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Abnormal Papanicolaou Test: Results and Risk Factors Among Women of Uttarakhand

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ABSTRACT

Background: Cervical cancer is a significant health issue worldwide. About 493 million new cases of cervical cancer are diagnosed each year. About 274 thousand women die from this disease annually and 83% of these cases are in developing countries. The aim of this study was to determine the frequency of abnormal cervical cytology among women attending Gynaecology OPD and to assess the presence of associated risk factors. *Methods*: This hospital based cross-sectional study was conducted using a questionnaire involving women attending Gynaecology OPD of HIMS, Dehradun from January to December 2016. All pap smears cytological examination was conducted using Bethesda system of classification. *Results*: 248 (11.6%) women had abnormal cytological findings with a mean age of 36.84 years. Duration of marriage was found be significantly longer among those with abnormal Pap smear (18.34 years verses 15.72 years (p<0.05). *Conclusions*: Early marriage, increasing parity and longer duration of marriage are strongly associated with abnormal Pap smear results.

Key words Abnormal PAP smear, Cervical cancer, Premalignant

INTRODUCTION

Cervical cancer is the second most common cancer among women and endangers the health of countless women around the world. Almost 493 million new cases of cervical cancer are diagnosed each year worldwide. About 274 thousand women die from this disease annually out of which 83% cases are in developing countries.[1] Due to lack of comprehensive cervical cancer screening programs in developing countries and the diagnosis of this disease at more advanced stage; cervical cancer has a high fatality rate in these countries.[2]

The duration of pre- invasive cervical cancer is long and implementation of screening and treatment of precancerous lesion in the early stage has made it a preventable problem in developed countries.[3] As a result, in the past 50 years, a significant reduction has been observed in the incidence and mortality rate of cervical cancer in developed countries. The risk of cervical cancer can be reduced to45% by one negative pap smear test and 99% by 9 negative tests. Lack of regular screening increases the risk of developing the disease by 2-6 times.[4,5]

Worldwide, cervical cancer is considered the fourth most common malignancy and also the fourth most common

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cause of cancer death in women.[6,7] Although cervical cancer has multifactorial risk factors, infection with human papilloma virus (HPV) and lack of effective screening have been identified as major component in the development of pre-invasive and invasive types of this disease. First infection with HPV often occurs soon after first sexual intercourse.[8], making early age at first intercourse a reasonable play for early age at first exposure to HPV.[9] In early marriage, the increased risk of HPV was attributed to biological predisposition of the immature cervix during adolescence which may be more susceptible to persistent HPV infection and therefore have a greater risk of cancer development.[10]

Invasive cancer of the cervix results from the progression of pre-invasive lesion called cervical intraepithelial neoplasia (CIN) or dysplasia. Not all pre- invasive lesions will progress to invasive cancer. Many mild and moderate lesions may regress.[11] The cytological changes which appear in pre-invasive lesions are nuclear enlargement, multinucleation, hyperchromatosis with thin cytoplasm and perinuclear halo, in addition to the koilocytosis.

Bethesda classification reporting system, which was first developed in 1988, classified these cytological abnormalities as atypical squamous cells of undetermined significance (ASCUS), low grade squamous intraepithelial lesion (LSIL) and high grade squamous intraepithelial lesion (HSIL).[12,13] Women can lower their risk for developing cervical dysplasia by quitting smoking, not using contraceptive pills for long duration, postponing intercourse until the age of 18 or 20, avoiding multiple sexual partners, precaution against sexually transmitted infections. These life style modifications can decrease the risk of cervical dysplasia.[14] Screening of high risks women for cervical cancer with Pap smear yield better results in terms of life saved and cancers prevented. Therefore, the present study was conducted to study the cytological findings in Pap smear and to evaluate the role of various risk factors for development of pre-invasive lesion in the women of Uttarakhand.

METHODS

The present prospective observational study was carried out at Swami Rama Himalayan Hospital in women attending the Gynaecology OPD from 1st January, 2016 to 31 December, 2016. All the 1073 women who fulfilled the inclusion criteria of being post-pubertal and married were included. Those women with duration of marriage of less than one year, previous history of cone biopsy or cauterization, any known malignancy and those who had received vaginal douches in the previous 72 hours were included. The Ethics Institutional Review Board of Swami Rama Himalayan University approved the study and informed consent was obtained from all participants.

Data collection and evaluation:

Data was collected from each women using a questionnaire especially prepared for this purpose. It included demography, life style and social information, obstetrics, gynecological, medical and social history. Pap test was

performed by rotating Ayer's spatula 360 degree around transformation zone of the cervix. Endo-cervical smear were taken by an endocervical brush. The results were evaluated and interpreted according to Bethesda system2001(15). Data was analyzed using SPSS statistical software (version 17.0 for windows, SPSS Inc., Chicago, IL, USA) for descriptive purposes. Continuous and discrete variables were presented as mean ±SD and rates and proportions respectively for analytic purposes. Independent sample t-test and chi square tests were used. A p-value of $\leq$ 0.05 was considered statistically significant. Out of 1073 pap smears taken, 1000 pap smear were found to be satisfactory and were evaluated by Bethesda (2001).

