A prospective study to evaluate the histopathologic pattern of carcinoma of cervix and to find out the incidence rate and most common type of the carcinoma of cervix

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Abstract

Objectives: To study histopathologic pattern of carcinoma of cervix and to find out the incidence rate and most common type of the carcinoma of cervix.

Material and Method: This study was undertaken in the department of pathology over a period of 2 years from June 2012 to June 2014. All Hysterectomy specimens and cervical biopsies were processed routinely and paraffin sections were taken and stained with Haematoxylin and Eosin (H&E) for microscopic examination. Tumours of the cervix were classified and studied according to WHO classification.

Results: Women in the study were in the age range of 31-50 years and had no education, with only 24.67% having primary education. The most common presenting complaint in 84% of cases was leucorrhoea. 56% (421) of the cases were reported as Chronic Non-Specific cervicitis followed by a significant number of cases presenting as Carcinoma Cervix (30%). There were 227 cases of Carcinoma cervix. Squamous cell Carcinomas accounted for 223 cases (98.24%). There were 3 cases of Adenocarcinoma (1.32%), and a single case of adenosquamous carcinoma. Histopathologic variants of SCC include large cell Keratinizing 76 cases (34.08%), Large cell non-Keratinizing 118 cases (52.92%) and small cell type 29 cases (13%).

Conclusion: Incidence of squamous cell carcinoma was more as compared to adenocarcinoma. Among Squamous Cell Carcinoma, Large cell non keratinizing type was the predominant type.

Keywords: Carcinoma Cervix, Squamous Cell Carcinoma, Large cell non keratinizing.

INTRODUCTION

Carcinoma cervix is the cancer that forms in tissues of the cervix1 (the organ connecting the uterus and vagina). Worldwide cancer cervix is the fourth most common cancer and the most common cause of death from cancer in women2. According to the World Health organization (WHO 2012) cervical cancer is said to be the world´s second deadly cancer with an estimate of about 493,243 women diagnosed with it and 273,505 dying from it per year. The worldwide incidence of carcinoma cervix is approximately 510,000 new cases annually with approximately 288,000 deaths worldwide3.

Cervical cancer is ranked as the most frequent cancer in India. India has a population of approximately 365.71 million women above 15 years of age, who are at risk of developing cervical carcinoma. The current estimate indicates approximately 132,000 new cases diagnosed and 74,000 deaths annually in India3, accounting to nearly one third of global cervical cancer deaths.

Cervical cancer strikes at the productive period of a women's life. The incidence rises between 30-34 years and peaks at 55-65 years with a median of 38 years (age 21-67 years)3.

Different methods of cervical cancer prevention have been developed and implemented worldwide. These methods include early diagnosis and treatment of precancerous lesions that has led to a significant reduction in the burden of the disease.

The present study was conducted with the aim to study the histopathological patterns of carcinoma cervix and to find out the incidence rate and most common type of the carcinoma of cervix.

Materials and Methods

The present study is a prospective study done over a period of 2 years from June 2019 to June 2021 in the Department of Pathology, Akash Institute of Medical Sciences and Research Centre, Devanahalli, Bangalore. The study material comprised of 75 Cervix punch biopsies received from the Department of Gynaecology, Akash Institute of Medical Sciences and Research Centre, Devanahalli.

Inclusion Criteria:

Cervix Biopsies from patients showing CIN I, CIN II, CIN III, Carcinomas all below 40 years of age are taken and submitted for immunohistochemistry.

A detailed clinical history pertaining to the selected cases including age, marital status, parity, symptoms at clinical presentation and other relevant details were obtained from the Department of Gynaecology, Akash Institute of Medical Sciences and Research Centre, Devanahalli.

Exclusion Criteria:

Cases of chronic nonspecific cervicitis, cervical polyps and all the cervical biopsies (including dysplasias , carcinomas) above 40 years of age are excluded for immunohistochemistry.

Methodology

All cervix biopsies received at the Department of Pathology, Akash Institute of Medical Sciences and Research Centre, Devanahalli were processed. The cervical biopsies showing features mentioned in the inclusion criteria were selected for further evaluation.

