Assessing the relationship between HIV infection and cervical cancer at Ndola Central Hospital from 2013 to 2014

Jeff Mweene*, David Mulenga

The Coperbelt University, school of medicine, Ndola Zambia

ABSTRACT

Background: Cervical cancer is the second highest cause of cancer related death worldwide, the highest in Africa and also the most frequent cancer in Zambian women. The incidence is high in human immunodeficiency virus positive (HIV+) patient as established by some sources. **Objectives:** The objectives of the study were to determine the association of HIV infection and other risk factors to cervical cancer. **Method:** The study was a cross sectional retrospective study done at Ndola central hospital in Zambia. A sample size of 172 was made up of 86 confirmed cases of cervical cancer and 86 suspected cases of cervical cancer. The statistical tests used in the analysis of the data were the chi square and regression bivariate logistical model. The level of significance was 0.05.**Results**: No significant relation was observed between HIV status and cervical cancer (AOR=1.00; 95% CI [0.71, 1.42]). Compared with the individuals aged 45 years or older, those aged less than 35 years were 62% (AOR=0.38;95%CI(0.22,0.67)) less likely to have cervical cancer.**Conclusion:** There is no association between HIV infection and cervical cancer in the years 2013 and 2014. There was an association between age and cervical cancer. There was an association between being on HAART and cervical cancer hence we conclude that HAART.

Key words: Infection, HIV, cancer

Introduction

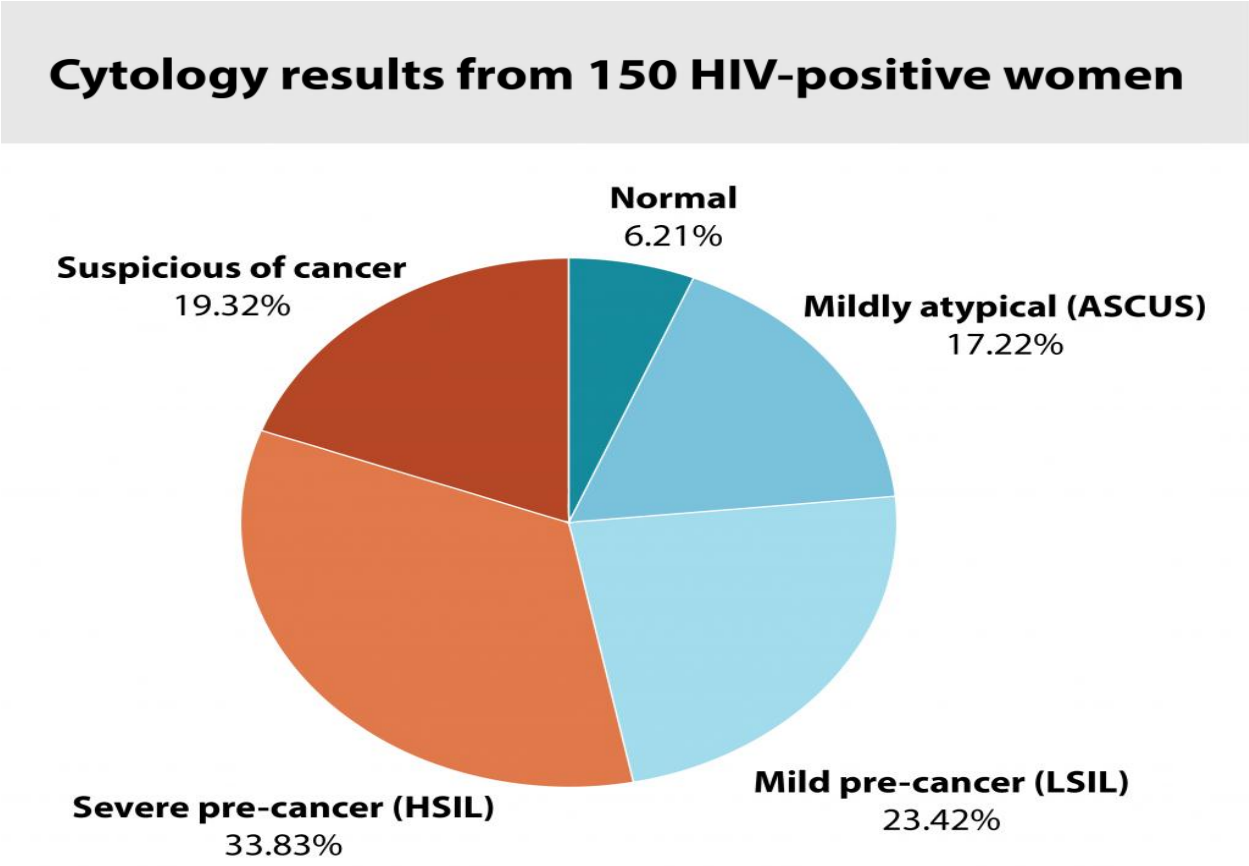
Cervical cancer is the second leading cause of cancer mortality in women worldwide, and the leading cause in Africa, and it is the leading cause of cancer deaths in Zambianwomen.[1, 2] There is uncertainty in the role of HIV infection as a risk factor for invasive and pre-invasive cervical lesions, particularly in African populations.[1] In a case control study in Dakar, Senegal,150 women with invasive cervical cancer were (ICC), 92 with cervical intraepithelial neoplasia (CIN) 2 or 3, 70 with CIN 1, and 515 control women (1).Logistic regression analysis to estimate associations between HIV-1 and HIV-2 infection and the risk of cervical neoplasia was used.[1,3]. Large increase in the risk of ICC and CIN 2-3 was found, but not of CIN 1, associated with the presence of either HIV-1 or HIV-2 infection.[1]. The analysis thus shows increases in the risk of both advanced and early cervical pathology associated with HIV infection in an African population [1].

