Association of Age Groups, Parity and Socioeconomic Status with Abnormal Pap-Smear

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Abstract

Objective: To determine the association of abnormal pap-smear results in women with the main triggering factors of their life.

Methodology: Pap-smear test was performed in 160 female patients (20 to 65 years old). Transformation zone was the area of screening. Pathological examination of each sample was performed and a cytological report was prepared.

Results: Total 31.25% (50) out of 160 patients were observed negative for cytology or for any inflammatory changes and remaining 68.75% (110) patients showed abnormal pap-smears. Out of all abnormal pap-smear cases, 60% (96) patients showed inflammatory changes and 8.75% (14) patients showed positive cytology for premalignant or malignant changes. Majority of the patients showing positive smear were 35 - 44 years old, highly sexually active (grand multiparous) and were belonging to lower socioeconomic status.

Conclusion: It was concluded that grand multiparous and poor patients in between the age range of 35-44 years are at high risk to cervical cytology and they should make their regular medical check-up and pap-smear test to live a risk-free life.

Key Words: *Papanicolau. Prevention. Diagnosis. Risk.*

Introduction

Gynecological malignancies are amongst the most common cancers in the women. As with most cancers, early diagnosis of these tumors would have saved many lives.[1] Cervical cancer is the 5th most common cancer worldwide in the women and woman dies of cervical cancer approximately every 2 minutes.[2] Cervical cancer and its dysplasia precursors account for a significant morbidity and mortality in the women

worldwide.[3] Cervical tumor is the second most common cancer in women of less developed countries and accounts for up to 3 lac annual deaths. In India, cervical cancer is the commonest cause of death between ages of 20 to 40 years.[4] The global estimates are 452000 new cases each year and 234000 deaths each year due to carcinoma of the cervix in the year 2000. While approximately 2000 deaths each year in England and Wales from carcinoma of the cervix have been reported.[5] Almost 80% of the cases occur in countries of low or middle-income.[2] One in ten female cancers diagnosed worldwide have cancers of the cervix. This is largely a preventable cancer[6] by detecting and preventing the pre-invasive disease.[7]

Cervical carcinoma has a premalignant condition called cervical intraepithelial neoplasia (CIN). Progression to high grade and then to invasive cancer typically takes more than 10 years and incidence of cervical cancer increases along with age.[1] Thus, along natural history of this type of cancer allows an ample opportunity for presentation and early detection of most precancerous lesions by screening through Papanicolaou smear or pap-smear.[8] Pap-smear is a simple test, easy to use, low cost, noninvasive and acceptable to patients. Pap-smear is the foundation for cervical cancer screening[9] and it is estimated that regular screening reduces the risk of cancer by 80%.[5] The test has saved the lives of millions of women worldwide.[10] Cervical cancer is most prevalent in the areas like Pakistan and India where effective screening activity is either no or very little.[6]

Screening intervals for a National cervical screening program is the first invitation at age of 25 years or once a woman has become sexually active. Screen three yearly in women from 25 - 49 years of age, five-yearly in the age of 50 - 64 years and if a woman is 65 years or more then only screen those ladies who have not been screened for 50 years of age or those who had a recent abnormal test.[5] There are no data, however, regarding the frequency at which women actually undergo screening. The frequency at which pap-smears should be performed also depends on individual considerations. Some recommend going longer than one year between examinations as the pap can miss up to 25% of lesions even when done correctly.[11]

Using pap-smear for prevention of cervical tumor is well-known technique.[1] A dramatic reduction in incidence of cervical cancer has been observed in the United States and other developed countries but there is still high incidence of cervical cancer in developing countries like Pakistan which is most likely due to improper screening program by pap-smear.[7]

The rationale of this study was to decrease the incidence and mortality due to cervical cancer by identifying the disease in early premalignant phase with the help of pap-smear.