Tissue Collection and Processing

All the samples obtained were fixed in 10% buffered neutral formalin and submitted for processing. Tissues were processed in MANUAL TISSUE PROCESSING with cycle of 14 hours, after which the processed tissues were embedded into wax blocks.

The wax blocks were trimmed, sections were made using the LEICA MICROTOME (RM 2245). Sections were taken on to slides and stained by routine H&E staining.

Technique of Tissue Processing

1. Dehydration - 3 changes of graded alcohol and 2 changes of acetone.

2. Clearing - by xylene

3. Paraffin impregnation- 2 changes at 600c.

4. Embedded in paraffin wax, labelled and blocks were made.

5. Sections were cut in a microtone of 4 microns thickness.

6. The sections were floated on a water bath at 600c temperature.

7. Sections were attached on a slide using a very thin layer of glycerol egg albumin.

Procedure of H & E Staining:

1. Sections are deparaffinised and hydrated through graded alcohol to water.

2. Stained with HARRIS Hematoxylin.

3. Washed in running tap water for 5 minutes.

4. Differentiated in 1 % alcohol for 5 seconds.

5. Washed well in tap water.

6. Blued by dipping in alkaline solution (ammonia water) followed by tap water wash.

7. Counterstained with 1% Eosin Y - 15 seconds.

8. Washed in running tap water for 1- 5 minutes.

9. Dehydrated, cleared and mounted in DPX.

Results:

Nuclei - blue in colour.

Cytoplasm - pink in colour.

Statistical analysis

Statistics were done using SPSS 22 version.

Results

Table 1: CLINICAL & DEMOGRAPHIC DETAILS OF PATIENTS

Age in years	**Cervical biopsies (No. of cases) (n=758)**	**% age**
< 30 yrs	78	10.30%
31-40 yrs	244	32.19%
41-50 yrs	239	31.53%
Above 50 yrs	197	25.98%
EDUCATION		
No education	571	75.33%
Primary education	187	24.67%
OCCUPATION		
House wife	584	77.04%
Other works	174	22.96%
AGE AT MARRIAGE		
< 17 yrs	26	3.43%
18 -20 yrs	267	35.22%
>20 yrs	465	61.35%
	PARITY	

Nil	45	5.94%
1-2	523	69%
3+	190	25.06%
CONTRACEPTIVE USE		
Yes	85	11.21%
No	673	88.79%
CLINICAL HISTORY		
White discharge	633	83.51%
Bleeding P/V	125	16.49%

Analysis of the background characteristics of women in the study revealed that three fourths of the women in the study were in the age range of 31-50 years and had no education, with only 24.67% having primary education. Most of them were housewives attending only farm, married after 20yrs of age (61.35%). 523 cases i.e. 68.69% of patients had 1-2 children and most of them do not give history of any contraceptive use. The most common presenting complaint in 84% of cases was leucorrhoea.

Table 2: DISTRIBUTION OF CERVICAL LESIONS ON THE BASIS OF HISTOPATHOLOGICAL DIAGNOSIS

Cervical lesions	**No. of cases (n=758)**	**% age**
CNC	421	55.54%
Cervical polyps	32	4.22 %
CIN I, Koilocytic change	59	7.78 %
CIN II, CIN III	19	2.51 %
Carcinoma Cervix	227	29.95 %

It is observed that 56% (421) of the cases were reported as Chronic Non-Specific cervicitis followed by a significant number of cases presenting as Carcinoma Cervix (30%). On the whole CIN accounted for 10% and cervical polyps in 4% of cases respectively.

Table 3: HISTOPATHOLOGICAL PATTERNS OF CARCINOMA CERVIX

Histological type	**No. of cases (n=227)**	**% age**
SCC	223	98.24 %
Adenocarcinoma	03	1.32 %
Adenosquamous carcinoma	01	0.44 %

There were 227 cases of Carcinoma cervix. Squamous cell Carcinomas accounted for 223 cases (98.24%). There were 3 cases of Adenocarcinoma (1.32%), and a single case of adenosquamous carcinoma.