In sub-Saharan Africa, age-standardized incidence of cervical cancer is high, ranging from 29.3 (West Africa) to 42.7 (southern Africa) per 100,000 women [4]. The development of cervical cancer is the result of interaction of systemic and local cofactors that facilitate malignant transformation of cervical cells, with HPV infection as a necessary factor [4]. Based on strength of association with cervical cancer, genital HPVs have been categorized by risk of acting as carcinogens in the development of cervical cancers [4,5]. High-risk or oncogenic types include HPV types **16**, **18**, **31**, 33, 35, 39,**41**, 45, 51, 52, 56, **58**, 59, 66, 68, 73 and 82; low-risk types include HPV types 6, 11, 42, 43, 44, 54, 61, 70, 72, 81.[5] Examples of factors other than HPV that have been suggested as potential modulators of cervical cancer development include age and parity , cigarette smoking , long-term oral contraceptive use , and host genetics and

**Correspondence*
Dr. Jeff Mweene
The Coperbelt University, school of medicine, Ndola Zambia
E Mail: jeffmweene@gmail.com

immunological factors. The incidence of cervical cancer has been changing at a global level, with increasing incidence in women below 40 years of age[3,4]. This may reflect age-cohort effects and the emergence of more aggressive histologies with a shorter natural history, possibly the result of HPV infection acquired at a younger age or of increased screening/awareness resulting in earlier detection of cervical cancer [1,3]. In HIV-infected women, there is an increased risk of HPV infection and squamous intraepithelial lesions (SIL), the precursor of cervical cancer.[6] Since 1993, the revised CDC AIDS case definition has included the development of cervical cancer in an HIV-infected person as a sufficient criterion for AIDS, even in the absence of an opportunistic infection.[7] Numerous studies have analyzed the association of HIV infection and cervical cancer[7]. Although positive associations between HIV infection and cervical cancer have been demonstrated, studies evaluating the strength of this association among African women have had differing conclusions. [5] It has been proposed that lack of excess risk of invasive cervical cancer among HIV-infected women in some populations may reflect the competing risk of mortality from other conditions associated with HIV infection.[1] Dr Mulindi Mwanahamuntu at university teaching hospital in Lusaka demonstrated that there is a strong relationship between the HIV status and the cervical cancer both pre and advanced disease as compared to those who were HIV non-reactive of above 50%,this prompted the Zambian government to come up with cervical cancer prevention program.[8] Although many women harbor HPV only a few develop invasive carcinoma of the cervix ,meaning other risk factors are involved ,well defined ones are cigarette smoking and immunodeficiency(HIV increase by five ford)[6].

The pie chart below shows the conclusion of the report from Mulindi Mwanahamuntu and his associates at university teaching hospital.[9]



Studies of HIV infection and invasive cervical cancer to date have tended to be limited by lack of information on presence of HPV DNA in cervical samples of study participants, and focused on quantifying the effect of HIV infection relative to other cofactors in the presence of HPV infection (5).A case-control study in a West African population to assess the relationship between cervical cancer and HIV infection, taking into account the presence of high-risk HPV infection and other cofactors such as age, parity, and lifetime number of sexual partners[10].

