Profile Of Cervical Smears Cytology In Western Region Of Saudi Arabia

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Citation

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Abstract

The aim of this study is to evaluate the importance of cervical PAP smears in order to detect the prevalence of abnormal Pap smear and types of abnormalities in Western region of Saudi Arabia. For this a retrospective study was designed to evaluate all consecutive cervical smears examined at King Abdul Aziz University Hospital from year 1984 to 2000. During this period a total of 22089 smears were reported. Among them there were 368 (1.66%) abnormal PAP smears out of total 22089 pap smears seen at our department during 15 years. Out of these 368 abnormal PAP smears there were 62 (16.8%, mean age 37) CIN I, 45 (12.2%, mean age 38.5) CIN II, 27 (7.3%, mean age 40.5) CIN III, 22 (6%, mean age 45.5) positive for malignant cells, 36 (9.8%, mean age 40.5) atypical endocervical cells, 88 (23.9%, mean age 39) atypical squamous cells, 9 (2.4%, mean age 40.5) squamous metaplasia with atypia, 26 (7.1%, mean age 45) squamous cell carcinoma, 6 (1.6%, mean age 36.5) repiarative atypia, 14 (3.8%, mean age 38.5) inflammatory atypia, 19 (5.2%, mean age 37.5) HPV changes, 2 (0.5%, mean age 35) herpes virus changes, 5 (1.4%, mean age 55) adenocarcinoma of endometrium and 7 (1.9%, mean age 43.5) adenocarcinoma of endocervix. The main conclusion derived from the study was that cervical screening programs are necessary nationwide to estimate the actual magnitude of cervical carcinoma and its precursor lesions.

INTRODUCTION

In 1941 Papanicolaou described cervical mass screening for sexually active women for early detection of cancer cervix and early pre-cancerous lesions. Until the early 1970s, approximately 75% to 80% of cervical cancer in the United States was invasive at the time of diagnosis. Today, about 78% of cervical cancer cases are diagnosed at the in-situ stage. Furthermore, both incidence and mortality for invasive cervical cancer have declined about 40% since the early 1970s.[1] Mortality began declining just before the Papanicolaou screening test became widely utilized, however, leaving a dilemma as to the relationship between the Pap test and reductions in cervical cancer mortality. Worldwide, cervical cancer is the second or third most common cancer among women (cervical cancer and colorectal cancer are virtually tied for second place after breast cancer). In some developing countries, it is the most common cancer. About 400,000 new cases are diagnosed each year, predominantly among the economically disadvantaged, in both developing and industrialized nations.1 In 1999, an estimated 12,800 cases of invasive cervical cancer are expected to occur in the United States, with about 4,500 women dying from this disease. In the United States, currently the highest age-adjusted incidence rate occurs among Vietnamese women (43 per 100,000), probably reflecting lack of prior screening. Incidence rates of 15 per 100,000 or higher also occur among Alaska Native, Korean, and Hispanic women. (For all U.S. women, the rate is about eight per 100,000).[2,3]

In developing countries, because of widespread differences of the availability of screening programs and the prevalence of risk factors, there is marked difference in the relative frequency of cervical cancer. The highest incidence rate reported includes the sub-Saharan, Central and South America, Southeast Asia and Brazil. The lowest reported incidence rates are from Middle East and Jews living in Israel. Its incidence is low among Muslim and Jewish compared to other religious groups. But overall, the mortality has declined 45 percent between the periods 1972-74 and 1992-94, while incidence declined 43.3 percent from 1973 to 1995. While death rates for African Americans have declined more rapidly than for whites, the African American death rate (6.7 per 100,000) continues to be more than twice that of whites (2.5 per 100,000). The higher African American death rate is due to the high number of

cervical cancer deaths among older black women.2

The major risk factors for cervical cancer include early age at initiation of sexual activity, sexual habits (age of first sexual intercourse and number of sexual partners), infection with human papilloma virus 16, and cigarette smoking. Therefore, primary prevention is focused mainly on modification of sexual behavior and eradication of cigarette smoking.[4,5,6,7] Carcinoma of the cervix ranks number 9 in its frequency in Saudi female with prevalence of 3.6%.[8] The pathogenesis of cervical cancer and precancerous lesions in Muslim countries might be different compare to Western societies because of different effects of different risk factors.

The objective of this study is to evaluate the importance of cervical pap smear in early detection of carcinoma of cervix or its pre-runners and its secondary prevention by the use of this screening test in our society, and to address the real need of cancer screening programs in different region of the Kingdom in order to properly estimate the magnitude of cancer cervix and its effective prevention in the Kingdom of Saudi Arabia (K.S.A.).