Table 4: HISTOPATHOLOGICAL GRADING OF SQUAMOUS CELL CARCINOMA

Histopathological type	**No. of cases (n=223)**	**% age**
Large cell Keratinizing	76	34.08
Large cell non-Keratinizing	118	52.92 %
Small cell	29	13.00 %

Histopathologic variants of SCC include large cell Keratinizing 76 cases (34.08%), Large cell non-Keratinizing 118 cases (52.92%) and small cell type 29 cases (13%). Thus, Squamous cell Carcinoma, Large cell non keratinizing type was the predominant type observed in our study.

Discussion

The clinical details of the cases in the present study are compared with that of Quamrin Nahar et al73. It is observed that the majority of cervical lesions presented in the age group of 31-50 yrs (63.72%) which compared well with the study of Quamrin Nahar et al4 (65.4%). Regarding the education level of the study cases, the present study did not co-relate, and this can be attributed to the rural background of our cases. Most of the cases ie 77.04% of our cases were housewives similar to that of Quamrin Nahar et al4.

In the present study it is noted that 61.35% of the cases are married after 20 yrs, 69% of the cases had 1-2 children and 88.79% never used any contraceptives. In Quamrin Naharet al4 study it is observed that 22.4% of the cases were married at 18-20 yrs, had 1-2 children in 42.6%, never used contraceptives in 86.7% of the cases. All these factors are dependent on the education and socio-cultural factors prevailing in the concerned study area.

Highest incidence of chronic nonspecific cervicitis is seen in Aravind pallipaday5 study accounting for 95.66% of cases. Lowest incidence is seen in the study of Ramdas et al6 study which is 20 %. In the present study the incidence is 55.54 %. Thus, the incidence of chronic nonspecific cervicitis is almost correlating with most of the studies.

Incidence of cervical polyps is lowest (0.92%) in Prathima7 study where as it is 4.22% in the present study which is almost nearer to the study of Balkachew Nigatu et al8 where the incidence is 6.5%

In the present study 78 cases of cervical intraepithelial lesions account for 10.29% of all cervical biopsies. Thus, the incidence of cervical intraepithelial lesions is higher in the present study when compared to the other studies. The incidence is least in the study of Solapurker9 which is 2.54%. Thus, the present study is almost in accordance to the study of Balkachew Nigatu et al8.

The incidence of carcinoma cervix in the present study is 227 cases constituting 29.94 % of all cervical lesions. Lowest incidence was reported in the study of Solapurker9 with 2 cases (0.36%) of the total 551 cases and the highest incidence was noted in the study of Balkachew et al8 study with 2318 cases of carcinomas accounting for 55.7% of total cases. Thus, the incidence in the present study is nearer to the study of HM Bramhacharimayum10.

In the present study, 227 out of 758 cases were carcinomas. 223 cases are squamous cell carcinomas accounting for 98.24% of cases, 3 cases adeno carcinoma constituting 1.32%, and 1 case of adenosquamous cell carcinoma accounting for 0.44 % of cases.

In the study of Bramhacharimayum10 80% cases are reported as squamous cell carcinomas ,15 % cases as adenocarcinomas, and 5% cases are adenosquamous carcinomas.

In the study of Poornima11 95.73 % cases are squamous cell carcinomas, 1.82 % cases are adeno carcinomas, 1.19 % cases are adenosquamous carcinoma. In all the studies Squamous cell carcinoma is the most common type of carcinoma followed by adeno carcinoma and adenosquamous carcinoma similar to our study.

In the present study of histological subtype of squamous cell carcinomas 118 cases are large cell non keratinizing type accounting for 52.92%, followed by 76 cases of large cell keratinizing type accounting for 34.08% of cases, and 29 small cell non keratinizing type accounting for 13.0% of cases.

Highest incidence of large cell non keratinizing type is seen in the study of Misra et al12 accounting for 75.55 %. Highest incidence of small cell non keratinizing type is seen in the study of Guptha et al13 accounting for 21.73 % of all squamous cell carcinomas.

Conclusion

The present study concluded that the incidence of squamous cell carcinoma was more as compared to adenocarcinoma. Among Squamous Cell Carcinoma, Large cell non keratinizing type was the predominant type.

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