

Prevalence of Cervical Abnormalities and Co-existent Human Papilloma Virus Infection in a Mixed Bahraini Population

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Abstract

Objective: To assess the association between cervical abnormalities and HPV infection in a mixed multicultural population of Bahrain.

Study Design: Quasi – experimental study.

Settings: Department of Obstetrics and Gynecology in Royal Bapco Hospital, Bahrain.

Material and Method: All patients presenting in the Gynecological Department had cervical screening by pap smear. Those having abnormalities in cervical smear were offered HPV infection screening which was determined by PCR on a cervicovaginal cell collection. Eligibility criteria included women in reproductive age group. Women with obvious cervical pathologies were excluded from the study.

Results: Out of 1082 pap smears, 64 (5.91%) were unsatisfactory, 922 (85.2%) were normal. 61 (5.6%) smears were inflammatory and 35 (3.2%) smears had epithelial abnormalities. Most frequently found epithelial abnormality was low grade squamous metaplasia (1.94%), cervical invasive lesions were the second common abnormality (0.64%). 54 women out of 96 with epithelial abnormalities were HPV positive. HPV 16 was found to be most prevalent.

Conclusion: This study showed a significant correlation between HPV positivity and cervical epithelial abnormalities among Bahraini women. It also confirms the prevalence of cervical lesions to be significant in these women.

Introduction

Cervical carcinoma is the fifth of the fatal cancers of women worldwide.¹ Every year around 16 per 100,000 women are diagnosed with cervical cancer and 9 per 100,000 die due to it.² However, the incidence and mortality rates have considerably decreased over the last two decades. The main cause of this reduction is attributed to rigorous screening procedures with regular Pap smears being carried out in the Western countries. However, there is still a high prevalence of cervical cancer in the developing countries and in the Middle East. Studies from Egyptian National Cancer Registry Centre show an incidence rate of 0.12% to 0.77%.³ There is minimal awareness of the importance of screening and no conclusive data about the prevalence of cervical abnormalities in this region.

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In the present study, our aim was to find out the prevalence of cervical preinvasive and invasive lesions in our hospital population. Since the knowledge of correlation between cervical pre invasive lesions and Human Papillomavirus is established,² there is also a significant interest in testing for HPV in women with cervical abnormalities. We have also tried to see the correlation of cervical abnormalities with HPV in a mixed Bahraini population.

Methods

Study Design

Quasi – experimental study.

Duration of the Study

The study was carried out in Royal Bapco Hospital in Bahrain. Around 1165 women presented in the outpatients department during the study period from August 2008 to August 2009.

Study Subjects

All the women presenting in the Obstetrics and Gynecology department were offered cervical screening by Pap smear as a part of routine gynecological checkup. The eligibility criteria included all women in reproductive age group from 14 to 65 years of age. Women with obvious cervical pathologies were excluded from the study.

Ethical Consideration

All women were counseled about the Pap smear prior to performing it. The possibility of cervical lesions and the follow up protocols with colposcopy and biopsy was discussed with all participating women. HPV testing, its method, requirement, result and consequences were also discussed with the patients. The women were included only after informed consent.

Data Collection

1165 women consented for the cervical smear and participated in the study. A detailed history was taken including patients' age, detailed sexual history, risk factors and menstrual and obstetrical history. A complete gynecological examination was carried out on each study participant. Any visible cervical or vaginal abnormalities were noted. Pap smears were taken.

Pathological Methods

Samples from ectocervix and endocervix were taken using the Ayre's spatula and transferred to glass slides. They were fixed with cytospray. The specimens were sent to laboratory where they were studied and classified according to Bethesda system classification 1991.

Human Papillomavirus Testing

All women with abnormal smear reports were tested for Human Papillomavirus. HPV DNA was tested by PCR.

Colposcopy – Guided Biopsy

Women found to have abnormal smears with ASCUS or more were offered colposcopy. Colposcopy – guided biopsy was done and sent for histopathology. The final diagnosis was based on biopsy after colposcopy.

Statistical Analysis

All the data was compiled and smears classified according to Bethesda system into:

- Normal smears.
- Squamous intraepithelial lesions of high grade (HSIL) or low – grade (LSIL).
- ASCUS (atypical squamous cells of undetermined significance).
- AGUS (atypical glandular cells of undetermined significance).
- Invasive cervical lesions.

The results for different cervical lesions were compared. HPV results were compared with Pap smear results.

