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Original Research Article

Manuscript of risk factors for cancer cervix: an analysis of 1000 cases

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ABSTRACT

Background: The global incidence of cervical cancer varies (5 lakhs new cases/year), highest in developing countries with >50% dying. Identification of risk factors is necessary to curb the disease.
Methods: In this study 1000 married women, attending A.H. Regional Cancer Centre Gynecological-Oncology OPD, from April 2016- March 2017 were randomly selected and subjected to Pap smear test of cervix and abnormal smears, biopsied. Histopathological report of HSIL/invasive carcinoma had HPV-DNA testing. Factors like menarche, coitarche, age at marriage, parity, contraception, smoking habit and socio-economic status were noted.
Results: In our study, HSIL was 4.2% and invasive cancer was 2.8%. Multiparity (>5) showed invasive cancer in 57.1% of cases. Menarche between 11-13 years had invasive cancer in 67.9%. Incidence of invasive carcinoma in women married < 15 years was 42.9%. Barrier contraception showed protective role. In patients below poverty line, 78.6%, showed invasive cancer. Rural women showed a higher incidence of invasive carcinoma (67.9%). About 53.6% of invasive cancers were positive for HPV DNA.
Conclusions: Early menarche, early coitarche, early marriage, high parity, use of contraception other than barrier, low socioeconomic status, poor habitat and HPV infection, carried a high risk of developing cervical cancer. None of the patients in the study group smoked. HPV infection was the most important risk factor. Improvement of socioeconomic status, education and cervical cancer screening of the high-risk group can reduce cervical cancer mortality and morbidity significantly.

Keywords: Cervical cancer, HSIL, Risk factors, Screening

INTRODUCTION

Cancer of uterine cervix is one of the leading causes of death among women worldwide.

The estimated new cancer cervix cases per year is 500,000 of which 79% occur in developing countries.[1] It is the only cancer that can be diagnosed in preclinical or clinical stages by a simple cervical smear. It is well known that the preclinical stages traverse through intraepithelial changes ranging from low grade squamous intraepithelial lesion (LSIL), high grade intraepithelial lesion (HSIL) and finally terminates in invasive carcinoma. Different epidemiological factors like early sexual debut, multiple sexual partner, menstrual hygiene, unprotected sex, human papilloma virus infection and role of male partner has been delineated in the process of cervical carcinogenesis.[2]

However, in neoplastic transformation by persistent HPV infection, additional factors also participate, one of the main being tobacco smoking.[3]

Other important factors early menarche, early marriage, high parity (>3 children born), use of oral contraceptive pills for more than 5 years, family history of cancer cervix, immunoexpressing due to malnutrition or other systemic diseases.[4] Socioeconomic status and habitat are also supposed to influence the causation of cervical cancer.

Attempt has been made to correlate some of these risk factors with abnormal smear and histopathological patterns observed.

METHODS

This is a study of 1000 patients, selected at random; attending the gynecological-oncology OPD of A.H. Regional Cancer Centre, Cuttack during the period April 2016-March 2017. They were at first subjected to cervical cytology by Pap smear test. Those in whom the smears were other than normal, were biopsied. The patients with histopathological reports showing High grade squamous intraepithelial lesion or invasive carcinoma were subjected to a survey with a questionnaire and HPV DNA test. Factors like menarche, coitarche (age at first coitus), age at marriage, contraceptive history, socioeconomic status and habitat were noted. An attempt has been made to correlate these risk factors with the abnormal smear and histopathological patterns observed.

RESULTS

The incidence of high grade squamous lesions (HSIL) was 4.2% and that of invasive carcinoma was 2.8% (Table1).

Table 1: Distribution of cases.

Cytology	No. of cases	Percentage
Normal	193	19.3%
Inflammatory	722	72.2%
LSIL	15	1.5%
HSIL	42	4.2%
Inv Cancer	28	2.8%
Total	1000	100

Multiparity seems to be a major factor associated with cervical cancer, with 57.9% of CIN and 57.1% of invasive carcinoma being seen above para five (Table 2).

Table 2: Parity.

Parity	No. of cases	CIN	Inv. lesion
Nulli	76 (7.6%)	4.0 (7%)	-
1 and 2	194 (19.4%)	6 (10.5%)	1 (3.6%)
3and 4	248 (24.8%)	14 (24.6%)	11 (39.3%)
5 and above	482 (48.2%)	33 (57.9%)	16 (57.1%)

X21 = 12.03 0.01 P 0.05 Significant.

The early age menarche shows significant influence on abnormal smears. Patients having menarche between 11-13 years of age 67.9% had invasive carcinoma (Table 3).

Table 3: Age at menarche.

