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Frequency of abnormal pap smears and assessment of risk factors for cervical cancer in an out-patient clinic

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ORIGINAL ARTICLE

FREQUENCY OF ABNORMAL PAP SMEAR AND ASSESSMENT OF RISK FACTORS FOR CERVICAL CANCER IN AN OUT-PATIENT CLINIC

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ABSTRACT

Objective: To estimate the frequency of abnormal Pap smear and assessment of risk factors for cervical cancer in an out-patient clinic of a tertiary care hospital

Study Design: A cross sectional study

Patients and Methods: All married female patients attending the preventive health check up (family medicine) clinics, The Aga Khan University Hospital, Karachi from December 2004 to April 2005 for general checkups and had Pap smear after informed consent, were included. Data were collected through a structured questionnaire administered to all participants and double entered in EPIDATA and analyzed in SPSS. Frequencies of all variables were generated. Means with standard deviations and ranges were also calculated for quantitative variables.

Results: A total of 103 patients were enrolled. The mean age was 45.8 $\pm$ 10.7 years. Half of the study population were menstruating at the time of interview. Mean age at marriage was 21.4 $\pm$ 4.57 years. Mean age at first pregnancy was 22.6 $\pm$ 4.4 years. A minority of husbands (2.9%) were uncircumcised. About one third (30.8%) of patients had at least four full term deliveries while the mean number of deliveries were 3.3 $\pm$ 2.0 years. More than one third (36.9%) were practicing contraception, with 5% using oral contraceptive pills and the rest using barrier methods. About one third of the women complained about vaginal discharge with foul smell, dysuria and dyspereunia in most patients. About two-third (63.1%) had at least one Pap smear in the past. None had any dysplasia or cancer. Reports of Pap smear findings showed that 16.5% patients had atrophic vaginitis, 37.9% had infective bacillary background diagnosed on histo pathology and the rest were reported normal.

Conclusion: The most frequent abnormality found in Pap smear study was infective bacillary back ground. None of the patients had any pre-cancerous or active cervical cancer. The study was limited by small sample size and choice of Pap smear by the elite class population with self referral for general health checkup.

Key Words: Pap smear, Cervical carcinoma, Screening.

INTRODUCTION

Cervical cancer is the leading killer of all cancers for women in the developing world. In 1990, at least 371,000 new cases of cervical cancer were identified, with 290,000 of these cases were estimated to have occurred in developing countries.[1] In Pakistan, hospital based data shows that cervical cancer is the third most common cancer in the country after breast and oral cancer.[2] Cervical cancer can be prevented through screening by routine Papanicolaou (Pap) smears and treating women at risk.[2] However, such screening services are not always feasible in developing countries because cytology facility are largely unavailable and are often costly at private hospitals.[3,4]

Risk factor assessment is also necessary along with Pap

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smear. Risk factors for cervical cancer are infection with the Human Papilloma virus (HPV) that also causes genital warts, other chronic infections, nutritional imbalance, hormonal and psychological factors, along with other immune suppressive factors. Certain sexual behaviors increase the risk of getting HPV like sex at an early age, having many sexual partners and having sex with uncircumcised males. Some of the other known factors are smoking and infection with Human immunodeficiency virus (HIV) and Chlamydia.[5,6] There is evidence that long-term oral contraceptive (OC) use, multiparity and low socioeconomic status also increases the risk of cancer of the cervix. Women with diets low in fruits and vegetables may be at increased risk for cervical cancer. Also overweight women are more likely to develop this cancer. Many women with low income do not have ready access to adequate health care services, including Pap tests and treatment of precancerous cervical disease.[7,8]

Screening for cervical cancer is justified as natural history of disease is chronic, and detectable in preclinical phase. A significant proportion of pre-clinical lesions progresses to clinical disease. Screening test as a rule should be valid, acceptable to the patient and physician, and should be affordable. HPV is a known risk factor but HPV DNA test is not available in Pakistan.

Pap smear has its own limitation like high costs in private hospitals, difficulty in preserving cell samples and transporting slides, lack of trained laboratory technicians to analyze the results, and difficulties in getting women back for follow-up tests and for treatment and referral, when necessary.

This study was conducted to determine the frequency of abnormal Pap smear and distribution of risk factors in healthy females having Pap smear as a part of their routine general health checkups.

PATIENTS AND METHODS

It was a cross sectional study conducted from December 2004 to April 2005.
All married females with minimum age of twenty five years, who came for general checkup including Pap smear examination, and gave their written consent for participation were enrolled from the out patient set-ups of Family Medicine and Executive Clinic at AKUH during the study period. Women with any cervical symptoms and advised for Pap smear were excluded from the study.

