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A Prospective Analysis of Cervical Cytology by Papanicolaou Staining in a Tertiary Care Hospital

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Original Research Article

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Abstract: Carcinoma of the cervix is the most common cancer of women in developing countries like India. The Pap smear screening is an effective method for identifying intra epithelial lesions of cervix. Our aim was to study the types of different cervical epithelial lesions in patients of KIMS Hospital, Bhubaneswar. This is a prospective study of all the cervical pap smear cases reported to the Department of Pathology, KIMS, BBSR. The duration of study was from January 2015 to December 2016. Total 1263 cases were included in this study. 19 (1.5%) cases were unsatisfactory. So, total 1244 cases were reported. Most of the patients were in between 41-50 years (41%). Common age group of the abnormal epithelial lesions was between 50 to 70yrs. NILM was the commonest presentation (1167 cases,93.8%), out of which normal smear was 604 (51.7%) cases , inflammatory smears 417 (35.7%) cases, candidiasis 5(0.4%) cases, bacterial vaginosis 118(10.1%) cases and atrophic smear 23 cases(1.9%). 77(6.2%) cases were abnormal epithelial lesions. The overall incidence (out of total cases reported) of ASCUS, ASC-H, AGUS-NOS, LSIL, HSIL and SCC were 2.7%, 0.3%, 0.4%, 0.9%, 0.5% and 1.4% respectively. This study concludes that cervical Pap smear test is very helpful in early diagnosis of cervical cancer and its precursor lesions. It is a simple, safe, inexpensive and painless method for diagnosis of the precancerous lesions as well as carcinoma of cervix.
Keywords: Pap smear, NILM, ASCUS, AGUS-NOS, LSIL, HSIL, SCC.

INTRODUCTION

Cancer cervix is the second most common cancer in women worldwide and is the leading cancer in women of developing countries [1]. Globally, 15% of all cancers in females are cervical cancers, while in South East Asia, it accounts for 20%-30% of all cancers [1]. Each year approximately 4. 65 lacs new cases of invasive cancer of the cervix are diagnosed globally and the mortality worldwide is around 2 lacs per year [2]. It is estimated that in India 1, 26,000 new cases are detected each year accounting for 86-90% of all genital cancers in Indian women [3]. Cancer cervix is preceded by a spectrum of intra epithelial neoplastic changes [4]. Upto one third of untreated pre-cancerous lesions develop into carcinoma in about 10 to 15 years [5]. The Bethesda system, first introduced in 1989, is currently being followed worldwide to classify these lesions [6]. The Pap smear screening is an effective and useful screening tool for identifying pre-cancerous intra - epithelial lesions [7]. Since the introduction of Pap test, a dramatic reduction has been observed in the incidence and mortality of invasive cervical cancer worldwide [8].

MATERIAL AND METHODS

The present study was conducted at Department of Pathology, Kalinga Institute of Medical Sciences, Bhubaneswar. This was a prospective study of two years from January 2015 to December 2016. A total number of 1263 cases were included. Cervical smears were collected in O&G department with Ayers spatula, properly labelled & fixed in 95% ethyl alcohol and immediately were sent to the Pathology Department. Subsequently slides were stained with Papanicolaou stain. After staining, the slides were mounted with DPX (Distrene dibutyl phthalate xylene), screened and reported according to the 2014 Bethesda system of reporting of cervical cytology.

RESULTS

Total 1263 cases were included in this study. 19 (1.5%) cases were unsatisfactory because of low

cellularity. So, a total of 1244 cases were reported according to 2014 Bethesda system of reporting. The age range was 21-81 yrs. Majority of the patients were between 41-50yrs (41.2%) [Table-1]. The mean age of NILM, ASCUS, AGUS, ASC-H, LSIL, HSIL, and SCC were 45.4yrs, 50.3yrs, 46.2yrs, 52.8yrs, 51.8yrs, 54.9yrs and 58.9yrs respectively [Table-4]. Most of the cases 1167 (93.8%) were NILM and 77 (6.2%) cases were abnormal epithelial lesions. Out of total NILM cases, normal smear was observed in 604 (51.7%) cases, followed by inflammatory smears in 417 (35.7%) cases, atrophic smears 23 cases (1.9%), bacterial vaginosis 118(10.1%) cases and candidiasis in 5(0.4%) cases [Table-2]. Out of 77 cases of abnormal epithelial lesions, 34 cases i.e. 44.1% were diagnosed as Atypical Squamous cells Of Undetermined Significance (ASCUS), 4 cases (5.1%) were Atypical Squamous cells-cannot exclude High-grade Squamous intraepithelial lesion (ASC-H), 5 cases (6.5%) were Atypical Glandular Cells Of Undetermined Significance (AGUS-NOS), 11 cases (14.3%) were Low Grade Squamous Intraepithelial Lesion (LSIL), 6 cases (7.8%) were High Grade Squamous Intraepithelial Lesion (HSIL) and 17 (22%) cases were diagnosed as Squamous cell carcinoma(SCC) on Pap smear examination [Table-6]. Out of 1244 cases reported, the overall incidence of epithelial abnormalities i.e. ASCUS, ASC-H, AGUS-NOS, LSIL, HSIL and SCC were 2.7%, 0.3%, 0.4%, 0.9%, 0.5% and 1.4% cases respectively [Table-7].

