

Acceptability of human immunodeficiency virus testing in patients with invasive cervical cancer in Kenya

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Abstract. Gichangi P, Estambale B, Bwayo J, Rogo R, Ojwang S, Njuguna E, Temmerman M. Acceptability of human immunodeficiency virus testing in patients with invasive cervical cancer in Kenya. *Int J Gynecol Cancer* 2006;16:681–685.

Invasive cervical cancer (ICC) is common in areas where human immunodeficiency virus (HIV) is also prevalent. Currently, HIV seroprevalence as well as acceptability of HIV testing in ICC patients in Kenya is unknown. The objective of this study was to determine the acceptability of HIV testing among patients with ICC. Women with histologically verified ICC at Kenyatta National Hospital participated in the study. A structured questionnaire was administered to patients who gave informed consent. HIV pre- and post-testing counseling was done. Blood was tested for HIV using enzyme-linked immunosorbent assay. Overall, 11% of ICC patients were HIV seropositive. The acceptance rate of HIV testing was 99%; yet, 5% of the patients did not want to know their HIV results. Patients less than 35 years old were two times more likely to refuse the result of the HIV test (odds ratio [OR] 2.2). Patients who did not want to know their HIV results were three times more likely to be HIV seropositive (OR 3.1). Eighty four percent of the patients were unaware of their HIV seropositive status. The HIV-1 seroprevalence in ICC patients was comparable to the overall seroprevalence in Kenya. ICC patients were interested in HIV testing following pretest counseling. Offering routine HIV testing is recommended in ICC patients.

KEYWORDS: cervical cancer, HIV, Kenya.

Invasive cervical cancer (ICC) and human immunodeficiency virus (HIV) infection are both prevalent in Kenya⁽¹⁾. The national incidence of ICC is unknown since there is no population-based cancer registry in Kenya. The principal etiologic agent for ICC is the human papillomavirus (HPV)⁽²⁾. The association of HIV, HPV, and cervical dysplasia has been clearly established^(3–5), and data on the association of HIV and ICC are also accumulating^(6–9). Since 1993, ICC has been included as an acquired immunodeficiency syndrome-defining condition. The clinical course and prognosis of acquired immunodeficiency syndrome have dramatically changed since the introduction of

highly active antiretroviral therapy (HAART)^(10,11). HAART may also influence the relationship between HIV and cervical cancer precursor lesions in two contrasting ways. HAART can partially restore immune competence, thereby mitigating the effects of HIV infection on the course of HPV infection^(12,13). Otherwise, HAART treatment may prolong the woman's life, thereby lengthening exposure to HPV, which could progress on to cervical cancer⁽¹⁴⁾.

Knowledge of one's HIV serostatus by opportunistic or routine screening is of value not only in accessing the increasingly available treatment options but also in preventing further spread of HIV. There are several studies on acceptance of HIV testing in specific subgroups such as heterosexual patients in a sexually transmitted disease (STD) clinic⁽¹⁵⁾, intravenous drug users, and homosexuals^(16,17) or population surveys⁽¹⁸⁾. Only a few studies have been done on acceptance of

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HIV testing in ICC patients from America⁽⁸⁾ and Canada⁽¹⁹⁾ and none from developing countries. Studies from socially and culturally different settings may not be generalizable to all populations. Currently, testing for HIV infection in ICC patients in Kenya is no routine, and the current HIV seroprevalence in these patients is unknown. An earlier Kenyan study 12 years ago had shown a HIV seroprevalence of 1.5% in cervical cancer patients⁽²⁰⁾. Equally unknown is whether ICC patients, if offered HIV testing would accept it or not. This study was undertaken to determine the acceptability of HIV testing and HIV seroprevalence in ICC patients at Kenyatta National Hospital (KNH), Nairobi, Kenya. Data from this study will be useful in the discussion of eligibility of patients for HIV treatment once HAART becomes available in Kenya.

