ORIGINAL ARTICLE

Clinical Profile and HIV/AIDS Prevalence of Patients with Malignancies in South-West Nigeria

Sunday **OCHENI**[1]
C E **OMOTI**[2]
Yetunde A **AKEN'OVA**[3]

[1]*Department of Haematology & Immunology University of Nigeria Enugu Campus (UNEC) Enugu, Nigeria.*
[2]*Department of Haematology & Blood Transfusion University of Benin Teaching Hospital (UBTH), Benin City, Nigeria*
[3]*Department of Haematology University of Ibadan Ibadan, Nigeria*

Author for Correspondence:
Dr. Sunday **OCHENI**
MB;BS (Ibadan), FMCPath
Department of Haematology & Immunology
University of Nigeria
Enugu Campus (UNEC)
PMB 01129,
Postal Code 400001
Enugu, NIGERIA
Email: kcjsocheni@yahoo.com
Phone: +234-703-922-2313

Received: June 30th, 2012
Accepted: September 3rd, 2012

ABSTRACT

Background: Clinical features of HIV/AIDS and various malignancies are similar. Clinical profiles and HIV/AIDS prevalence in Nigerian cancer patients have been poorly documented.
Aim: To identify the patterns of clinical presentations in patients with malignancies and to determine the prevalence of HIV infection in cancer patients.
Methodology: It was a prospective study of patients who were attending the Oncology Clinics of the UCH Ibadan. All the first 100 patients with malignancies seen during the period of the study were included in the study. Data was analyzed using Epi info software package. Test of significance was done using the Chi-square and Fisher's exact probability test with the statistical significance set at $p < 0.05$.
Results: A total of 100 patients were studied, 6% had both malignancies and HIV sero-positivity, 94% had only malignancies without HIV infection (age range: 7months-80years). Females made up 59%, with a male: female ratio 1:1.4. The common clinical features were weight loss (62.0%), glandular body swellings (28.0%) and prolonged fever (25.0%). Persistent fever >1month, weight loss >10% body weight and unexplained diarrhoea >1month were present in 66.7%, 83.3% and 16.7% HIV sero-positive patients, respectively, and in 22.3%, 60.6%, and 5.3% HIV sero-negative patients, respectively. There was a significant statistical relationship between HIV infection, fever ($p=0.03$) and oral lesions ($p=0.001$). Weight loss was more common in HIV sero-positive patients (83.3%).
Conclusion: The prevalence of HIV associated malignancies is 6% in this environment. Although weight loss is a known feature of both HIV infection and malignancies, it was more common in patients with both malignancies and HIV infection than those without HIV infection.
Keywords: *Cancer, co-existence*, fever, *infection, weight loss*

INTRODUCTION

The relationship between human immunodeficiency virus (HIV) infection and development of malignancies has been attributed to the profound immunosuppression caused by the virus.[1,2] Nigeria is one of the countries that are heavily burdened by HIV/AIDS which is the most common cause of death, apart from malaria, in tropical and sub-tropical countries. Unfortunately, sub-Saharan Africa with about 10% of the world's population harbors about 70% of people infected with HIV.[3] In Nigeria, the first case of AIDS was reported in 1986, and despite attempts at controlling the

disease, the National prevalence has steadily risen to 5.8%.[4,5]

During the HIV pandemic, there has been an increased prevalence of certain cancers, particularly the HIV-associated malignancies, namely, non-Hodgkin's lymphomas (NHL), cervical carcinoma and Kaposi's sarcoma. Apart from these three malignancies, certain other cancers have been seen in the HIV-setting in Africa.[6-8] Despite the advent of highly active anti-retroviral therapy (HAART), malignancy in association with HIV together contribute to significant morbidity and mortality. Also, though there is a recent decline in the incidence of AIDS-defining malignancies, that of invasive cervical carcinoma has not significantly changed in the HAART era.[9] AIDS-associated malignancies are reported to be driven by oncogenic viruses such as Epstein-Barr virus and human herpes virus 8.[10]

This study was carried out to provide information on the clinical features and HIV/AIDS prevalence among patients with malignancies in South-West Nigeria.

METHODOLOGY

Sampling technique: It was a prospective study of patients who were attending the Oncology Clinics of the UCH Ibadan. All the first 100 patients with malignancies seen by the research scientist during the period of the study were included in the study.

Sample size determination: The minimum size determined by calculation was actually 84 (see below). However, to increase the statistical strength of the data, 100 patients were used. The minimum sample size required for this study was 84, the number determined from the following formula for prevalence studies:

$$\text{Minimum sample size (n)} = \frac{Z^2 (P) (q)}{d^2}$$

where Z = area under the curve = 1.96

P = 5.8% (zero-prevalence of HIV at the time of the study)

q = 1-P

d = standard error margin = 0.05

Therefore, $n = \frac{1.96^2 (0.058 \times 0.942)}{0.05^2}$

= 84.