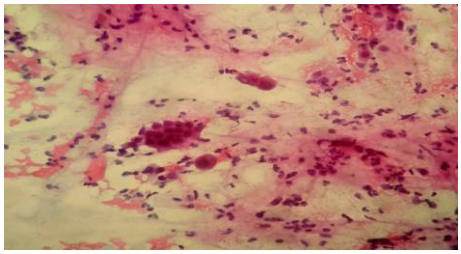

Fig-1: ASCUS (H&E 400X)

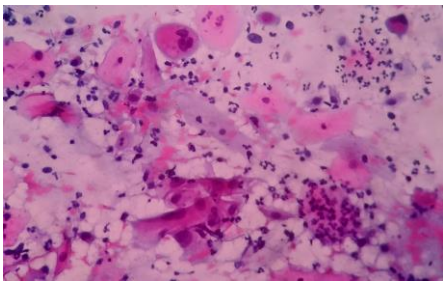

Fig-2: HSIL (H&E 400X)

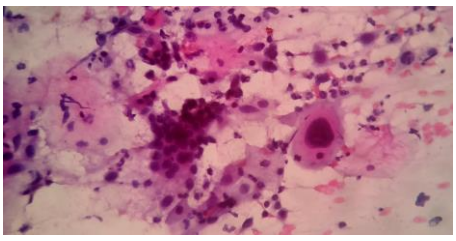

Fig-3: HSIL (H&E 400X)

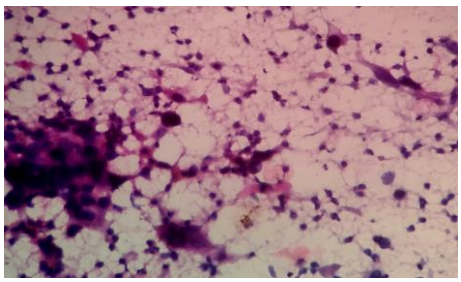

Fig-4: SCC (H&E 400X)

Table-1: Distribution cases according to the age of patient (n=1244)

AGE(YRS)	NO OF PATIENTS	%
<20	0	0
21-30	99	7.9
31-40	300	24.1
41-50	512	41.2
51-60	252	20.3
61-70	79	6.4
71-80	21	1.7

Table-2: Distribution of NILM smears (n=1167)

DISEASE	NO OF PATIENTS	%
Normal smear	604	51.7
Inflammatory smear	417	35.7
Atrophic smear	23	1.9
Candidiasis	5	0.4
Bacterial vaginosis	118	10.1

Table-3: Age distribution pattern of all types of smears (n=1244)

AGE	NORMAL SMEAR	INFLAMMATORY	BACTERIAL VAGINOSIS	CANDIDIASIS	EPITHELIAL ABNORMALITIES
20-30	33	46	14	0	03
31-40	142	97	37	2	08
41-50	251	175	46	2	23
51-60	135	71	18	1	29
61-70	49	15	01	0	10
71-80	11	07	0	0	04

Table-4: Mean age group of all lesions (n=1244)

