and adequate water for hygiene and easy accessibility of Cervical Pap Smear testing facilities in Rural Areas . Along with these factors, mandatory single life time screening of Cervical Pap smears by national Health programme between 30-49 years can go a long way in reducing cervical cancer related morbidity and mortality

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