Results

Of all the women presenting in the outpatients department, 1165 consented for the screening. According to study protocols, 83 women were then excluded due to visible cervical pathology. Thus, 1082 women were included in the study. All had cervical smears taken and sent for cytological examination.

Ethnicity

Based on ethnicity, the women population participating in the study was varied. There were 31 different

Table 1: Showing the mixed ethnic background of participating women.

Ethnicity	Number of women	Ethnicity	Number of women
Bahraini	348	UK	331
Indian	18	Canadian	25
Lebanese	16	Irish	40
Jordan	14	Australian	40
Pakistani	14	South African	25
Moroccan	14	Italian	18
Ethiopian	13	Polish	14
UAE	13	Greek	14
Qatar	13	Sweden	12
Bulgarian	13	Russian	10
Cook Island	7	Danish	10
Tunisia	8	Mali	7
Kuwait	7	Finnish	8
Egyptian	7	Japanese	7
Syrian	8		
Iranian	8		
		Total	1082

Table 2: Showing the cytopathology results of Papanicolau smears taken.

Smear Cytopathology Result	Number of Women	% age of Women
Normal smears	922	85.2%
Unsatisfactory report	64	5.91%
Inflammatory smears	61	5.6%
LSIL	21	1.94%
HSIL	5	0.46%
ASCUS	2	0.18%
AGUS	0	0
Invasive lesions	7	0.64%
Total	1082	100%

LSIL = Low – grade squamous intraepithelial lesion, HSIL = high – grade squamous intraepithelial lesion, ASCUS = atypical squamous cells of undetermined significance, AGUS = atypical glandular cells of undetermined significance.

ethnic backgrounds to which these women belonged. The commonest ethnic background was Bahraini and UK nationals were the second commonest as shown in the table below.

Age

The age range of the participating women was from 14 to 65 years. Most of the women i.e. 921 were more than 25 years of age (78%). Only 32 (3%) were over 50 years of age.

Cytopathology

1082 Pap smears were taken and studied. Out of these, 64 (5.91%) samples were reported to be unsatisfactory, mostly due to inadequate sampling technique or fixation error. 922 (85.2%) were found to be normal. There were 61 (5.6%) inflammatory smears and 35 (3.2%) smears with epithelial abnormalities.

Table 3: Showing results of Human Papillomavirus testing.

	Number of women	% age of women
HPV – positive	54	56.25%
HPV – negative	42	47.75%
Total	96	100%

Epithelial Abnormalities

Epithelial abnormalities were graded according to Bethesda system. ASCUS or more was found in 3.2% of cervical Pap smears. Most frequent abnormality found was low – grade squamous metaplasia (1.94%). Cervical invasive lesions were the second commonest abnormality, found in 7 smears (0.64%) as shown in Table 2 below.

Correlation with HPV

Of a total of 96 women tested for HPV, 54 were found to be HPV positive. 33 (61.11%) of the HPV positive women had an epithelial abnormality on cervical smear and 21 (38.88%) had inflammatory smears. 23 women (42.59%) were found to have LSIL or HSIL, 2

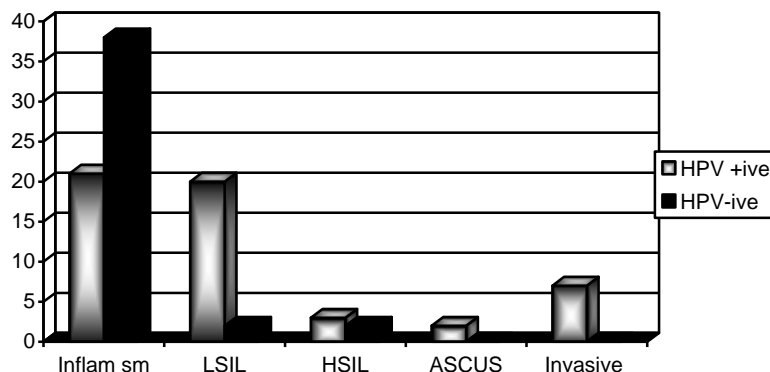
(3.7%) were found to have ASCUS and 7 (12.96%) had cervical invasive lesion. The results are shown in Table 3 and figure 1. Most common HPV species found was type 16 followed by 52. Other types found were 18, 31, 33, 51, 44, 45, 56 and 59.

