The Influence Of Age On Genital Human Papilloma Virus Infection

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Citation

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Abstract

Aim: To study the association between age and human papilloma virus (HPV) inflection of the cervix.

Method: The subjects were 450 randomly selected sexually active women attending the antenatal, postnatal, gynaecology and family planning clinics in the Department of Obstetrics and gynecology of the University of Maiduguri Teaching Hospital, Nigeria between April 2001 to May 2002. The Pap smear these patients were examined microscopically for evidence of HPV infection. A questionnaire assessing the age characteristics of the patients were administered.

Result: Abnormal smears occurred in 245 (54.5%) of the patients screened. Forty eight women (10.7%) had HPV associated changes constituting 19.6% of all abnormal smears their ages ranged between 15 and 64 years, with a mean of 26 ± 3 years. There was no statistically significant difference in the prevalence of HPV between the age groups, probably because the study population was predominately young, 79.1% being 29 years or below. Also the peak age-specific prevalence of 11.7% which occurred in the 15-19 years age bracket and the high prevalence of 21.5% in the 20-29 years age bracket shows that the rates of cervical HPV infection were high in teenagers at the outset of their sexual experience and in young adults who belonged to the most sexually active group.

Conclusion: Teenagers at the outset of their sexual experience and young adults who belong to the most sexually active group are at increased risk of acquiring HPV infection of the cervix and should be the target in a sporadic or an organized cervical cancer screening programme without discriminating other sexually active women.

INTRODUCTION

As at year 2000, cervical carcinoma was responsible for 466,000 deaths per annum worldwide and is the leading cause of death in women aged 35-45years[1]. It was the most common malignancy among women in Nigeria and the rest of sub-Saharan Africa with a very poor 5-year survival rate[1-4].

In Benin, Nigeria, carcinoma of the cervix made up 74.6% of all cases of malignant gynalcological tumours, with stage IIb and above constituting 67.6% of the case[2]. It accounted for 66.2% of all gynaecological malignancies in Zaria, Nigeria, with advanced carcinoma of the cervix, stage IIb and above, making up 88.7% of the cases[3]. In Kenya, 55% of women with cancer of the cervix presented with stage III disease and beyond[4].

In 1842, Rigoni-Stern formally hypothesized that cervical cancer had an infective sexually transmitted aetiology[5]. Many studies since then have confirmed the venereal nature of cervical cancer and identified other risk factors. The most exciting development has been the finding that infection with human papilloma virus (HPV) is causally associated with cervical cancer[6,7]. The HPV has been shown to be a determinant of the natural history of cervical intraepidthelial neoplasia (CIN). The progression rate to cervical cancer when HPV coexists with CIN is about 21% but only 5.6% when CIN lesions occur alone[8].

Many studies have tried to show some kind of association between age, marital factors, contraceptive use, educational level and sexual behaviour with the risk of developing HPV and cervical cancer[9]. Such socio-demographic factors may be useful in risk scoring. This is important because risk scoring systems have the potential for assisting the targeting of screening resources, as broad risk targeting of all sexually

active women is not a viable option for developing countries due to paucity of both human and financial resources. Even in the industrialized nations of the West, the need for more precise targeting of high risk groups in order to improve the efficiency of cervical cytology programmes and conserve funds has become a major issue.

Sub-clinical HPV infections of the cervix may be diagnosed by colposcopy, viral DNA hybridization, polymerase chain reaction (PCR) amplification histology by the characteristic HPV changes on Papanicolaou Smear[9,11]. The Papanicolaou Smear for cervical cytology fulfills all the criteria for an ideal screening test. Not only is it cost effective, acceptable to most patients and adoptable to wide spread screenings, it is specific enough to detect HPV changes and subsequent progression to CIN result in decrelsed morbidity and mortality from invasive cervical cancer. DNA hybridization and PCR amplification can detect both productive and non-productive infection but appear

to be of limited value in predicting the risk of developing CIN or invasive carcinoma. Although cytology, histology and colposcopy are less sensitive, they are capable of detecting significant pathological change associated with productive HPV infection[11].

This study looks at the association between age and human Papilloma virus infection of the cervix.

SUBJECTS AND METHODS

The subjects were 450 randomly selected sexually active women attending the ante-natal, postnatal, gynaecology and family planning clinics in the Department of Obstetrics and Gynaecology of the University of Maduguri Teaching Hospital, Nigeria between April, 2001 to May, 2002.

