Pathology Section

Histomorphological Spectrum of Cervical Lesions: A Three Year Retrospective Study in Rural Area Bastar Region, Chhattisgarh, India

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Original Article

ABSTRACT

Introduction: Uterine cervix is vulnerable for both non neoplastic and neoplastic lesions of the female genital tract. Histopathological examination of cervical lesions is essential to make early diagnosis for premalignant and malignant conditions.

Aim: To study various histomorphological patterns and age distribution of cervical lesions.

Materials and Methods: A retrospective study of total 349 cases of cervical lesions was studied in the Department of Pathology over a period of 3 years at Late BRKM Government Medical College Dimrapal, Bastar (CG). The study included both hysterectomy and cervical biopsy. Various histomorphological

patterns were assessed and classified and mean age distribution of cervical lesions were calculated.

Results: A total of 349 cases were retrieved from the register of Department of Pathology. The youngest patient was 20 years and oldest patient was 77 years with a mean age of 48.5 years. Out of 349 cases studied, non-neoplastic lesions were 259(74.21%), Preinvasive (Cervical Intraepithelial Lesions) were 11(3.15%) and 79 (22.63%) cases were malignant. Among non-neoplastic cervical lesions, Chronic non-specific Cervicitis was the most common histopathological finding and Squamous Cell Carcinoma was the commonest variant in malignant cervical lesions.

Conclusion: Cervical biopsy is valuable in early diagnosis and management of premalignant and malignant lesions.

Keywords: Cervicitis, Chronic non-specific cervicitis, Non-neoplastic, Squamous cell carcinoma

INTRODUCTION

The cervix is prone to develop many Non-neoplastic and Neoplastic gynaecological lesions in women of reproductive age group [1]. The transformation zone of the cervix specifically squamo-columnar junction is vulnerable to Human Papilloma Virus (HPV) [2]. The HPV causes wide spectrum of changes which ranges from Condyloma acuminatum, Cervical Intraepithelial Neoplasia to Invasive Squamous cell carcinoma [3]. Carcinoma cervix is the second most common malignancy in women which accounts 12% of all cancers in the world [4].

In Indian women Carcinoma of cervix is the most common cancer that is 20% of all malignant tumours in the females [5]. The Cervical cancer in urban areas constitutes 40% of cancers while in rural areas it accounts for 65% of cancers. In the rural area it is difficult to carry out screening and follow-up due to lack of awareness among people [6]. There was a related study done on Hysterectomy specimen in our department [7]. One literature is available related to this topic in Bastar region [8]. The aim of this study was to classify various histomorphological patterns and age distribution of cervical lesions.

MATERIALS AND METHODS

This is a retrospective study conducted at Department of Pathology at Late BRKM Medical College Dimrapal, over a three years period from 1st January 2017 to 31st December 2019. Sample size represents the data retrieved from register which were 349 cases. Retrospective analysis is commonly used to assess clinical outcomes, treatment patterns or in cases where the required parameters are not captured in large data sets. Therefore, there is no perfect method for calculating the sample size. Three commonly used sampling methods are convenience, quota and systematic sampling. It is the likelihood that the test is correctly rejecting the null hypothesis (i.e., proving our hypothesis). The study has 80% power means that the study has an 80% chance of test having significant results. The data of total 349 cases were retrieved from past records that were diagnosed with various cervical lesions. Relevant and available clinical information regarding age, parity, clinical features and provisional diagnosis were obtained from the histopathology requisition forms and register.

All the slides of the cases were retrieved and examined. Tissue block of cervical tissue were retrieved wherever required, sections cut into 5 μ thickness using rotatory microtome and subsequently sections stained with Haematoxylin and Eosin (H&E). The present study classified cervical tumor according to WHO classification of tumours of the uterine cervix 2014 at 400x magnification [9].

Inclusion criteria: All the cervical biopsies and hysterectomy specimens received in Department of Pathology from January 2017-December 2019.

Exclusion criteria: Cervical biopsies found to be unsatisfactory for evaluation on microscopic examination (Autolysed specimen and disrupted or crushed sample).

STATISTICAL ANALYSIS

Data was compiled in MS excel sheet and descriptive data are presented in the form of frequencies and percentage.