Discussion

Cervical cancer is one of the deadliest cancers of women especially in developing countries. It is much more common in developing countries in which it accounts for 15% of all new female cancers whereas in developed countries it accounts for only 3.6% of such cases.⁴ In the United States, however, it is the eighth most fatal cancer of women and the incidence is dropping every year. The trend can be explained by awareness about the disease among women and regular screening by Pap smear.⁵ Another major factor is the discovery of Human Papillomavirus or HPV as an implicating factor in cervical carcinoma.^{6,7} Our aim was to provide a rough estimate of the prevalence of cervical abnormalities and their correlation with Human Papillomavirus infection.

Our study population was heterogeneous in terms of ethnicity as was expected. There was no significant correlation between ethnicity and cervical abnormalities. However, a significant correlation was found between HPV positivity and cervical epithelial abnormalities (Figure 1). This is in confirming with previous studies which all show comparable results.⁵⁻⁸ Finan et al showed that in patients with CIN disease, abnormal cervical cytology was higher in HPV positive women.⁸ Chlamydia Trachomatis was also found to be a co-factor in CIN disease. Shalini et al suggested that Human Papillomavirus testing of women with Pap smears showing atypical squamous cells of undetermined

Figure 1: Chart depicting HPV positivity among various epithelial abnormalities.



significance or higher has clinical usefulness.⁹ Human Papillomavirus (HPV) infection is a necessary factor in the development of nearly 70% of cases of cervical cancer.^{10,11}

There are very few studies carried out in The Middle East to explain the trend. Neither are there any regular protocols for screening to follow. The cervical cancer rates available are comparable throughout the region. The Middle East Cancer Consortium reported 0.027% as prevalence rate for cancer in Egyptian women.¹² The prevalence rate in Jordan is 0.026%.¹³ Other Egyptian studies show a prevalence of pre-invasive cervical lesions as varying from 1%¹⁴ to 8%.¹⁵ Our results of prevalence of abnormal cervical smears (8.8%) is comparable to other studies in the region. We found 3.2% of our pap smears to have epithelial abnormalities whereas a study in Saudi Arabia found an epithelial abnormality in 3.14% of 3088 Pap smears done.¹⁵ They reported smears with ASCUS, LGSIL, HGSIL, invasive SCC, AGCUS and adenocarcinoma as representing 0.45%, 0.93%, 0.55%, 0.13%, 0.13% and 0.03% respectively. In our study, we had 1.94% with LSIL, 0.18% with ASCUS, 0.64% with invasive and 0.46% with HSIL (Table 3).

We looked for HPV in patients with abnormal smears only and so our data is limited. We found (54) 56.25% HPV positive cases among women with abnormal smears. 31 out of 35 women (88.57%) with epithelial abnormalities on cervical smears were HPV positive. Only 23 women tested positive for HPV had inflammatory smears. None of the women with normal smears were tested for HPV. There are variable data available about the prevalence of HPV infection rates among women in the Middle East. Mroueh et al reported a prevalence rate of 4.9% for HPV in 1,026 Lebanese women, with type 16 representing 3%.¹⁶ In Morocco, 70.5% of invasive carcinoma cases were HPV positive, 34.88% cases had HPV16, and 15.5% cases had HPV18.¹⁷ Abdel All et al found a prevalence rate of 3.1% of CIN and 0.04% of invasive lesions. They reported prevalence of HPV to be 2.6% whereas 94.3% of all cervical lesions were HPV positive on in-situ-hybridization of specimens.¹⁸ In our study, prevalence of HPV among women with cervical epithelial abnormalities was 88.57%.

Among the various types of HPV strains, we found HPV 16 to be the most prevalent. Studies find HPV 16 to be present in half of the cases of cervical cancer worldwide, HPV 18, 45 and 31 being other common types.¹⁹ In Iran, Mortaza V et al reported that 73.9% of HPV positive cases of cervical cancer had

HPV 16²⁰ whereas Farjadian et al identified type 16 in 26.7% cases.²¹ Besides Human Papillomavirus, other risk factors have also been studied as possible causes of cervical epithelial abnormalities. In a study of Egyptian women, with epithelial abnormalities, schistosomiasis was identified as an added risk factor and *T. vaginalis* to be insignificant in causing cervical lesions.¹⁸

In conclusion, our study confirms the prevalence of cervical lesions to be significant in Bahraini women. Large scale studies will be required to confirm the prevalence of coexistent HPV with cervical epithelial lesions. As HPV testing is now a useful tool, we suggest a regular screening protocol involving Pap smear as well as HPV testing to identify asymptomatic women.

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