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RESEARCH ARTICLE

PREVALENCE OF HUMAN PAPILLOMA VIRUS AMONG WOMEN INFECTED WITH HUMAN IMMUNO- DEFICIENCY VIRUS

Vem T.S[1], Adisa J. O[1], Oyero S.K[2], Egbujo E.C[1], Golit W.N[3] and Golwa P[4]

[1]Department of Medical Laboratory Science, University of Jos, P.M.B. 2084, jos Nigeria
[2] Histopathology Department, Jos University Teaching Hospitals, P.M.B. 2084, jos Nigeria
[3]Department of Obstetrics and Genecology, Plateau Specialist Hospital, P.M.B. 2084, jos Nigeria
[4]Department of Surgery, Plateau Specialist Hospital, P.M.B. 2084, jos Nigeria

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ABSTRACT

Background: Human papilloma virus (HPV) is a sexually transmitted disease associated with the development of cervical premalignant lesion. There is a connection between transmission of Human Immuno Deficiency Virus (HIV) and HPV, therefore the possibility of cervical premalignant lesions among women. This study therefore undertook to detect HPV in HIV infected women to establish the correlation.

Methodology: One hundred (100) women infected with the Human Immune deficiency Virus (HIV) and one hundred (100) non - infected women were used for the study. Cervical smears were collected from each of them and stained using the standard Papanicolaou's method and then examined microscopically for HPV haloes.

Result: The prevalence of HPV among HIV positive women in the study was 9.0% .The prevalence of HPV among HIV negative women was 6.0%. Prevalence rates according to age revealed 12.5 % and 11.0% in ages 21 – 30 and 31 – 40 years respectively, while 41 – 50 and 51 – 60 years recorded 6.7% and 5.2% respectively. No infection was recorded above ages 60 in HIV positive women. Among HIV negative women, a prevalence rate of 6.7% and 8.3% was recorded in ages 21 – 30 and 31 – 40 years respectively. Ages 41 – 50 years recorded 4.2%. No HPV infection was recorded above age 50.

Conclusion: Infection with HIV is an important risk factor for HPV and the development of HPV associated lesions

INTRODUCTION

The global public health burden attributable to Human Papilloma viruses is considerable.HPV poses an important public health threat amongst HIV positive women.The most important known determinant of HPV resistance and progression to cancer is most HPV type 16 and 18 which are strongly associated with high grade squamous intraepithelial lesion and 52 which is the seventh most frequently detected as high risk type in cervical cancer worldwide (Clifford 2003). HIV infected women are more likely to be infected with HPV than HIV negative women. Data from the American Women's Interagency HIV study (WIHS) found that 58% of HIV infected women had HPV compared with 24% of HIV negative women (Palefsky, 1999). The WIHS reported that advanced HIV disease was strongly associated with HPV infection. However, little is known about the natural history of HPV infection in HIV positive women and persistent of HPV infections may explain the increased risk of cervical squamous intraepithelial lesions and invasive cervical cancer in HIV positive women.(Strickler,2005).

***Corresponding author:** tabitha_vem@yahoo.com

Notably, the presence of HPV immune suppression by HIV infection also appears to worsen the outcome of HPV infection. Women infected with HIV are at significantly increased risk of invasive cervical cancer which cannot be explained purely by higher incidence of HPV infection among these women. Science daily (2008), awarded a Noble price to Harald Zur Hausen for his discovery of HPV causing cervical cancer and the other half to Francuise Barresinoussi and Luc Montagnier for their discovery of HIV (MLA Noble, 2008).They discovered the two viruses as causing severe human disease. Harald Zur Hausen pursed this idea for over 10 years by searching for different HPV types, a search made difficult by the fact that only parts of the viral DNA were integrated into the host genome. The detection of high risk HPV types in genital specimen has now been approved in several countries for the triage of women with cytomorphological diagnosis of atypical squamous cell of undetermined significance(ASCUS) and primary screening for cervical cancer for women age 30years and above as an adjuvant to cytology (Wright, 1994).

METHODOLOGY

HIV positive (n=100) and HIV negative (n-100) women were screened in Jos metropolis Plateau State, Nigeria for the prevalence of HPV infection with age ranges from 21 – 70 years. Pap smears were collected from subjects and stained by the standard, Papanicoluos smear method (Richard and Demay, 1999).Concurrently, questionnaires were administered to consenting subjects to obtain their biodata. The Pap smears were made in replicates, labeled and fixed in 95% alcohol for 30 minutes before staining. The stained smears were examined for pre-malignant lesions and the presence or absence of perinuclear haloes that indicate HPV infection.

Table 1. Distribution of HPV in different stages of premalignant lesions among HIV positive women

Cytological group	No Screened	No positive HPV/% prevalence
ASCUS	32	2 (6.3)
LSIL	34	5 (12.0)
HSIL	27	2 (8.7)
CIS	07	0 (0.0)
Total	100	9 (9.0)

Table 2. Distribution of HPV in different stages of premalignant lesions among HIV negative women

Cytological group	No Screened	No positive HPV % prevalence
ASCUS	38	1 (2.6)
LSIL	29	2 (6.9)
HSIL	26	3 (11.5)
CIS	07	0 (0.0)
Total	100	6 (6.0)

Table 3: Prevalence of HPV according to various age group of HIV positive women.