Data were collected through a structured questionnaire administered to all consented participants.The questionnaire was in English language and it was filled by the physician. The questionnaire comprised of age, level of education, occupation, age at menarche, marriage, first sexual contact, first pregnancy, number of marriages for both husbands and wives, and history of genital warts/ulcer for both husbands and wives. History of circumcision in husbands, history of vaginal discharge, use of contraception and number of deliveries among women were also inquired. A detailed menstrual history as well as history of post- menopausal and post-coital bleeding was also taken. Details of Pap smear done in past and current Pap smear finding was documented according to Bethesda system.

Data were double entered in EPIDATA (version 3.0) and analyzed in SPSS (version 13.0). Frequencies and percentages of all variables documented in the structured questionnaire were generated. Cross tabulation of age of the patient, age at first marriage, level of education and occupation with outcome of Pap smear test were also generated. Means, standard deviations and ranges of quantitative variables like age of the patients at the time of interview, age at first marriage, age at first pregnancy, age at first sexual contact, number of marriages, age at menarche etc. were also computed.

RESULTS

A total of one hundred and three married female patients were included in the study. Mean age of the participants was 45.8 ± 10.7 years ranging from 25 to 69 years. Majority of them were housewives. All of them reported first sexual contact at their marriage. The mean age at first marriage was 21.4 ± 4.6 years ranging from 13 to 40 years. Mean age at first pregnancy and mean age at menarche were reported as $22.6\pm$ years 4.4 years, ranging form 15 to 35 years and 13.19 ± 1.3 years ranging from 10 to 17 years respectively. The mean number of deliveries was 3.3 ± 2.0 per woman ranging from 0 to11.

More than half (61.2%) of the patients had received education matriculation and above. Sixteen (15.5%) patients were working for pay or profit and out of those majority were either teacher or businesswomen. Only two (1.9%) patients were married more than once at the

time of interview. Three patients (2.9%) reported as being either current or past smokers. Out of these smokers two were regular current smokers and one was occasional past smoker. All of them were self-referred except one patient who was referred by general practitioner (Table I).

Table I: Percentage distribution of patients by their age, age at first marriage, level of education and occupational status

Factor	Infective smear/Bacillary background % (n)	Atrophic Vaginitis % (n)	Normal % (n)	Total Percent (n)
Age of the patient (in years)*				
<30 years	10.3 (4)	0.0 (0)	8.5 (4)	8.5 (4)
30-39 years	20.5 (8)	0.0 (0)	25.5 (12)	25.5 (12)
40-49 years	33.3 (13)	18.8 (3)	34.0 (16)	34.0 (16)
50-59 years	25.6 (10)	56.3 (9)	23.4 (11)	23.4 (11)
60 years and above	10.3 (4)	25.0 (4)	8.5 (4)	8.5 (4)
Mean age in years (SD)	44.8 (10.53)	53.6 (7.55)	44.0 (10.74)	44.0 (10.74)
Age at first marriage (in years)				
<18 years	17.9 (7)	17.6 (3)	17.0 (8)	17.0 (8)
18-21 years	35.9 (14)	35.3 (6)	36.2 (17)	36.2 (17)
22 – 25 years	30.8 (12)	35.3 (6)	36.2 (17)	36.2 (17)
26 years and above	15.4 (6)	11.8 (2)	10.6 (5)	10.6 (5)
Mean age at first marriage (SD)	21.2 (4.26)	21.8 (4.13)	21.4 (5.03)	21.4 (5.03)
Level of education				
Illiterate	5.1 (2)	0.0 (0)	8.5 (4)	8.5 (4)
Can read and write	7.7 (3)	17.6 (3)	6.4 (3)	6.4 (3)
Below Matric	7.7 (3)	17.6 (3)	17.0 (8)	17.0 (8)
Matric	7.7 (3)	11.8 (2)	12.8 (6)	12.8 (6)
Intermediate	23.1 (9)	17.6 (3)	8.5 (4)	8.5 (4)
Graduate	28.2 (11)	23.5 (4)	34.0 (16)	34.0 (16)
Post graduate	20.5 (8)	11.8 (2)	12.8 (6)	12.8 (6)
Occupation				
Housewife	76.9 (30)	76.5 (13)	93.6 (44)	93.6 (44)
Teacher	7.7 (3)	11.8 (2)	0.0 (0)	0.0 (0)
Business women/ Manager	7.7 (3)	0.0 (0)	6.4 (3)	6.4 (3)
Gynecologist	0.0 (0)	5.9 (1)	0.0 (0)	0.0 (0)
Other	7.7 (3)	5.9 (1)	0.0 (0)	0.0 (0)
Total	**39**	**17**	**47**	**103**

.***One missing information**

Three (2.9%) patients reported that their husbands were not circumcised. One patient reported that her husband had history of urethral discharge, while two (1.9%) patients reported that their husband had genital warts. Thirty (29.1%) women reported foul smelling vaginal discharge.