MATERIAL AND METHODS

A retrospective study was designed to look at the previous reports of the pap smear for the last 16 years starting from January 1984 until Dec. 2000 that was present in the archived of King Abdul Aziz University Hospital, Pathology Department. The following information was collected from the reports clinical presentation, either routine or for gynecology investigation and symptoms, specimen adequacy and cytological diagnosis. Specimen adequacy was properly assessed only the last few years and it was based on presence of endocervical cells and/or metaplastic cells as well as adequate number of squamous epithelial cells i.e. more than 10% of the slides contain squamous cells. Before the years the Bethesda system was defined, the adequacy was assessed subjectively. A total number of 22089 cases were available for the study. The cytological information collected from the reports included these major categories: CIN I, CIN II, CIN III; Positive for malignant cells; atypical endocervical cells; atypical squamous cells; squamous metaplasia with atypia; reparative atypia; inflammatory atypia; HPV changes; Herpes virus changes; squamous cell carcinoma; adenocarcinoma of endometrium and adenocarcinoma of endocervix. We noticed that no specific classification scheme was followed in the reporting of these smears, even though all the known abnormalities were identified and stated in these reports. Age distributions for each individual lesion was tabulated and mean age calculated. Percentage distribution of each diagnosis has been mentioned out of 368 abnormal PAP smears and out of total 22089 cervical PAP smears. The data has been tabulated in table I.

RESULTS

A total number of 22089 cases of cervical PAP smears were seen in fifteen years. There were total 368 (1.66%) abnormal PAP smears with significant pathological diagnosis. Out of these 368 abnormal PAP smears there were 62 (16.8%, mean age 37) CIN I, 45 (12.2%, mean age 38.5) CIN II, 27 (7.3%, mean age 40.5) CIN III, 22 (6%, mean age 45.5) positive for malignant cells, 36 (9.8%, mean age 40.5) atypical endocervical cells, 88 (23.9%, mean age 39) atypical squamous cells, 9 (2.4%, mean age 40.5) squamous metaplasia with atypia, 26 (7.1%, mean age 45) squamous cell carcinoma, 6 (1.6%, mean age 36.5) repiarative atypia, 14 (3.8%, mean age 38.5) inflammatory atypia, 19 (5.2%, mean age 37.5) HPV changes, 2 (0.5%, mean age 35) herpes virus changes, 5 (1.4%, mean age 55) adenocarcinoma of endometrium and 7 (1.9%, mean age 43.5) adenocarcinoma of endocervix.

Figure 1

Table I: Cytological diagnosis of PAP smears with their age distribution, mean age and percentage distribution.

Table I - Cytological diagnosis of PAP smears with there age distribution, mean age and percentage distribution.

Cytological Diagnosis	Age Groups							Mean Age	Total	% among Abnormal *	% among Total PAP**
	20-29	30-39	40-49	50-59	60-69	70-79	80-89				
CIN I	13	16	22	6	3			37	62	16.8	0.28
CIN II	10	19	9	4	3			38.5	45	12.2	0.2
CIN III	5	8	11	1	1	1		40.5	27	7.3	0.12
Positive for malignant cells	4	4	6	5	1	2		45.5	22	6	0.09
Atypical endocervical cells	5	14	13	1	2	1		40.5	36	9.8	0.16
Atypical squamous cells	21	32	21	9	4		1	39	88	23.9	0.39
Squamous metaplasia with	1	2	6					40.5	9	2.4	0.04
Squamous cell carcinoma	2	9	6	5	3	1		45	26	7.1	1.17
Reperative atypia	1	3	2					36.5	6	1.6	0.03
Inflammatory atypia	4	3	5	2				38.5	14	3.8	0.06
HPV changes	2	11	5	1				37.5	19	5.2	0.08
Herpes changes	1		1					35	2	0.5	0.009
Adeno Ca. of endometrium		1		2	2			55	5	1.4	0.02
Adeno Ca. of endocervix		3	2	2				43.5	7	1.9	0.03
Total	69	127	109	38	19	5	1		368	100	1.66

* = Percentage out of 368 abnormal PAP smears; ** = Percentage out total 22089 PAP smears; Ca. = Carcinoma; CIN = Cervical intraepithelial neoplasia; HPV = Human papilloma virus.