DISEASE	MEAN AGE(YRS)
NILM	45.4
ASCUS	50.3
ASC-H	52.8
LSIL	51.8
HSIL	54.9
SCC	58.9
AGUS	46.2

Table-5: Relation of age with various lesions

AGE	NILM		ASCUS		ASC-H		LSIL		HSIL		AGUS		SCC	
	NO	%	NO	%	NO	%	NO	%	NO	%	NO	%	NO	%
20-30	95	8.1	0	0	0	0	2	18.2	0	0	1	20	0	0
31-40	286	24.5	4	11.8	0	0	2	18.2	1	16.7	0	0	1	5.9
41-50	477	40.9	15	44.1	1	25	2	18.2	1	16.7	2	40	2	11.8
51-60	219	18.8	11	32.3	3	75	2	18.2	3	50	2	40	8	47.1
61-70	69	5.9	3	8.8	0	0	2	18.2	1	16.7	0	0	4	23.5
71-80	18	1.5	1	2.9	0	0	1	9.1	0	0	0	0	2	11.8
Total	1167		34		04		11		06		05		17	

Table-6: Incidence of epithelial abnormalities (n=77)

TYPE OF SMEAR	NO OF CASES	%
ASC-US	34	44.1
ASC-H	04	5.1
AGUS-NOS	05	6.5
LSIL	11	14.3
HSIL	06	7.8
SCC	17	22

Table-7: Overall incidence of epithelial abnormalites (n=1244)

TYPE OF SMEAR	NO OF CASES	%
ASC-US	34	2.7
ASC-H	04	0.3
AGUS-NOS	05	0.4
LSIL	11	0.9
HSIL	06	0.5
SCC	17	1.4

DISCUSSION

Carcinoma of cervix is the most common and widely screened malignant tumor of female genital tract. It is one of the major causes of death in developing countries like India. It is preventable when its precursor lesions are detected and treated early. The incidence of cervical cancer has decreased more than 50% in the past 30 years because of widespread screening with cervical cytology [9]. Out of all the exfoliative cytology, Pap smear has been regarded as the gold standard for cervical screening programs [10].

In our study total 1263 number of cases were studied. 19 cases were rejected due to scanty cellularity. So total number of smears reported were 1244. The age range was 21-81yrs with a mean age of 51yrs. The predominant age group was 41-50yrs (40.5%). Common age group of the abnormal epithelial lesions was between 50 to 70yrs. The age group for cervical cancer in this study is comparable to that reported in literature and is found to be maximum between 51-70 years of age.

Bogaertt *et al*. reported the common age group of squamous cell carcinoma to be at 6th decade [11]. Kobilkova *et al*. studied that the incidence of cervical cancer had two peaks, one at an age group of 40-49 years and another at age group of 55-65 years[12].

Most of the cases 1167(93.8%) were NILM, out of which normal smear was observed in 604 (51.7%) cases. Inflammatory smears were in 417 (35.7%) cases, candidiasis 5(0.4%) cases and bacterial vaginosis 118(10%) cases. Ashok Verma *et al*. reported 56% NILM with 32.5% inflammatory smears[13]. Sharma et al found 45.3% cases of inflammatory smears[14].

In this study epithelial abnormalities were found in 77 (6.2%) smears. ASCUS was most common epithelial abnormality comprising of 34(44.1%) cases out of total 77 cases of epithelial abnormalities. Prevalence of ASC-H, AGUS, LSIL, HSIL and SCC was 5.1%, 6.5%, 14.3%, 7.8% and 22% of total epithelial abnormalities. The overall incidence of ASCUS, ASC-H, AGUS-NOS, LSIL, HSIL and SCC was 2.7%, 0.3%, 0.4%, 0.9%, 0.5% and 1.4% respectively out of total smears 1244 cases.

Sabina *et al*. found 10.6% epithelial abnormalities, out of which 4.3%, 2.9% and 0.7% cases were LSIL, HSIL & SCC respectively[15]. Manjit Singh Bal *et al.* observed 3% cases of squamous intraepithelial abnormalities with 2.7% LSIL, 0.3% HSIL and 1.3% SCC [1]. Nayir *et al*. observed 1.7%, 0.2%, 0.5% & 0.1% ASCUS, ASC-H, LSIL & HSIL respectively[9].

CONCLUSION

Carcinoma of the cervix is the most common cancer of women in developing countries like India. Squamous intraepithelial lesions (SIL) are precancerous lesions, if untreated would lead to the development of carcinoma in a period of about 10-15 years. Cervical pap smear test is still the gold standard method because it is a simple, safe, inexpensive, painless and highly sensitive method. So, it is very appropriate in a country like ours to do regular PAP tests in women considering their high risk for development of cervical cancer. Newer methods of sample collection, processing, smear preparation & reporting procedure have further revolutionized in determining the accuracy of the test. The community should be enlightened about this test by educational activities and media programmes for early detection of precancerous and cancerous lesions of cervix. This will make the cancer prevention programmes more successful.

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