Fifty four (52.4%) patients reported that they were still menstruating. Out of those, nine (8.7%) patients had irregular cycle at the time of interview. Similarly 38

(36.9%) of them reported using at least one contraceptive method. Most of these patients were using barrier method (n=30) and only five were using oral contraceptive pills.

Of those reported menopause (n=49) at the time of interview, two had surgical menopause. Mean duration of menopause (in months) was 76±61.6 months ranging from 2 to 240 months. Ten out of all post menopausal women reported postmenopausal bleeding. Fourteen (13.6%) patients had history of post coital bleeding.

Approximately two third (63.1%; n=65) patients reported having Pap smear in past. Forty Six (44.7%) of them had normal Pap smear, eleven (10.7%) had abnormal Pap smear, while eight of them did not know the result of those had abnormal Pap smear, six had infective bacillary background, and one had chronic endometritis.

According to the current Pap smear findings more than half (54.4%; n=56) had abnormal Pap smear. In patients with abnormal Pap smaear findings, 37.9% (n = 39) patients had infective bacillary background, and 16.5% (n=17) patients had atrophic vaginitis. None had dysplasia or carcinoma-in-situ in Pap smear examination.

DISCUSSION

Cervical cancer generally develops slowly and has a readily detectable and treatable pre cancerous condition; it can be detected through screening. Pap smear screening is the best screening program world wide recommended for sexually active women.[7,8] In this study majority of subjects were housewives presented by self referral. Those females had Pap smear as one of the essential component of their routine general health checkups. Mean age of marriage of the study population was 21.40 years which was also the age of first sexual contact. Only 3 male partners / husbands were non circumcised. It is a documented fact that carcinoma cervix is more common in those females whose male partners are non circumcised.[9] Clinically, sexually transmitted disease (Herpes, gonorrhea and Chlamydia infection) were absent in the study population which is another risk for cancer, although one third patients had abnormal vaginal discharge. Other risk factor associated with cervical cancer is poor socio-economic conditions, early marriage and multi parity.[10]

In a Muslim country, extra marital sex practice is not as common as in Western countries and all Muslim males

are circumcised. Moreover, poor socio-economic group who are at high risk do not come for screening by Pap smear. It is recommended that an effective screening program should be introduced at national level and awareness regarding risk factors must be created in local women.

According to Ahmed's study done on recent trends in diagnosis and management of cervical cancer, 59.50% showed normal Pap smear while 33.22% were inflammatory smears; only 2.47% showed mild dyskaryosis.[11] None of the subjects in the study had dysplasia on carcinoma-in-situ in Pap smear examination.

Another hospital-based study done in an out patient clinic at Karachi showed 30.55% normal smear while 60.44% had inflammatory and 4.16% had dysplasia. In contrast, none of the present study population had any grade of pre cancerous condition.[12] However, more than one third of the current Pap smear showed inflammatory bacillary back ground.

A cervical cancer screening study was done in Northern Pakistan which showed 37% dysplasia/ malignant cells in retrospective group while 2% dysplasia was seen in prospective group.[13] More than half of the present study population had Pap smear in the past but none of them had pre cancerous changes or dysplasia which was re-confirmed on the repeat Pap smear with an average interval duration of 2 years. Efficient and cost effective screening programme will substantially reduce the burden of cervical cancer.[14] Khan and colleagues conducted a study on Pap smear screening for pre cancerous condition of cervical cancer and found 55.3% inflammatory, 22.7% normal, 7.33% atrophic and 3.12% dysplastic smear.[15] Bhatti evaluated prospective application of cervical screening program in local setting and found normal finding in 75% of cases, in inflammatory changes 17% and 8% had intraepithelial neoplasia.[16]

The Western recommendations are screening in three years after the last negative smear in women 30 - 64 years who had three or more consecutive negative smear.[17-19] It is recommended that an effective screening program should be introduced at national level and awareness must be created in women regarding screening of cervical cancer.[20] A high number of this study group had Pap smear in past but again none of them had any pre cancerous cellular changes in histopathology reports.[21] Most of the standardized guidelines for cervical cancer screening have

been developed in Western countries as per own high riskpopulation as well as mass screening.[22,23]

According to American Cancer Society guideline for the early detection of cervical neoplasia and cancer, the screening should be started approximately three years after the onset of sexual intercourse but not later than age 21 years.[7,23]

This study population mainly comprised of elite group of women who wanted to screen themselves yearly without having any medical or gynecological problems. Utilization of Pap smear will be more effective if it is used according to standard guidelines.

Further studies at different socioeconomic levels are needed for the assessment of risk factor. The burden of cancer in developing countries is becoming higher which needs better awareness program and feasible screening.This study had limited sample size and a large sample size is needed to make some kind of recommendation or to make local guide lines.