RESULTS

Out of 349 cases, a majority 259 (74.21%) were non-neoplastic, 11 (3.15%) were preinvasive cervical intraepithelial lesions and 79 (22.63%) cases were malignant [Table/Fig-1]. This is a retrospective study so no follow-up was done and mortality cannot be commented.

Lesions of cervix	Total	Percentage
Non-neoplastic	259	74.21%
Preinvasive (Cervical Intraepithelial Lesions)	11	3.15%
Malignant lesions	79	22.63%
Total	349	100%

[Table/Fig-1]: Distribution of cervical lesions.

Age of patients ranged from 20 to 77 years. The youngest patient was 20 years and oldest patient was 77 years with a mean age of 48.5 years. Maximum number of cases 145 (41.55%) were found in 41-50 years age group, 126 (36.10%) cases in 31-40 years age group, 30(8.6%) cases in 51-60 years of age group,29 (8.30%) cases in 20-30 years age group,15 (4.3%) cases in 61-70 years age group with minimum no. of cases 4 (1.15%) in >70 years of age [Table/Fig-2].

Age group (in years)	No. of cases	Percentage				
<20	1	0.28%				
21-30	28	8.02%				
31-40	126	36.10%				
41-50	145	41.55%				
51-60	30	8.6%				
61-70	15	4.3%				
>70	4	1.15%				
Total	349	100%				
[Table/Fig-2]: Age wise distribution of cervical lesions.						

Out of 349 cases, Chronic non-specific cervicitis 223 (63.89%) was the most common finding. In Preinvasive (Cervical Intraepithelial Lesions), HSIL constituted maximum cases. In malignant lesion the most predominant malignancy was Squamous cell carcinoma 66 cases (18.9%) [Table/Fig-3].

Histomorphological variants	Number of cases	Percentage (%)				
Chronic non-specific cervicitis	223	63.89%				
Polyp	14	4.01%				
Chronic cervicitis with squamous metaplasia	12	3.44%				
Papillary endocervicitis	8	2.29%				
Micro glandular hyperplasia	1	0.29%				
Cervical TB	1	0.29%				
LSIL	3	0.86%				
HSIL	8	2.29%				
Squamous cell carcinoma	66	18.91%				
Adenocarcinoma	11	3.15%				
Metastasis	1	0.29%				
Adenosquamous carcinoma	1	0.29%				
Total	349	100				
[Table/Fig-3]: Distribution of various histomorphological variants of cervical lesions. *LSIL: Low grade squamous intraepithelial lesion; *HSIL: High Grade squamous intraepithelial lesion						

In non- neoplastic lesions maximum cases seen in both Chronic nonspecific cervicitis and Chronic cervicitis with squamous metaplasia were in 41-50 years. In Preinvasive (Cervical Intraepithelial Lesions) maximum number of cases of Low Grade Squamous Intraepithelial Lesion was seen in 3rd decade and maximum number of cases of High Grade Squamous Intraepithelial Lesion in 4th decade. Maximum no. of cases of Squamous cell Carcinoma were in 4th decade [Table/Fig-4].

DISCUSSION

Cervical specimens either from Hysterectomies or punch biopsies were the main bulk of specimens which were reterived in the Department of Pathology. Among 349 cases, Hysterectomy 212(60.7%) was the most common type followed by the cervical punch biopsy specimens i.e., 137(39.3%) which was similar to the studies done by Upadhyay et al., [10] and Gupta N et al., [1].

The youngest patient was 20 years and the oldest patient was 77 years with a mean age of 48.5 years. This age range was comparable with the study done by Bagde S et al., [6]. Maximum number of cases 145 (41.55%) in the age group seen in 41-50 years [Table/ Fig-2] with these findings are comparable with the study done by Bhagyashree et al., [11].

The present study shows Non-neoplastic lesions are more common than Malignant lesions in the Bastar region which was similar to the studies done by Poste et al., [14], Saravanan S et al., [13] and Bagde S et al., [6] [Table/Fig-5]. But on the contrary the study done by Ali EF et al., showed Malignant condition (51.2%) were more common than Non-neoplastic (46.34%) [12].

Study	Year	Non neoplastic	Preinvasive (LSIL and HSIL)	Malignant lesions			
Bagde S et al., [6]	2014	46.51%	24.1%	13.95%			
Ali H M M et al.,[12]	2014	46.34%	2.43%	51.2%			
Saravanan S et al., [13]	2015	79.5%	10.7%	9.6%			
Poste P et al., [14]	2015	81.58%	4.04%	13.01%			
Jain A et al.,[5]	2017	73%	23.5%	5.5%			
Present study	2019	74.21%	3.15%	22.63%			
[Table/Fig-5]: Comparsion of various cervical Lesions with other publications.							