RESULTS

1073 women, who attended Gynaecology OPD during the study period, were subjected to cervical Pap smear and were interviewed. Out of these, 1000(93.19%) were found to be satisfactory for evaluation. Among the satisfactory smears 198(19.82%) showed intraepithelial lesion while 802(80.20%) were negative for intraepithelial lesions or malignancy (NILM). Most of the NILM smears 782(78.20%) had inflammatory smear. Among the abnormal smears, 95(49.875%) were low grade squamous intraepithelial lesions.

The ages of the respondents ranged from 15to65 years with a mean age of 31.1 ± 11.6years. Among the study group, 223 women (22.30%) admitted to have history of smoking. Cigarette smoking was reported among 126 women having abnormal smear (63%), especially among woman who had ASCUS which was significantly higher by 5.1% as compared to 0.7% of the cases seen among the non-smokers. As high as 31.90% women did not use any contraception. The rest used different contraceptive methods such as oral contraceptive pills, intrauterine contraceptive devices, condom and other methods. No significant association was seen between using contraceptives and abnormal Pap smear results.

Among the subjects studied, 86.25% were Hindus and 13.80% were Muslims. 950 woman (95%) were married, 42% were widows and 86 were separated, 898 were in monogamous marriage (89.80%) while 10.20%) were in polygamous marriage. 55.4% had no formal education and most women (68.3%) were farmers. Over a third of the women (35.9%) had at least two sexual partners while 60.9% had at least three lifetime pregnancies. Mean age at marriage was 20.3 ±3.7years and mean age at first childbirth was 21.2 ±3.9years.

DISCUSSION

Early age of marriage has been cited as a risk factor for cervical cancer as damage might be caused to the cervix at a time when it is still developing.[16] Majority (82%) of the women in this study got married between 15-24 years with 3.8% getting married before the age of 15 years. The number of sexual partners also play an important role in cervical cancer as it increases the risk of infection with HPV. Over a

third of the women surveyed (35.9%) had at least two life time sexual partners. Verguse et al. noted that increasing age, increasing parity, illiteracy and poor sexual hygiene were risk factors for cancer cervix.[17]

Table-1. Demography and baseline data.

Diagnosis	No of cases
1. Negative for Intraepithelial Malignancy(NILM)	
i) Microorganism grown from infective lesion	802 (80.2%)
(a) Trichomonas vaginalis	6 (0.6%)
(b) Candidiasis	9 (0.9%)
(c) Bacterial vaginosis	4 (0.4%)
2. Cellular non-neoplastic lesions	
(a) Reactive changes with inflammation	782 (97.5%)
(b) Radiation	1 (0.12%)
(c) Atrophy	19 (2.36%)
Total	802 (100%)
Epithelial cell abnormalities	198 (19.82%)
ASCUS	58 (29.29%)
LSIL	95(49.97%)
HSIL	41 (20.70%)
Squamous Cell carcinoma	2 (1.01%)
Atypical glandular cells	2 (1.01%)
Total	198 (100%)

Table-2: Pap smear findings in smokers among the studies group

Grading	Non-smoker	Smoker	Total	p-value
Negative for malignancy	705(70.5)	7((9.3)	802 (80.2)	0.152
ASCUS	7(0.7)	51(5.1)	58 (5.8)	0.031
LSIL	45(4.5)	50(5.0)	95 (9.5)	1.00
HSIL	18(1.8)	23(2.3)	41 (4.1)	1.00
Infiltrative carcinoma	1(0.1)	1(0.1)	2 (0.2)	0.058
AGC	1(0.1)	1(0.1)		0.058

*Statistically significant

Table 3: Contraceptive methods used and Pap smear findings among the study group

Contraceptive method used	Negative pap smear	Abnormal findings (%)	p-value
OCP	65(6.5)	20(13%)	0.580
IUCD	135(13.5)	27(71%)	0.085
Condoms	364(36.4)	18(4.9%)	1.00
Others	163(16.3)	20(12.2%)	0.581
No contraceptive method used	273(27.3)	46(16.8%)	0.429
Total	1000	198	

Similar observations were made by Chichareon et al[19] in 1998. HSIL is especially considered a significant precancerous lesion which necessitates screening for cervical cancer. This study was able to find a significant association between smoking and the presence of ASCUS. Many other studies have also concluded the association between smoking and cervical cancer.[20-22]

According to this study there was no significant association between the use of different contraceptive methods (IUCD, Condoms, OCPs and others) and the presence of abnormal Pap smear. However, the study did not involve the duration of contraceptive use. There is a proven excess risk of cervical cancer associated with long term use (over 12 years) of OCPs and its association is somewhat stronger for adenocarcinoma than for squamous cell carcinoma.[23] Identifying the factors that contribute to the development of cervical cancer in addition to HPV infection is important because most women who receive a positive HPV test result do not progress to develop the disease. Further studies would be needed to measure the HPV infection serotype commonly present in Uttarakhand together with the knowledge of the risk factors would be able to decrease the disease burden in this area.

CONCLUSION

This study was able to indicate that the most important factor for development of carcinoma cervix is early age at marriage in this area followed by smoking. It is therefore recommended to target this group for screening for development of pre-cancerous lesions of cervix.

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