Method

The study was a hospital based study involving the review of hospital records from the year 2013 to 2014. It was cross sectional retrospective study. The files were reviewed from 7th may to 14th may 2016

Study site

The study was carried out at Ndola central hospital which is the second largest referral hospital in Zambia, on the coperbelt province within Ndola city the provincial capital.

Sampling method

The sample was selected by getting all the known cases of cervical cancer, or those who were suspected cases, some which were on palliative care.86 cases were known cases of cervical cancer and 86 controls. The controls were those who had suspected invasive cell carcinoma from cervical cancer screening and those cases who were suspected but were non confirmatory of cervical cancer.

The inclusion criteria was that only files of patients who were on palliative care , the suspected cases, and those with queried invasive cervical carcinoma from the cervical cancer screening clinic, were reviewed from the year 2013 and 2014. The exclusion criteria was as follows: exclude all incomplete records, missing files, all files out of the stipulated period of study and all files without the age of patients on them.

Data Capturing Tool, Data Entry Method and Analysis

The data collection tool had patients age, marital status, confirmed cervical cancer (by histopathology or pap smear), HIV status, on HAART, and Age at sex debut. The data that was captured was entered in the Microsoft access then transferred to Microsoft excel, and then the data was transferred to the spss software 16.0 for analysis. The data was analyzed by the spss software using the *chi square* test to associate HIV status and other risk factors with cervical cancer.

Results

Table 1: Risk factors associated with cervical cancer

Factor	Cervical Cancer confirmed Yes n (%)	No n(%)	P value
A. Age(years)			
<35	12(14.3)	29(34.5)	
35-44	42(50.0)	35(41.7)	0.008
45+	30(35.7)	20(23.8)	
B. Marital status			
Married	81(93.1)	81(96.4)	0.497
Not married	6(6.9)	3(3.6)	
C.HIV status			
Positive	33(41.2)	27(36.0)	0.502
Negative	47(58.8)	48(64.0)	
D.ON HAART			
Yes	33(37.9)	20(23.8)	0.046
No	54(62.1)	64(76.2)	

Of the factors in table 1.0 only age (p value=0.008) and an HAART (p value=0.046) has the significant association with cervical cancer. No significant association between HIV infection (p value=0.502) and cervical cancer were observed.

Table 2: Association between HIV status and cervical cancer adjusted for age

Factor	Adjusted odd ratio(95%CI)
Age	
<35	**0.32(0.22,0.67)**
35-44	**1.35(0.86,2.12)**
45+	**1**
HIV status	
positive	**1.00(0.71,1.42)**
negative	**1**

All the factors that were significantly associated with cervical cancer in bivariate analysis were considered in a multivariate logistic regression model that included HIV status. The relationship between HIV status after adjusting for age in table 2.0, No significant relation was observed between HIV status and cervical cancer (AOR=1.00; 95% CI (0.71, 1.42)). Compared with the individuals aged 45 years or older ,those aged less than 35 years were 62% (AOR=0.38;95%CI(0.22,0.67)) less likely to have cervical cancer

Discussion

To our knowledge this study is the first one of its kind to be done at Ndola central hospital in Zambia. The other study on cervical cancer and HIV was done at the university teaching hospital in Lusaka, Zambia and it showed that there was a significant association between cervical cancer and HIV infection [9]. However, our study did not find the association between HIV infection and cervical cancer. Therefore, this finding indicated that for the years 2013 and 2014, there was no association between HIV infection and cervical cancer at Ndola central hospital. All the factors that were significantly associated with cervical cancer in bivariate analysis were considered in a multivariate logistic regression model that included HIV status. However, only age and having been on HAART were found to be significantly associated with cervical cancer. Therefore, the finding that HIV is related to HIV still stands as can be found in many other studies. This is because patients who are on HAART are HIV positive. The possible explanation to this finding is that HAART makes HIV positive patients less likely to develop cervical cancer. Compared with the individuals aged 45 years and older, those aged 35years and less were less likely to have cervical cancer. This finding is in accord with a number of studies that indicate that women over 40 remain at risk and need to continue having regular cervical cancer screenings, which include both a pap test and HPV test.

Limitations

In our study which was a retrospective study some files did not contain some risk factors which were contained in other files, however they were considered for inclusion in the study.

Conclusion

In conclusion, there was no association between HIV infection and cervical cancer in the years 2013 and 2014. There was an association between age and cervical cancer. There was an association between being on HAART and cervical cancer hence we conclude that HAART reduces the chance of developing cervical cancer. We fail to reject the null hypothesis therefore there is no relationship between HIV infection and cervical cancer

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