DISCUSSION

The cervix is both a sentinel for potentially serious upper genital tract infections and a target for viral and other carcinogens, which may lead to invasive carcinoma. Infection constitutes one of the most common clinical complaints in gynecologic practice and frequently vexes both patient and clinician. The potential threat of cancer, however, is central to Papanicolaou smear screening programs and histologic interpretation of biopsy specimens by the pathologist. Worldwide, cervical carcinoma alone is responsible for about 5% of all cancer deaths in women.1

No form of cancer better documents the remarkable effects of prevention, early diagnosis, and curative therapy on the

mortality rate than does cancer of the cervix. Fifty years ago, carcinoma of the cervix was the leading cause of cancer deaths in women in the United States, but the death rate has declined by two thirds to its present rank as the eighth source of cancer mortality, causing about 4800 deaths annually (behind lung, breast, colon, pancreas, ovary, lymph nodes, and blood).2 In sharp contrast to this reduced mortality, the detection frequency of early cancers and precancerous conditions is high. Much credit for these dramatic gains belongs to the effectiveness of the Papanicolaou cytologic test in detecting cervical precancers and to the accessibility of the cervix to colposcopy and biopsy.

There are an estimated 13,500 cases of new invasive cancer annually and nearly 1 million precancerous conditions (squamous intraepithelial lesions) of varying grade.3 Thus, it is evident that Papanicolaou smear screening has increased the detection of potential curable cancers and the detection and eradication of preinvasive lesions, some of which would progress to cancer if not discovered. Cervical precancers have been classified in a variety of ways. The oldest system is the dysplasia/carcinoma in situ system with mild dysplasia on one end and severe dysplasia/carcinoma in situ on the other. Another is the cervical intraepithelial neoplasia (CIN) classification, with mild dysplasias termed CIN grade I and carcinoma in situ lesions termed CIN III.[9] Still another reduces these entities to two, terming them low-grade and high-grade intraepithelial lesions.9 Because these systems describe noninvasive lesions of indeterminate biology that are usually easily treated, none of these classifications is indispensable to clinical management or immune to revision. In this study, we refer to lesions by the CIN terminology.9

It is well established in the literature and clinical practice that, the best method of early detection of cancer cervix precancerous lesions is by cytological examination of pap smears.[10] Visual inspection of the cervix has been proposed as an alternative to cervical cytology for the early detection of cervical cancer. The unmagnified visual inspection of the cervix after the application of 3-5% acetic acid which is known as visual inspection of cervix with acetic acid wash (VIA) that is also known as cervicoscopy, seems to be potentially useful early detection approach. However, there is little doubt that cytological screening programs play a major role in reducing both the incidence and mortality of invasive cervical cancer. In U.S.A. and Canada widespread introduction of cytological screening decreased the incidence of cancer cervix that was paralleled by reduction in mortality. [11,12] According to the American Cancer Society only 30% of U.S. women had ever pap smear in 1961, this number increased to 87% by 1987. In 1940 incidence of cancer cervix in U.S.A. was 32.8/100,000 women. By 1984 the incidence was 8.3/100,000 women. In 1991 there were only 13,500 of invasive cervical cancer with 4,500 cancer deaths, which decreased even more in 1999 to 12,800 invasive cancers.2

Over the last decade there has been an explosion of information about the etiology of cervical cancer and its precursor lesion. The risk factors of carcinoma of cervix are well documented in the literature. However, the sexual activity and human papilloma virus infection (HPV) are the most important risk factors in the pathogenesis of cancer cervix. It is now widely accepted that both squamous cell carcinoma and adenocarcinoma of cervix as well as their respective precursor lesions are caused by specific human papilloma virus (HPV) that infect the genital tract. HPV subtype 6 and 11 cause benign lesions such as flat condyloma and mild atypia whereas HPV 16, 18 and 31 called “oncogenic virus” are implicated in high-grade cytological atypia (CIN 2, 3) with squamous cell carcinoma as well as endocervical carcinoma.4-7

In our study, we found that the percentages of patient with benign and reactive cellular changes are 5.4% (0.09% of total pap smears). Those with low-grade lesions including condyloma and CIN 1, atypical squamous cells (ASCUS), squamous metaplasia with atypia and atypical endocervical cells (AGUS) 52.9%% (n195/386, 0.88 % of total pap smears) are the high grade lesions yet non-invasive cancer are CIN 2 and CIN 3, 19.5%(n72/368, 0.32% of total pap smears). The invasive squamous and adenocarcinoma are 10.32% (n38/368). The prevalence of CIN 1 and CIN 2 in our patients is 0.48 (n107/22089) with age range of patient between 22-63 years and the prevalence of CIN 3 is 0.12% (n27/22089) with age range of 25-71 years. If we compare this results with the literature,3 it reveals that the prevalence of CIN 1 and CIN 2 is lower than other developed countries as 0.48% in our study against 2.6 % in United States and with wider age range in our study 23-53 years as compared to 25-29 years in United States. Regarding CIN 3 the prevalence in our population is approximately 0.12 % that is much lower against 0.5 % in United States and with our wider age range of 35-51, as compared to 35-39 years in United States. It seem from this statistics that in our society we have lower prevalence of CIN 1 and CIN 2 with wide range age compare to the developed countries although we have a bit comparable prevalence of CIN 3 but with wide

age range. We have compared our results with one similar local study by form King Khalid hospital and with results from United States in Table II.[13]