Materials and methods

From January 2000 to May 2002, women with ICC treated at the radiotherapy department of KNH were requested to participate in the study. All patients had histologically verified ICC. The study nurse administered a structured questionnaire, with details on sociodemographic characteristics, and acceptability of testing for HIV. After HIV pretest counseling, 5 mL of blood was drawn for HIV testing. Women were given an option of whether or not to receive their HIV results. A follow-up appointment was given for HIV results and posttest counseling for the patients who wanted to know their results. Patients found to be HIV seropositive were referred to patient support center for more counseling and further management. HIV screening was done using the enzyme-linked immunosorbant assay (Biochem Immuno Systems Kit, Montreal, Canada), and positive samples were confirmed using second enzyme-linked immunosorbant assay (Biotech Ltd, Cambridge, Ireland).

The ethics and research review boards of KNH, and Departments of Medical Microbiology, and Obstetrics and Gynecology, University of Nairobi approved the study.

Statistical analysis

The main outcome measures were the proportion of women who accept HIV testing and the proportion who wanted to know their HIV results and HIV seroprevalence. Data was analyzed using SPSS version 10.0 (SPSS Inc., Chicago, IL) statistical package. Odds ratio (OR) or adjusted OR (AOR) and their 95% confidence intervals were used to measure strength of associations. Fisher's exact test and Yates corrected

Chi-square testing was used to compare proportions. Differences between means were tested by *t* test. Multivariate logistic regression models included variables significant in univariate analysis or those that were thought to have biologic influence on the dependent variable. Associations with two-sided *P* value less than 0.05 were considered statistically significant.

Results

A total of 771 patients were requested to participate in the study. After confidential HIV pretest counseling, 99% consented to participate in the study and to have HIV test. The overall mean age was 48.8 ± 12.1 years. Table 1 shows characteristics of the patients interviewed. More than a quarter of the patients did not have formal education, and 21% were younger than 35 years. Thirty seven percent reported their partners had multiple sex partners. About 34% of the patients reported more than two lifetime sex partners. Only 13% of all patients had previously been tested for HIV.

Table 1. Sociodemographic characteristics of 763 patients with ICC

Characteristic	Number (%)
<35 years old	758 (20.8)
Marital status	
Single	61 (8.0)
Married	490 (64.5)
Ever married (widowed, divorced, separated)	209 (27.5)
Total	760 (100)
Education	
None	212 (28.2)
Up to 8 years	407 (54.1)
More than 8 years	133 (17.7)
Total	752 (100)
Religion	
Catholic	225 (29.9)
Protestant	504 (67.0)
Muslim	18 (2.4)
Others	5 (0.7)
Total	752 (100)
Partners with multiple partners	
Yes	278 (37.4)
No	103 (13.8)
Do not know	363 (48.8)
Total	744 (100)
Polygamous relationship	688 (31.0)
Use of family planning methods	743 (54.5)
Use of condoms	747 (15.0)
Previous STD	750 (10.7)
>2 lifetime sex partners	629 (33.7)
Alcohol use	753 (8.1)
Smoking	754 (4.9)
Previous HIV testing	688 (12.5)

Overall, 11% of the patients were HIV seropositive. Eighty four percent of the patients were identified as HIV seropositive for the first time during this testing. Six patients (0.8%) did not give a response to the question on whether they wanted to know their HIV results. Five percent of the 757 patients did not want to know their HIV results. Twenty-one of the 37 patients (58%) who did not want to know their HIV results, gave reasons for the decline. Fourteen patients were either afraid to be confronted with another burden on top of the current cancer problem or it was not going to add to their condition. One patient was confident that she was HIV negative, although she had never been tested before. One said she already knew her status and was being treated by her doctor for HIV infection. Three said they were not psychologically prepared or wanted to get well first. Two patients just did not want to know. Table 2 shows correlates of wanting to know current HIV results. Patients <35 years old were two times more likely than patients ≥35 years to decline their HIV results. Patients who did not want to know their HIV results were three times more likely to be HIV seropositive as compared to those who wanted to know their results (27% vs 11%).

The overall condom use was 15%. Table 3 shows correlates of condom use. On univariate analysis, condom users were <35 years old, reported alcohol consumption, had used family planning other than condoms, had an STD before, had more than two lifetime sex partners and were also more likely to report risk of HIV infection and to be HIV positive. On multivariate analysis, condom use was significantly asso-

ciated with age (<35 years old, AOR 3.3), use of family planning (AOR 2.9), and had history of STD (AOR 4.2).