Age in yrs	No. of cases	CIN	Invasive
< 11	51 (5.1%)	7 (12.3%)	3 (10.7%)
11-13	411 (41.1%)	17 (29.8%)	19 (67.9%)
14-16	497 (49.7%)	33 (57.9%)	6 (21.4%)
17+	41 (4.1%)	-	-

Early marriage shows a significantly high incidence of CIN and invasive lesions. Only 5.3% of cases CIN and no invasive lesion is seen once the age at marriage is raised to 20 years and above (Table 4).

Table 4: Age at marriage.

Age in years	Total cases	CIN	Invasive
< 15	330 (33%)	17 (29.8%)	12 (42.9%)
16-20	540 (54%)	37 (64.9%)	16 (57.1%)
21-25	110 (11%)	3 (5.3%)	
26-30	11 (1.1%)	-	
31+	9 (0.9%)	-	

X = 6.48 0.01<P< 0.05 Significant at P=0.05

The users of barrier contraceptives, seem to be protected and show a lower incidence of 5.3% of CIN and none of them show invasive lesion (Table 5).

Table 5: Contraception used.

Method	No. cases	CIN	Invasive
Barrier	140 (14%)	3 (5.3%)	-
IUCD	70 (7%)	-	3 (10.7%)
Permanent	160 (16%)	7 (12.2%)	-
OC Pills	40 (4%)	3 (5.3%)	-
Combined	50 (5%)	-	-
None	540 (54%)	44(77.2%)	25 (89.3)

P = <0.01 Highly significant

Patients below poverty line show 52.6% of CIN and 78.6% of invasive carcinoma, which is significant (Table 6).

Table 6: Socioeconomic status.

Poverty line	No. cases	CIN	Invasive
Below	670 (67%)	30 (52.6%)	22 (78.6%)
Above	330 (33%)	27 (47.7%)	6 (21.4%)

E= 7.15 0.01<P<0.05 significant. Poverty Line as per 7th five-year plan

Similarly, habitation also does show significant influence. A considerable number, i.e. 77.2% of cases of CIN and 67.9% cases of invasive lesions were seen in rural patients (Table 7).

Table 7: Habitation.

Habitation	No cases	CIN	Invasive
Rural	601 (60.1%)	44 (77.2%)	19 (67.9%)
Urban	270 (27%)	13 (22.8%)	6 (21.4%)
Urban-slum	129 (12.9%)	-	3 (10.7%)

HPV-DNA positivity was noted in a greater number of patients in the invasive cancer group (53.6%) as compared to HSIL (23.8%) and LSIL group (13.3%).

Table 8: HPV DNA hybrid capture test.

C_x Lesions	No. cases	HPV-positive
LSIL	15	2 (13.3%)
HSIL	42	10 (23.8%)
Invasive Ca	28	15 (53.6%)

DISCUSSION

Our study shows higher incidence of CIN and invasive cancer when compared with the United States results of 0.6% and 0.1% respectively, as reported by Mahbooba S, Diane S et al.[5] This difference is probably due to the difference in the study group, the latter being a population based report (Table 1).

Hinkula M, Pukkala E et al, described multiparity as a major contributor to cancer cervix (Table 2).[6]

Attainment of menarche in Indian population leads to early marriage and earlier exposure to coitus (Table 3).

Christopher WM et al, states that married state before the age of 17 years plays an important role in the causation of the disease (Table 4).[7]

A significant observation and has also been highlighted by many, who advocate that, the use of barrier contraception, could help in checking the transmission of the HPV virus (Table 5).

Lower socioeconomic status leads to severe comprehensive factors like, early marriage, multiparity, lack of proper habitat. Seema P, Paul B et al, emphasized the role of socioeconomic status in the causation of cervical cancer (Table 6).[8]

Durowade KA et al, suggests that social class did appear to affect the risk of developing cancer cervix (Table 6).[9]

Aswathy S, Reshma J, stated that morbidity and mortality caused by carcinoma cervix was higher in non-metropolitan residents than those of metropolitan residents (Table 7).[10]

The study found a significant relationship between HPV DNA positivity and preinvasive and invasive lesions of cervix, suggesting that Human Papilloma virus indeed played an important role in causation of cancer cervix Nour NM et al (Table 8).[11]

None of our patients were smokers and therefore the causal relationship between tobacco smoking and cancer cervix could not be elicited. There was no history of cancer cervix in any of the patient's family.

CONCLUSION

The accumulated evidence suggests that cervical cancer is preventable and is highly suitable for primary prevention. Maintenance of sexual hygiene, using barrier contraception, raising age of marriage and thus coitarche, avoiding multiple sexual partners of both the wife and her husband, improving her socioeconomic status, preventing immunodepression due to malnutrition or systemic illness and preventing or treating HPV infection, will go a long way in reducing the cervical cancer morbidity and mortality, significantly.

Health education regarding cancer risk factors, explaining the role of smoking and oral contraceptive pills and behavioural communication activities, should also be practiced till facilities for mass scale screening are developed in developing countries. In the mean-time, primary prevention approaches, like avoiding risk factors and immunization with HPV vaccines could certainly help to check the disease.

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