The present study showed that maximum number of Nonneoplastic lesions were in the age group 41-50 year which were well corroborated with findings of Bhagyashree et al., [11]. While Kumari K et al., [15] showed maximum number of cases in 31-40 year age group [Table/Fig-6].

Among Non-neoplastic lesions, Chronic non-specific cervicitis constituents highest percentage [Table/Fig-7]. Due to a lack of health awareness, early marriage, and poor personal hygiene in Bastar tribal region, Chronic non-specific cervicitis accounts for the majority of disease burden in this study. Kumari K et al., [15] and Saravanan S et al., [13] also had similar finding. Maximum number of cases of Chronic non-specific cervicitis was in 41-50 years which was comparable with previous studies done by Bhagyashree et al., [11] and Patel et al., [16]. Tuberculosis of the cervix is almost invariably secondary to tuberculous salpingitis and endometritis and is typically associated with pulmonary tuberculosis [17]. The incidence of cervical tuberculosis in the general population is 2-6% [18]. The present study, showed one case of Cervical Tuberculosis (0.29%) and that patient was a known case of Pulmonary Tuberculosis.

Maximum number of cases of cervical polyp and Papillary endocervicitis were in 31-40 years [Table/Fig-8]. Preinvasive

Lesion age group (yr)	CNC	Polyp	CC with SM	PEC	MGH	Cervical TB	LSIL	HSIL	SCC	Adeno Ca	Adeno Sq Ca	Mets	Total
<20	1	0	0	0	0	0	0	0	0	0	0	0	1
21-30	11	4	2	1	0	1	2	1	6	0	0	0	28
31-40	81	5	4	5	1	0	0	3	23	4	0	0	126
41-50	112	2	6	0	0	0	1	2	20	2	0	0	145
51-60	11	2	0	2	0	0	0	1	13	0	0	1	30
61-70	6	1	0	0	0	0	0	1	3	4	0	0	15
>70	1	0	0	0	0	0	0	0	1	1	1	0	4
Total	223	14	12	8	1	1	3	8	66	11	1	1	349

[Table/Fig-4]: Age-wise distribution of various histomorphological variants of cervical lesions. *CNC: Chronic non-specific cervicitis; CC with SM: Chronic cervicitis with squamous metaplasia; PEC: Papillary endocervicitis; MGH: Microglandular hyperplasia; TB: Tuberculo

Age in	Bhagyasl al., [1	nree et 1]	Kumari K	et al., [15]	Present Study		
group (years)	Non neo- plastic	Neo- plastic	Non neo- plastic	Neoplastic	Non neo- plastic	Neo- plastic	
<20	0	0	1 (0.3%)	0	1 (0.3%)	0	
21-30	15 (2%)	3 (2%)	81 (22.2%)	9 (3.44%)	19 (7.3%)	6 (7.6%)	
31-40	150 (26%)	21 (17%)	132 (36.2%)	57 (21.8%)	96 (37.0%)	27 (34.17%)	
41-50	263 (46%)	36 (30%)	91 (24.9%)	57 (21.8%)	120 (46.3%)	22 (27.85%)	
51-60	90 (16%)	32 (27%)	38 (10.4%)	70 (26.8%)	15 (5.7%)	14 (17.72%)	
61-70	38 (7%)	15 (13%)	14 (3.8%)	54 (20.6%)	7 (2.7%)	7 (8.86%)	
>70	14 (3%)	13 (11%)	8 (2.2%)	14 (5.36%)	1 (0.3%)	3 (3.80%)	
Total (no. of cases)	570	120	365	374	259	90	
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squamous epithelium with inflammation (10X HE).



(Cervical intraepithelial lesion) accounts for 11(3.15%) which was comparable with findings in 51(4.04%) cases in Poste et al., [14].

LSIL is associated with HPV infection and does not progress directly to invasive carcinoma. Mostly LSILs regress and only a small percentage progress to HSIL [19]. The hallmark of infection with HPV is koilocytic change in the epithelial cells [18].