Discussion

Eleven percent of ICC patients were HIV seropositive. This seroprevalence is similar to HIV seroprevalence in Kenyan adults now estimated at 15%⁽¹⁾. The prevalence observed in this population of ICC patients is much lower than the 31% observed among those tested by clinicians in the same hospital⁽⁷⁾. A prevalence of 19% was reported among American women with ICC⁽⁸⁾. Lomalisa *et al.* reported a prevalence of 7.6% among South African women with ICC from Gauteng province⁽⁹⁾. The differences in the observed prevalence could be as a result of selection bias as shown by data from Kenya where clinician-driven testing⁽⁷⁾ had higher prevalence than when all clients were offered routine testing (current study) or the populations are so different that they may not be comparable. For example, Chin *et al.*'s study showed racial differences in the prevalence of ICC among HIV seropositive women, being higher in black women and Hispanics than in American whites⁽⁶⁾. Currently, there is no data on the prevalence of ICC among HIV seropositive patients in Kenya. This is an area which is being addressed by evaluation of the existing HIV cohorts in Kenya.

Patients who did not want to know their HIV results were significantly more likely to be HIV seropositive. These findings are consistent with other studies in which higher HIV seroprevalence rates were observed

Table 2. Correlates of interest in the HIV test results (N = 757)

Variable	Did not want to know HIV results, n/N (%)	Wants to know HIV results, n/N (%)	OR (95% CI)	P value
<35 years old	13/37 (35.1)	143/718 (19.9)	2.2 (1.1–4.4)	0.026
Married or ever married	31/37 (83.8)	665/720 (92.4)	2.3 (0.9–5.9)	0.062
Lack of formal education	12/37 (32.4)	199/712 (27.9)	1.2 (0.6–2.5)	0.554
Partners with multiple sex partners	16/21 (76.2)	261/358 (72.9)	0.8 (0.3–2.4)	0.741
Use of family planning methods	23/37 (62.2)	383/703 (54.5)	1.4 (0.7–2.7)	0.360
Previous STD	6/37 (16.2)	74/711 (10.4)	1.7 (0.7–4.10)	0.265
Condom use	8/37 (21.6)	104/707 (14.7)	1.6 (0.7–3.6)	0.252
>2 lifetime sex partners	11/33 (33.3)	228/679 (33.6)	1.1 (0.5–2.1)	0.977
Previous testing for HIV infection	5/31 (16.1)	81/655 (12.4)	1.4 (0.5–3.6)	0.536
Reported risk of HIV infection	10/23 (43.5)	140/428 (32.6)	1.6 (0.7–3.7)	0.286
Current HIV seropositive	10/37 (27.0)	76/715 (10.6)	3.1 (1.5–6.7)	0.002

CI, confidence interval.

Table 3. Correlates of condom use among invasive cervical patients (N = 763)

Variable	No condom use, n/N (%)	Condom use, n/N (%)	Univariate analysis		Multivariate analysis	
			OR (95% CI)	P value	AOR (95% CI)	P value
<35 years	119/514 (18.8)	38/112 (33.9)	2.2 (1.4–3.4)	<0.001	3.3 (1.7–6.5)	<0.001
Unmarried	49/635 (7.7)	11/112 (9.8)	1.3 (0.7–2.6)	0.450		
Having partner with multiple sex partners	226/316 (71.5)	46/59 (78.0)	1.4 (0.7–2.7)	0.308		
Use of FP methods	319/626 (51.0)	86/109 (78.9)	3.6 (2.2–5.9)	<0.001	2.9 (1.3–6.2)	0.007
Past STD	52/633 (8.2)	26/112 (23.2)	3.4 (2.0–5.7)	<0.001	4.2 (1.9–9.1)	<0.001
>2 lifetime sex partners	186/602 (30.9)	52/110 (47.3)	2.0 (1.3–3.0)	0.001	1.4 (0.7–2.6)	0.356
Alcohol use	43/633 (6.8)	18/112 (16.1)	2.6 (1.5–4.7)	0.001	1.8 (0.7–4.9)	0.244
Reported risk of HIV infection	117/389 (30.0)	29/56 (51.8)	2.5 (1.4–4.4)	0.001	1.5 (0.8–2.8)	0.255
Previous HIV test	66/577 (11.4)	19/105 (18.1)	1.7 (1.0–3.0)	0.057	1.8 (0.8–3.9)	0.152
Current HIV positive	59/631 (9.4)	25/111 (22.5)	2.8 (1.7–4.7)	<0.001	1.1 (0.5–2.7)	0.814