Age range (Years)	No. screened	No positive HPV (%) prevalence
21-30	32	4(12.5)
31-40	33	3(11.0)
41-50	15	1(6.7)
51-60	17	1(5.2)
61-70	3	0(0.0)
TOTAL	100	9 (9.0)

Table 4. Prevalence of HPV according to various age groups in HIV Negative women

Age range (Years)	No. screened	Positive HPV/%prevalence
21-30	34	2(6.7)
31-40	32	3(8.3)
41-50	24	1(4.2)
51-60	8	0(0.0)
61-70	2	0(0.0)
Total	100	6(6.0)

RESULTS

This study subjects were made up of one hundred (100) HIV positive and one hundred (100) HIV negative women. The overall prevalence rate of HPV infection among HIV positive women in the study for those with premalignant changes was 6.3%, 12.0% and 8.7% for Ascus LSIL/HSIL respectively, Table1. The prevalence of HPV in HIV negative women with premalignant conditions was 2.6% and 6.9%, 11.5% for Ascus LSIL & HSIL respectively (Table 2). A look at Table 3 reveals that ages 21-30 years recorded a prevalence rate of 12.5% among the HIV positive women followed by 11.0% in age group 31-40 years, while ages 41-50 and 51-60 years recorded 6.7% and 5.2% respectively. Among the control group, HIV negative women examined for the prevalence of HPV based on age, shows that age 21-30 years recorded 6.7% and age 31-40 years recorded 8.3%, while age 41-50 recorded 4.2% . No infection was recorded in ages 51-60 and 61-70 years respectively.

DISCUSSION

It is well established that infection with high risk types of HPV (16, 18, 31, 33, 45 and 52) are most strongly associated with development of cervical cancer. (Bleeker, 2003) However, infection with high risk types of HPV does not always translate to development of cervical cancer, suggesting that other co-factors must be present for the development of malignancy. However, it has been difficult to account for the precise contribution of HPV infection in the development of cancer. (Watts, 2005). Table 1 shows that the prevalence of HPV among HIV positive women in Jos metropolis is 9.0% which is higher than in the control subjects (HIV negative women) which is 6.0% (Table 2). Several studies have reported that women with HIV are more likely to have abnormal Pap smear result than HIV negative women. The WIHS reported abnormal Pap smear results in 38% of HIV infected women compared with 16% of HIV negative controls and recorded 58% prevalence rate of HPV among HIV

infected women compared with 24% of uninfected women This agrees with the relative difference observed between the HIV infected subjects (9.0%) and the negative controls (6.0%) using the same method in this study. Internationally, approximately 5% of the world populations of women have HPV infection irrespective of their HIV status. Our findings suggest that the probability of HPV infection is increased by about 100% in HIV infected persons. This funding suport to the report that HIV infection leading cause of cervical intraepithelial neoplasia (CIN) or cervical carcinoma. (Gillison, 2001).

Indeed, HPV infections are more likely to persist in HIV positive women than in HIV negative women and this persistence contributes to a higher prevalence of HPV infection among HIV positive women (table 3) and a higher risk of developing squamous intraepithelial lesions. A look at the distribution of premalignant changes in the HIV positive women (Table 1), about 9.0% were infected with HPV while in Table 2, only 6.0% were infected with HPV among HIV negative women. This suggests that, infection with HIV is an important risk factor for HPV infection and development of HPV associated lesion in the female genital tract and also immune damage caused by HIV increases the risk of developing cervical cancers. However, the age distribution of HPV in HIV positive women was 12.5% in age 21-30 years, while age 31-40 years recorded 11.0% and a decrease rate of 6.7% and 5.2% in ages 41-50, 51-60 years respectively, (Table 3). In Table 4, age group 21-30 years recorded 6.7% and 8.3% in age group 31-40 years. Age group 41-50 years recorded 4.2% while no infection was recorded in 51-60, 61-70 age groups. A higher prevalence rate was observed in the younger women than the older ones. The total infection rate in in our study is (21-40 years) is 25.5%. This agrees with the study in the United Kingdom which recorded a prevalence rate of 30-40% in young adults in 2004. The prevalence among the younger women in the United Kingdom was higher slightly even though the method used was the same. The reason for this may be that more women are screened for HPV in addition to skills, mor sensitive equipment and awareness.

Mike *et al* (2001) reported that sexual contact at young age increases the likely hood of HPV infection and increases the time for (HPV) infection to progress to pre-cancerous changes and eventually to invasive cancer especially in HIV positive.
It is estimated that the worldwide prevalence of HPV infection is 630million. The prevalence in the U.S. is 20million. The lifetime risk for sexually active women is at least 50%, and by age 50, at least 80% of women would have acquired genital HPV infection. We know, however, that 74% of HPV infections occur in individuals who are sexually active between ages 15 to 24 years. Concisely, HPV is the most common sexually transmitted infection. (www. obgmanagement.com); and therefore routine screening of sexually active women will go a long way to reduce the prevalence of cancer of the cervix especially among HIV infected women (www. obgmanagement.com).

CONCLUSION

This study has highlighted the fact that deliberate screening for HPV, even if this will be done by relatively less sensitive microscopic method, is very important in the prevention of cervical cancer. While the early detection of premalignant lesions is helpful, the detection of HPV is more valuable especially, if the methods used are the more specific and sensitive onces. Immunological methods are the sensitive and specific.

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