CONCLUSION

None of the subjects had cervical dysplasia or carcinoma-in-situ in this Pap smear based study. Infective bacillary background and atrophic vaginitis were the most frequently seen abnormalities. This study was limited by sample size and population with self referral. Further studies are needed on a wider scale to assess risk factors as well as abnormal Pap smear to detect cervical carcinoma at an early stage.

REFERENCES

1. Parkin DM, Pisani P, Ferlay J. Estimates of the worldwide incidence of 25 major cancers in 1990.Int J Cancer 1999; 80: 827-41.

2. Bhurgri Y, Bhurgri A, Rahim A et al. The pattern of malignancies in Karachi (1995 to 1996) . J Pak Med Assoc 1999;49:157-61.

3. Bhurgri Y, Bhurgri A, Hasan SH. Comparability and quality control in cancer registration; Karachi cancer registry data. J Pak Med Assoc 2002; 52: 301-7.

4. Shingleton HM, Patrick RL, Johnston WW et al. The

current status of the Papanicolaou smear. CA Cancer J Clin 1995;45:305-20.

5. Bosch FX, Manos MM, Munoz N et al. Prevalence of human papillomavirus in cervical cancer: a worldwide perspective. International biological study on cervical cancer (IBSCC) Study Group. J Natl Cancer Inst 1995; 87:796- 802.

6. Malik AI. The role of Human Papilloma virus in etiology of cervical cancer. J Pak Med Assoc 2005 ; 55: 553-8.

7. Saslow D, Runowicz CD, Solomon D et al. American Cancer Society Guideline for the early detection of cervical neoplasia and cancer. CA Cancer J Clin 2002; 52: 342-62

8. Sawaya GF , Brown AD , Washington AE et al . Clinical practice: Current approaches to cervical-cancer screening. N Engl J Med 2001; 344:1603-7.

9. Castellsague X, Bosch FX, Munoz N et al. Male circumcision, penile Human Papilloma virus infection, and cervical cancer in female partners. N Engl J Med 2002 ;346:1105-12.

10. Munoz N, Franceschi S, Bosetti C et al. Role of parity and Human Papilloma-virus in cervical cancer: the IARC multicentric case-control study. Lancet 2002 ; 359:1093-101.

11. Ahmad N, Mehboob R. Cervical intraepithelial neoplasia recent trends in diagnosis and management. Pak J Med Res 2002; 41:43-5.

12. Nausheen A, Karim SA. The screening for cervical cancer by Pap smear in hospital based population. Ann Abbasi Shaheed Hosp Karachi Med Dent Coll 2004; 9: 544-7.

13. Rehman T, Mamoon N, Sultana N. Cervical cancer screening in northern Pakistan: an appraisal. J Coll Physician Surg Pak 2002; 12:606-8.

14. Fahs MC, Plichta SB, Mandelblatt JS. Cost-effective policies for cervical cancer screening; an International Review. Pharmacoeconomics 1996; 9: 211-30.

15. Khan MS, Raja FY, Ishfaq G et al. Pap smear screening for precancerous conditions of the cervical cancer. Pak J Med Res 2005; 44:111-3.

16. Bhatti NR, Ahmad NS, Akhter N. Future of cervical screening programme in Pakistan : a two year experience of colposcopy at District Headquarters Hospital, Rawalpindi. Pak J Obstet Gynaecol 1995; 8: 8-12.

17. Sherlaw-Johnson C, Gallivan S, Jenkins D. Evaluating cervical cancer screening programmes for developing countries. Int J Cancer 1997 ;72: 210-6.

18. Nanda K, McCrory DC, Myers ER et al. Accuracy of the Papanicolaou test in screening for and follow-up of cervical cytologic abnormalities: a systematic review. Ann Intern Med 2000;132: 810-9.

19. Cain JM, Howett MK. Preventing cervical cancer. Science 2000; 288:1753-5.

20. Myers ER, McCrory DC, Subramanian S et al. Setting the target for a better cervical screening test: characteristics of a cost-effective test for cervical neoplasia screening. Obstet Gynecol 2000;96: 645-52.

21. Sung HY, Kearney KA, Miller M et al. Papanicolaou smear history and diagnosis of invasive cervical carcinoma among members of a large prepaid health plan. Cancer 2000; 88: 2283-9.

22. Foulks MJ. The Papanicolaou smear : its impact on the promotion of women's health. J Obstet Gynecol Neonatal Nurs 1998; 27: 367-73.

23. Mahoney MC, Saslow D, Cohen CJ. American Cancer Society (ACS) Guide lines for early detection of cancer. recommendations on cervical cancer screening. Am Fam Physic 2003; 67:1677-8.