CI, confidence interval; FP, family planning other than condoms.

among test refusers than test acceptors^(15,21,22). Persons at high risk for HIV infection may decline testing because they have previously tested positive or may fear coping with a positive result or suspect themselves to be HIV seropositive from their sexual behavior.

About 99% of ICC patients at KNH would accept HIV testing following confidential counseling. Similar high levels of acceptance have been reported among cervical cancer patients in other countries^(8,9). Five percent did not want to know their HIV results for various reasons including concerns about risk and benefits, social stigmatization, and fear of coping with test results, which have been reported in other patient populations^(23,24). Cervical cancer patients are already traumatized emotionally and psychologically by the diagnosis of cancer and the treatment they have to receive^(25,26). Though the majority of ICC patients accepted HIV testing, introduction of routine HIV testing should be cautious not to lead to more trauma to these patients.

Current evidence showing reduced prevalence of cervical intraepithelial lesions⁽¹²⁾, increased regression, and reduced progression of HPV infections⁽¹³⁾ upon use of HAART suggests HAART could play a role in the evolution of cervical cancer disease. In addition, although sexual activity might be lower in patients with cervical cancer, HIV testing in these patients could compliment efforts to control HIV infection to the partner. ICC is an ulcerative condition, which would be associated with more transmission/acquisition. At individual level, diagnosis of HIV infection may allow access to HAART. Currently, HAART is not widely available in Kenya, but this situation is rapidly improving. By allowing immunoreconstitution^(12,13), HAART may positively contribute to better control of malignant cells in combination with other stand-

ard treatment. This may improve the reported poor outcome of treatment of ICC with concurrent HIV infection^(8,27).

Treatment for cervical cancer is associated with several vaginal abnormalities that interfere with sexual function such as reduced lubrication⁽²⁸⁾ and vaginal stenosis^(28,29). Despite these abnormalities, women still remain sexually active. Bergmark *et al.*⁽³⁰⁾ reported that 68% of women with history of cancer treatment had regular vaginal intercourse. With reduced vaginal lubrication, the chances of microerosions are much higher in these women. These erosions could increase the risk of HIV transmission/acquisition, which could be prevented by condom use. Condom use in this population of ICC patients was low (15%) despite the fact that more than one third of the women reported having sexual partners with multiple sex partners. Moreover, about one third of the patients had more than two lifetime sex partners. Cervical cancer is associated with loss of permanent relationships⁽³⁰⁾. Women who lose permanent relationships may still remain sexually active. Coupled with the finding from this study that majority of the women (84%) found to be HIV positive were unaware about their HIV status, there is need to promote condom use in this population and to make it an integral part of sexuality counseling during radiotherapy treatment.

The main limitation of this study was the reliance on self-reported information, which could not be validated. These data were collected in a research setting, which could have introduced a bias. Patients could also have accepted HIV testing failing to recognize "right of refusal" from mandatory routine testing, although this was explicitly stated in the consent form.

In conclusion, the overall HIV seroprevalence in ICC patients is similar to the overall Kenyan adult

prevalence. Condom use in this population is low. The majority of HIV seropositive patients were unaware about their serostatus. HIV testing among ICC patients is acceptable and routine HIV testing for ICC patients could be considered.

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Contributions

P.G., study concept and design, analysis of results, manuscript writing, E.N., clinical advice, B.E., J.B., S.O., K.R., and M.T., critical revision of the manuscript for intellectual content, M.T., overall supervision.

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