Methodology

It was a cross-sectional study in which 160 female patients, aged 20 - 65 years, were analyzed thoroughly after considering the inclusion and exclusion criteria. The patients were selected from tertiary care hospitals of Faisalabad after approval from Research Ethics Committee. For each patient detailed history, demographic information, age, parity, number of marriages of both partners, any abnormal sexual behavior including multiple sexual partners, personal history like smoking, monthly income and any history of the previous pap-smear was taken. The general physical examination was done especially for general look, physique and pallor. Any mass or abnormality in cervix and any evidence of infection was noted on abdominopelvic examination. Regarding investigation, pelvic ultrasonography (USG) was also done to rule out any abnormality. Then, the pap-smear test was performed in each patient by using conventional cytological sampling technique.

A sample was said to be adequate when endocervical cells were present on smear. Area of screening was transformation zone, the upper limit of which was squamocolumnar junction, as > 90% cervical carcinoma develops in transformation zone, so, it was important for this area to be adequately sampled.

Scraping from the transformation zone was taken with Ayer's spatula as it was easily available, cheap and easy to use. At the time of collection, this cytological sample from cervix was spread on glass slide and then was fixed with 95% ethyl alcohol. This slide was examined under microscope by expert pathologist and features suggesting dyskaryosis was noted and samples were divided into normal, inflammatory, dyskaryosis (mild, moderate, and severe), borderline changes, glandular neoplasia and then a cytological report was obtained consisting of a description of cells

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in precisely defined and generally acceptable cytological terms. The effectiveness of pap-smear is dependent on proper sampling, screening and interpretation of slides. A smear was said to be negative when no cellular abnormality was detected and when a smear was unable to be evaluated in the laboratory, the smear was said to be inadequate. It may be poorly prepared at the point of collection, obscured by blood or inflammatory cells or may not contain the right type of cells.

All the information collected was recorded on a pre-designed performa for this purpose. Data was tabulated and percentages for all the variables were calculated.

Results

In the present study, positive pap-smears were 14 out of 160 pap-smears taken from the patients aged between 20 - 65 years. The youngest woman with a positive cervical smear was found 20 years old and oldest was of 65 years age. In various degrees of the dysplasia, the peak incidence was noted in the age group of 35 to 54 years. Prevalence of the positive pap smears were found the maximum in age group 35 - 44 years (50%) i.e. seven patients, then 45 - 54 years (21%) i.e. three patients (Table I).

Table I shows that most of the patients, eight (57%) patients, with positive smears were grand multipara i.e. Para 6 - 8. A high incidence of dysplasia was observed in the patients having lower socioeconomic status. Seven patients (50%) with positive cervical cytology were in low class (having monthly income < PKR 15000), five patients (35.7%) in the middle class (having monthly income PKR 15000 - 30000) and two patients (14.2%) in high class (having monthly income > PKR 30000). In all patients with positive smears, two patients (14.28%) were a smoker. It was observed from the cytological report of pap-smear results (Table II) that out of 160 smears 50 (31%) patients have normal smears i.e. did not have any evidence of inflammatory, premalignant or malignant change, while 96 (60%) patients showed inflammatory smear results. Total 14 (8.7%) of 160 patients were positive for the premalignant or malignant change. There was no patient with glandular neoplasia or borderline change.

There was no patient with abnormal sexual behavior and also no patient with the previous history of having any pap-smear test.

Table I: Frequency/prevalence of positive smear (n = 14) in patients according to their age, parity, smoking and socio-economics variables.

Variable	Range	No. of smears (n = 14)	Percentage (%)
Age (in years)	20 - 25	1	7.14
	25 - 34	2	14.28
	35 - 44	7	50.00
	45 - 54	3	21.42
	55 - 65	1	7.14
Parity	0 to 2	1	7.14
	3 to 5	3	21.42
	6 to 8	8	57.14
	> 8	2	14.28
Smoking	Yes	4	28.57
	No	10	71.42
Monthly income (in Pakistani rupee)	> PKR 30000	2	14.28
	PKR 15000 - 30000	5	35.71
	< PKR 15000	7	50.00

Table II: Results of pap-smear cytology (160 smears).