One hundred patients with malignancies managed at the University College Hospital (UCH) Ibadan, Nigeria over a 9-month period (October 2001 - June 2002) were prospectively studied. The hospital serves all the States in South-West Zone of Nigeria and receives referrals from all over the country and West African sub-region. This study was approved by the Ethical Committee of the hospital, and informed oral consent was obtained from all the subjects.

The clinical features and HIV sero-status of 100 patients with various malignancies were analyzed. These include the age, gender, clinical symptoms and signs at diagnosis. The various malignancies were diagnosed based on typical clinical features, standard cytomorphological and histological findings including type-specific diagnostic criteria. Blood specimens were screened for antibody to HIV infection using ELISA method and confirmed by Western blot technique.

Statistical Analysis: Data was analyzed using Epi info software package. Test of significance was done using the Chi-square and Fisher's exact probability test with the statistical significance set at $p<0.05$. Mean and standard deviation were determined for quantitative data and frequency determined for categorical values.

RESULTS

A total of 100 patients with malignancies that were managed at the University College Hospital, Ibadan, Nigeria were recruited into the study. This comprised of 49(49%) haematological and 51(51%) non-haematological malignancies (Table 1).

Table 1. The frequency distribution of malignancies most commonly seen during the study

Type of Malignancy (N)	No.	%
Haematological (N=49)		
Non-hodgkin's lymphoma	20	20
Chronic lymphocytic leukaemia	10	10
Multiple myeloma	5	5
Hodgkin's lymphoma	4	4
Chronic myelogenous leukaemia	4	4
Acute myeloblastic leukaemia	4	4
Acute lymphoblastic leukaemia	2	2
Total	**49**	**49**
Non-haematological (N=51)		
Carcinoma of breast	19	19
Carcinoma of cervix	11	11
Wilms tumor	2	2
Osteosarcoma	2	2
Ovarian carcinoma	2	2
Carcinoma of vulva	2	2
Carcinoma of larynx	2	2
Carcinoma of nasopharynx	2	2
Rhabdomyosarcoma	2	2
Basal cell carcinoma	2	2
Neuroblastoma	2	2
Pleomorphic sarcoma of mediastinum	2	2
Kaposi's sarcoma	1	1
Total	**51**	**51**

Amongst the malignancies, non-Hodgkin's lymphoma (NHL) and carcinoma of the breast were the most frequent, with prevalence of 20% and 19%, respectively. Although there were more females (59%) than males (41%) with a male-to-female ratio of 1:1.4, there was no significant statistical relationship between sex and malignancies. The overall median age was 46years (range: 7months-80years); the most frequent age group was 20-49years with 33 patients (33%) being ≤50years of age. The prevalence of malignancy was found to be low after the age of 70years; the age distribution of the cancer patients is shown in Table 2.

Table 2. The prevalence, sex and age distribution of malignancies

Biologic features	HIV-positive	HIV-negative
Prevalence (%)	6	94
Sex (M:F)	3:3	38:56
Age (years)	**No (%)**	No (%)
0-9	0 (0)	9 (9.6)
10-19	0 (0)	13 (13.8)
20-29	1 (16.7)	3 (3.2)
30-39	5 (83.3)	9 (9.6)
40-49	0 (0)	15 (16.0)
50-59	0 (0)	21 (22.3)
60-69	0 (0)	19 (20.2)
>70	0 (0)	5 (5.3)

The 6 patients with malignancies and also HIV sero-positive included, 3 males (50%) and 3 females (50%). This consisted of 2 patients (33.3%) with NHL and one patient (16.7%) each with carcinoma of breast, carcinoma of cervix, Kaposi's sarcoma and Hodgkin's lymphoma, respectively. The age range for HIV infection co-existing with malignancy was 29-35years, with a mean age of 33.2±2.4years.

Table 3. The main clinical features related to HIV infection in all the 100 patients with malignancies (whether sero-positive or sero-negative)

Clinical features		HIV Pos	HIV neg.	χ^2	P value
Prolonged fever	Yes	4 (66.7%)	21 (22.3%)	3.78	0.03*
	No	2 (33.3%)	73 (77.7%)		
Weight loss	Yes	5 (83.3%)	57 (60.6%)	0.46	0.26
	No	1 (16.7%)	37 (39.4%)		
Diarrhoea	Yes	1 (16.7%)	5 (5.3%)	0.06	0.32
	No	5 (83.3%)	89 (94.7%)		
Skin infections	Yes	2 (33.3%)	5 (5.3%)	3.18	0.055
	No	4 (66.7%)	89 (94.7%)		
Oral Lesions	Yes	2 (33.3%)	2 (2.1%)	7.33	0.01*
	No	4 (66.7%)	92 (97.9)		
Pulmonary tuberculosis within the past year	Yes	1 (16.7%)	6 (6.4%)	0.02	0.36
	No	5 (83.3%)	88 (93.6%)		
Glandular body swellings	Yes	2 (33.3%)	26 (27.7%)	0.03	0.54
	No	4 (66.7%)	68 (72.3%)		