Figure 2

Table II: Comparison of significant difference in prevalence and age range among two local studies with one study from United States.

Table II – Comparoson of significant difference in prevelance and age range among two local studies with one study from United States.

Cytological Diagnosis	Saudi Arabia				USA	
	Ibrahim et al*		Fadwa[13]		Miller BA[2]	
	Prevelance	Age Range	Prevelance	Age Range	Prevelance	Age Range
CIN 1 & CIN 2	0.48 (n107/22089	22-63	1.2 (n38/3088	23-53	2.6	25-29
CIN 3	0.12 (n27/22089)	25-71	0.19 (n6/3088	35-51	0.5	35-39

* present study

CONCLUSION

In conclusion I would like to stress that cervical screening has been shown to be an effective tool in the detection of pre-invasive stages of the disease and attempts to decrease its associated mortality. The health services in the Kingdom of Saudi Arabia thus have to consider launching nationwide public education and screening programs. These should include services such as colposcopy clinics to manage the abnormalities detected during the screening program. It is certainly going to be a mammoth task to create a mechanism to offer women cervical smears, proper guidelines for taking smears, and follow-up and referrals to specialist clinics if abnormal smears are detected, but if such steps are not taken, women in Saudi Arabia will continue to develop this disease and die from what is essentially a preventable disease.

There is the conventional Pap smear screening program and new HPV (human papillomavirus) DNA testing program.[14] The Pap smear screening program is simple, cost effective and proven, thus it would be advisable to adopt a similar, centralized program in the Kingdom of Saudi Arabia.

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References

1. Cotran K et al: Robbins Pathologic Basis of Disease, 6th ed., 1999 W. B. Saunders Company. Pg.1070-1079.
2. Miller BA, Kolonel LN, Bernstein L, Young, Jr. JL, Swanson GM, West D, Key CR, Liff JM, Glover CS, Alexander GA, et al. Racial/Ethnic Patterns of Cancer in the United States 1988-1992, National Cancer Institute. NIH Pub. No. 96-4104. Bethesda, MD, 1996. Pg.12-20.
3. Walton RJ. Cervical cancer screening program and Epidemiology and history of carcinoma of cervix. Canad MedJ (1976) 114; 1003-1012.
4. Koutsky LA, et al: A cohort study of the risk of cervical intraepithelial neoplasia grade 2 or 3 in relation to papillomavirus infection. N Engl J Med 327:1272, 1992.
5. Herrero R, et al: Sexual behavior, venereal diseases, hygiene practices and invasive cervical cancer in a high-risk population. Cancer 65:380, 1990.
6. Alani RM, Munger K: Human papillomaviruses and associated malignancies. J Clin Oncol 16:330, 1997.
7. Lorincz AT, et al: Human papillomavirus infection of the cervix: relative risk associations of 15 common anogenital types. Obstet Gynecol 79:328, 1992.
8. Cancer incidence in Saudi Arabia, by the National Cancer Registry 1994 Report. Pg. 12 .
9. Crum CP, et al: Pathology of Early Cervical Neoplasia. New York, Churchill Livingstone, 1996.
10. Papanicolaou GN, Trut H. The diagnostic value of vaginal smears in carcinoma of the uterus. A. J Obstet Gynecol (1941) 42; 193-205.
11. Christoperson WM, Lundin F E Jr., Mendez WM, et.al. Cancer cervical control. Study of morbidity and mortality trends over a twenty one-year period. Cancer (1976) 38; 1357-1366.
12. Blaustein's Pathology of the Female Genital tract, fourth edition, 1994, Springer - Verlag. p. 287.
13. Fadwa JA. Experience of cervical smears at King Khalid Hospital. Annals of Saudi Medicine. (2000) 20(5); 230-235.
14. Schiffman M, Herrero R, Hildesheim A, et al. HPV DNA testing in cervical cancer screening: results from women in a high-risk province of Costa Rica. JAMA 2000;283:87-93.

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