They were recruited after consenting to participate and a formal approval had been given by the institution's Ethical and Research Committee. The recruitment continued until a sample size of 450, was reached. This was calculated using the WHO Epi Info Version 6 programme for population or descriptive study using simple random sampling. It was based on a population of 4, 342 patients/clients attending the recruiting clinics from April, 2001 to May, 2002. The purpose, value and nature of the procedure was explained to each prospective patient and her consent sought. All consenting patients had

their Pap smears take using a moistened unlubricated Cusco's bivalve speculum and an Ayre's wooden spatual after a questionnaire containing the ages, of the women had been filled. The smears were immediately transported to the histopathology laboratory immersed in 95% ethanol for preparation, staining and reading. The smears were examined microscopically by a pathologist at the magnifications of 4,10 and 100.

The WHO Epi Info statistical programme was used to compute and analyze the results. These included frequency distribution and tests of significance using Chi-square (X^2). A p – value of ≤0.05 is taken as being significant.

RESULTS

Four hundred and fifty women attending various clinics at the Department of Obstetrics and Gynaecology, University of Maiduguri Teaching Hospital had their Pap smears taken and questionnaires on patients ages filled.

TABLE 1: Shows the cytology results of the Papanicolaou smears. Abnormal smears occurred in 245 (54.5%) of the patients screened. Forty eight women (10.7%) had HPV associated changes, constituting 19.6% of all abnormal smears.

TABLE 2: Depicts the ages of the patients screened. Their ages ranged between 15 and 64 years, with a mean of 26.3 years.

TABLE 3: Shows the association between age and human Papilloma virus infection of the cervix. There was no significant association between the patients' age and human Papilloma virus infection (P > 0.05). The peak age-specific prevalence of 11.7% occurred in the 15-19 years age group. Those in the 20-29 years age range accounted for 66.7% (32/48) of the cases.

Figure 1

TABLE 1 CYTOLOGY REPORT OF PAP SMEARS

S/NO	CLASS OF PAPANICOLAOU	NUMBER	PERCENTAGE
1.	Normal	205	45.6
2.	Inflammatory	124	27.6
3.	Cervical dyskaryosis	73	16.2
4.	Human papilloma virus changes	48	10.7
	TOTAL	**450**	**100**

Figure 2

TABLE 2 AGE RANGE OF THE WOMEN SCREENED

S/NO	AGE (YEARS)	NUMBER	PERCENTAGE
1.	15-19	60	13.3
2.	20-24	158	35.1
3.	25-29	138	30.7
4.	30-34	53	11.8
5.	>/35	41	9.1
	TOTAL	**450**	**100**

- RANGE = 15-64; MEAN = 26.3±5.

Figure 3

TABLE 3: ASSOCIATION BETWEEN AGE AND HUMAN PAPILLOMA VIRUS INFECTION OF THE CERVIX

AGE (YEARS)	POSITIVE	NEGATIVE	TOTAL
15-19	7	53	60
20-24	18	140	158
25-29	14	124	138
30-34	5	48	53
≥35	4	37	41
TOTAL	**48**	**402**	**450**

X^2 for linear trend = 0.05, df = 4, P=0.82.

DISCUSSION

In this study the patients screened were of the young age group, 79.1% were aged from 15 to 29 years with a mean of 26.3 years and a range of 15 to 64 years. This is a reflection of the age composition of the women attending the recruiting clinics. It indicates one of the drawbacks of opportunistic screening. It is however pertinent to note that this young age group is the age at which to start screening since carcinoma of the cervix has been shown to have two age peaks in Nigeria, at ages of 36-40 years and 56-60 years in Benin[2] and 30-39 years and 50-59 years at Ilorin [12] .

Moreover, majority of deaths from cervical cancer occur in women over 35 years, especially those over 45 years[13]. Since age is the most easily identifiable risk factor, with women aged 35 and 60 years having the highest risk of developing cancer of the cervix[2,14], concentrating screening before that age is an acceptable policy. However, in a hitherto unscreened population, there is a need to screen all those beyond 18 years. With a peak age-specific prevalence rate of 11.7% at 15-19 years, there is a need to concentrate/start screening at/before this age, inorder to pick up human papilloma virus infection early and appropriately follow them up to detect early progression to cervical intraepithelial neoplasia and thereby prevent invasive cervical cancer.

The absence of any significant difference in the prevalence of HPV between the age groups in this study may be accounted for by the fact that the study population was predominantly young, 79.1% being 29 years or below. However, the peak age-specific prevalence of 11.7% which occurred in the 15-19 years age bracket and the high prevalence of 21.5% in the 20-29 years age bracket is in keeping with the findings of other authors which showed that the rates of cervical human papilloma virus infection were high in teenagers at the outset of their sexual experience [15] and in young adults who belonged to the most sexually active group[15-17]. This age range also corresponds to that of other sexually transmitted diseases like gonorrhoea and non-gonococcal infections[16].

These associations may allow for targeting of a high risk group in sporadic cervical screening programmes as is the practice in most developing countries such as ours or in an organized systematic cervical screening programme, without discriminating other sexually active women.

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