* *Statistically significant*

Table 3 shows the main presenting clinical features related to HIV infection in all the 100 patients with malignancies (whether sero-positive or sero-negative). The most common clinical features among all the patients were weight loss (62%), glandular body swelling

(28%) and prolonged fever (25%). Constitutional disease/HIV wasting syndrome of persistent fever >1month, weight loss >10% body weight and unexplained diarrhoea >1month were present in 4(66.7%), 5(83.3%) and 1(16.7%) HIV-seropositive patients, and in 21(22.3%), 57(60.6%) and 5(5.3%) HIV-seronegative patients, respectively.

There was a significant statistical relationship between HIV infection and fever in all the patients with both malignancies and HIV infection (*p=0.03*). Weight loss was more common in patients with both malignancies and HIV infection (83.3%) but was not statistically significant compared with patients with malignancies who had no HIV infection (60.6%) (*p>0.05*).

Secondary infectious diseases such as oral candidiasis (*n=4*), pulmonary mycobacterium infections (*n=7*), multi-dermatomal herpes zoster (*n=2*) and other skin lesions (*n=5*) were the other presenting features found, according to the 1993 CDC Revised Classification Staging System for HIV infection.[11] The skin lesions included rashes, nodular swellings, ulcerations and itching seen in two of the HIV seropositive patients. All these lesions were more common in the HIV positive patients but was only statistically significant for oral lesions (*p=0.01*).

DISCUSSION

There is very little available data on the prevalence and clinical features of patients with malignancies co-existing with HIV infection in Nigeria and the sub-Saharan Africa in general.[7] The relationship between HIV infection and the development of malignancies has been attributed to the profound immunosuppression caused by HIV.[1,2] The risk of developing a malignancy, particularly a lymphoma, is higher in subjects with primary and secondary immunodeficiencies.[1]

In patients with both malignancies and HIV infection in our study, we were unable to determine whether it was the HIV infection that pre-dated the malignancy or the malignancy that predated the HIV infection, as both diagnoses were made together in the course of investigating the patients at presentation.

In this study, patients were aged between 7months and 80years, with a median of 46years. Five of the sero-positive patients in this study were in their fourth decade of life. This is in contrast to an earlier report where people mostly affected were in their third decades of life.[12]

The sero-prevalence of HIV in patients with malignancies in this study was 6%. There appears to be no significant relationship between malignancies and HIV infection in this environment as the overall National sero-prevalence rate of HIV in Nigeria at the time of this study was 5.8%.[5,13] This contradicts the findings of Levine in USA where a sero-prevalence rate of HIV infection was 40% in patients with malignancies. Our report however supports the findings of other studies where no significant relationship was found between malignancies and HIV infection.[14,15,16,17]

The most frequent malignancy associated with HIV infection in this study was NHL (20%). This finding is similar to that found in a study in Zimbabwe where 22.4% of the cases were NHL.[6] The increased prevalence of NHL and its association with the HIV virus is reported extensively in the literature.[6,11,15,18] In this study there was however no significant association with the HIV virus. The lack of association between NHL and HIV virus has been observed by other researchers.[11,19] Another study reported that the relative risk of NHL in AIDS patients in Africa is lower compared with that in the United States.[15]

The other AIDS-defining malignancies, Kaposi's sarcoma (KS) and cancer of the cervix were also found in the study. The only patient with KS was a male. This supports earlier reports that KS is more common in males than females.[6,20] In a study in Zimbabwe where 12 patients with KS were seen, there were 10 males and 2 females.[6] In an 8-year study in Ibadan between 1960 and 1968, 29 cases of KS were seen and all of them were males.[20] It has been suggested that the male preponderance may be associated with occupational disease and those other diseases which might unexpectedly involve occupational exposure. The areas of lesions might be areas of exposure which are often subject to various trauma or diseases caused by physical agents and environmental factors, such as areas below the elbows and knees.

Fever was significantly more common in patients with HIV infection and malignancies compared to patients with malignancies but negative for HIV. Although weight loss was more common in patients with both malignancies and HIV infection than in the patients with malignancies who were sero-negative, no statistically significant relationship was established, since malignancies alone can also produce significant weight loss. Diarrhoea in this study was not significantly related to HIV infection ($p > 0.05$). These findings show that although chronic diarrhoea and weight loss are major clinical findings in HIV/AIDS, other conditions can also produce these clinical disorders. Nonetheless, the small number of HIV associated malignancies in this study implies that further and larger, preferably multi-centre, studies would be necessary for a more reliable interpretation.