Out of 11 cases (3.15%), of Pre invasive (Cervical intraepithelial lesion), majorities were High-Grade Squamous Intraepithelial Lesions seen in the age group 31-40 years [Table/Fig-9]. Low-Grade Squamous Intraepithelial Lesions were seen in 21-30 years. While Kumari K et al., [15] showed the most common age group 31-40 years both in LSIL and HSIL.



The present study showed LSIL were seen in the 3rd decade while HSIL were observed in the 4th decade therefore HSIL can be prevented by early screening of the diseases and educating people. The specificity of diagnosis of HPV has increased by techniques like polymerase chain reaction, HPV genotyping, in situ hybridization and molecular studies [20][21]. HPV vaccine plays a key role in the prevention of cervical cancer in developing countries [20], [22].

Malignant lesions comprise of 79 (22.63%) and findings were comparable with the study done by Jain A et al., which showed 25(23.7%) cases [5]. The malignancy spectrum, most common malignancy was Squamous cell carcinoma 66 (18.91%). Adenocarcinoma was the second most common epithelial neoplasm constituting 11 cases (3.15%). The maximum number of cases both for Squamous Cell Carcinoma and Adenocarcinoma occurred in the 4th decade and this was comparable with Jain A et al., [5]. The present study showed the youngest patient of Squamous Cell Carcinoma was 28 years and the oldest patient was at 72 years. Out of 66 cases of Squamous Cell Carcinoma, 40 cases were Well-differentiated Squamous Cell Carcinoma [Table/Fig-10], 20 cases were of Moderately differentiated Squamous Cell Carcinoma [Table/Fig-11] and Poorly differentiated Squamous Cell Carcinoma were 6 cases [Table/Fig-12].



[Table/Fig-10]: Microscopy of Well differentiated Squamous cell carcinoma show tumor cells and keratin pearl (40X HE).



[Table/Fig-11]: Microscopy of Moderately DifferentiatedSquamous Cell Carcinoma show tumor cells and individual keratin (40X HE).



tumor cells in nest, nuclear pleomorphism, hyper chromatic nucleus (40X HE).

Papillary Squamous Cell Carcinoma is a rare variant of Squamous Cell Carcinoma of cervix [17]. The present study showed one case of Papillary Squamous Cell Carcinoma aged 50 years [Table/Fig-13].



tumor cells in papillary pattern. Inset showing nuclear pleomorphic coarse chromatin and mitotic figure (40X HE).

This study found one case each of the Endocervical adenocarcinoma of villoglandular type and Endometrial carcinoma metastasizes to Cervix was seen [Table/Fig-14,15].

Adenosquamous carcinoma of the cervix is rare. It is defined as having both glandular and squamous cell differentiation, each component malignant [23]. The present study, reported one case of Adenosquamous Carcinoma aged 72 years [Table/Fig-16].



glands, nuclear pleomorphism, hyperchromatic nucleus (40 X HE).



[Table/Fig-15]: Microscopy of Endocervical Adenocarcinoma villoglandular type show villous papillary structure with endometrioid appearance (10X HE). Inset showing (40X HE).



The present study show Non-neoplastic lesions were more common than Malignant lesion followed by Preinvasive lesion. Chronic

cervicitis was the major inflammatory lesions and Squamous Cell Carcinoma was the most common Malignant lesions.

Authors came across less number of cases of malignancy compared to other studies because this is a tribal area where fewer people come to the hospital and in advanced stage or referred to higher centers for further treatment. People usually treat chronic conditions indigenously at their home.

Limitation(s)

The present study revealed a wide spectrum of cervical lesions in a small study population. Follow-up could not be done in cases of malignant lesions as they are referred to the higher center. In this study, Low Grade Squamous Intraepithelial Lesions could not be followed up with HPV DNA testing and HSIL with LEEP, conization because of their unavailability in our setup and high cost.

CONCLUSION(S)

The present study showed that the non-neoplastic lesions were more common than Neoplastic lesions and Chronic cervicitis being the most common. In Bastar region Squamous cell carcinoma was most common among cervical malignancy. Present study found two rare cases one was Papillary Squamous cell carcinoma and another was Adenosquamous carcinoma. Histopathological examination of cervical biopsy is gold standard for diagnosis of cervical lesion and helps clinician for further management. Adequate screening procedure with follow up cervical biopsies helps in early diagnosis and management of premalignant and malignant lesions.

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