Interpretation	No. of smears	Percentage (%)
Normal	50	31.25
Abnormal	110	68.75
a) Inflammatory	96	60.00
b) Positive	14	08.75

Discussion

Cervical cytology is a simple, highly effective and non-invasive method for detecting pre-malignant cervical changes. It offers the best means to control and manage the invasive diseases as these pre-malignant changes are curable. This study was selectively carried out on the patients attending the gynecological outdoors of a tertiary care hospital at Faisalabad in

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which patients come from rural and urban areas both. Furthermore, a positive smear is an indication of colposcopy but due to lack of facilities only punch biopsy was done.

Cervical cancer can occur at any age level ranging from the second decade of life to its senility. The peak incidence of invasive lesion occurs at 45 years of age and dysplasia occurs at age of about 30 years. In the present study, the peak incidence of various degrees of dysplasia occurred at 35 - 44 years of age group. Youngest woman with a positive cervical smear was only of 20 years and the oldest was 62 years old with an average of 39.30 years. Mean age of diagnosis of cervical intraepithelial neoplasia in different studies was found as 39.06 - 53.6 years,[12] 40 - 60 years,[13] 43.4 years[14] and 41 - 60 years.[15]

Cervical dysplasia has been correlated with increased parity; low socioeconomic status and number of sexual partners. In the present study, most of the patients with results of positive smears were grand multiparous i.e. Para 6 - 8 (57%) eight patients. In comparison Goes et al[16] reported that women with high risk were those with four or more pregnancies and women having more than one sexual partner. In another study Para three and above was revealed as major risk factors for cervical intraepithelial neoplasia and cytology (positive) for malignant cells.[15]

In the present study, a high incidence of dysplasia was observed in patients belonging to lower income or socioeconomic status. Seven patients (50%) with positive cervical cytology were in low class, five patients (35.7%) in the middle class and two patients (14.2%) in high class. Similarly, Sohail et al[12] showed low socioeconomic status and high parity as major risk factors for cervical dysplasia. Zhang et al[17] also carried out a population-based study in 1989 and found a strong relationship between cervical cancer and poor genital hygiene.

Smoking is also a risk factor for persistence of infections and progressions to cancer thus resulting in the abnormal pap-smear test.[18] In all patients with positive smears, two patients (14.28%) were smokers as there is low prevalence of smoking in the female population in our society in comparison to that of the western world. There might be the factor of the hide as smoking is considered a bad habit in local females.

Out of 160, 14 (8.7%) patients were positive for premalignant or malignant changes. Percentage of positive pap-smear cytology in present study was found higher than the previous reported values of dysplasia or positive smear such as 3.12%,[8] 3%,[13] 1.6%[19] and 1.3%.[20]

Different techniques have been discovered to treat cervical cytology. Some of these important methods are laser vaporization therapy,[21] Laser TZ Excision[22] and Knife cone biopsy.[23,24] Certain factors are involved in the development of cervical neoplasm which has been identified from a series of molecular, clinical, epidemiological and pathological studies. Their risks factors include being at an early age during her first intercourse, having multiple sexual partners or having one male partner with his multiple sexual partners. Other potential risk factors include use of oral contraceptives, smoking, multi-parity, family history, genital infections and lack of circumcision is opposite sexual partner.[25-27]

It has been proved that pap-smear test is a relatively simple, easy to carry out, cost-effective, non-invasive test and should have wide application. Awareness campaign and screening program for cervical cancer in women of reproductive age is recommended. Age, parity and socioeconomic status of the patients play a major role in widespread of cervical carcinoma.

Conclusion

Cervical carcinoma was mostly found in poor patients or persons with low income. Parity of the patients also plays a major role in widespread of cervical carcinoma. Poor and middle age women and females with grand multipara are more prone to cervical cytology.

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