CONCLUSION

There was a low incidence of HIV/AIDS amongst the patients with malignancies. But, a significant relationship was noted between HIV infection and fever in the patients with malignancies and co-existing HIV infection, and although weight loss was present in all the patients with malignancies studied, it was more common in patients with both malignancies and HIV infection. Larger, multi-center studies should be carried out to assess the overall clinical profile and HIV/AIDS prevalence among patients with malignancies in Nigeria.

REFERENCES

1. Evans JA, Gibb DM, Holland FJ, Tookey PA, Pritchard J, Ades AE. Malignancies in UK children with HIV infection acquired from mother to child transmission. *Archives of Disease in Childhood* 1997; 76:330-333.
2. Ioachim HL. The opportunistic tumors of immune deficiency. *Adv Cancer Res* 1990; 54:301-317.
3. UNAIDS Joint United Programme on HIV/AIDS. AIDS Epidemic Update 1999.
4. Rukujei AD. Epidemiology of HIV/AIDS in Nigeria. *Niger J Med* 1998; 7:8-10.
5. Federal Ministry of Health 2001 HIV/Syphilis Sentinel Seroprevalence Survey in Nigeria. Technical report AIDS/STD Control Programme. Federal Ministry of Health, Abuja 2001.
6. Chitsike I, Siziya S. Seroprevalence of Human Immunodeficiency Virus type-1 infection in childhood malignancy in Zimbabwe. *Centr Afr J Med* 1998; 44(10):242-245.
7. Shokunbi WA, Okpala IE, Shokunbi MT, Akinboye OO, Saliu I, Essien EM. Multiple myeloma co-existing with HIV-1 infection in a 65-year old Nigerian man. *AIDS* 1991; 5:115-116.
8. Ola SO, Famuyiwa OO, Jaiyesimi AEA, Adelowo OO, Odusan O, Ogun SA. The occurrence of antibodies to HIV among hospitalized Nigerian patients- Sagamu experience. *Niger Med* J 1998; 34(1):17-19.
9. Gates AE, Kaplan LD. AIDS malignancies in the era of highly active antiretroviral therapy. *Oncology* 2002; 16(4):441-459.
10. Launay O, Guillevin L. Epidemiology of HIV-associated malignancies. *Bull Cancer* 2003; 90(5):387-392.
11. Centers for Disease Control 1993 Revised Classification system for HIV infection and Expanded Surveillance Case Definition for AIDS among Adolescents and Adults. MMWR 1992; 41:1-13.

12. Akinsete I, Akanmu AS, Okany CC. Spectrum of clinical diseases in HIV- infected adults at the Lagos University Teaching Hospital: a five-year experience (`1992 - 1996). *Afr J Med Sci* 1998; 28:147-151.
13. Levine AM. AIDS-related malignancies: the emerging epidemic. *J Nat Cancer Inst* 1993; 85(17):1382-1397.
14. Thomas JO. Acquired Immunodeficiency Syndrome Associated Cancers in Sub-Saharan Africa. *Semin Oncol* 2001; 28:198-206.
15. Mboup S, Gershy-Domet G. HIVs and AIDS in West Africa. In: Esssex M, Mboup S, Kanki PJ, Kalengayi MR. (eds). AIDS in Africa. New York, Raven Press, 1994:613-649.
16. Ocheni S, Aken'Ova YA. Association between HIV/AIDS and malignancies in a Nigerian tertiary institution. *West Afr J Med* 2004; 23:151-155.
17. Elumelu TN, Campbell BD, Kotila TR. Kaposi's sarcoma and HIV infection. Abstract A12. *In:* Haematological malignancies - the unique challenges in Africa. 28th Annual Scientific Meeting and Workshop on diagnosis of Haematological Malignancies. Nigerian Society of Haematology and Blood Transfusion, Ibadan 2000.
18. Ziegla JL, Beckstead JA, Volberding PA, *et al*. Non-Hodgkin's lymphoma in 90 homosexual men: Relation to generalized lymphadenopathy and the acquired immunodeficiency syndrome. *N Eng J Med* 1984; 11:565-570.
19. Cardi PM, Boutron MC, Maynadie M, Bailly F, Caillot D, Petrella T. Increase in the incidence of non - Hodgkin's lymphoma: evidence for a recent sharp increase in France independent of AIDS. *Br J Cancer* 1994; 70:713-715.
20. Oluwasanmi JO, Osunkoya BO. Kaposi's sarcoma in Ibadan. *West Afr Med J* 1969; 89-94.