Association between HIV/AIDS and malignancies in a Nigerian tertiary institution

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Summary

Background: **Following the outbreak of the Human Immunodeficiency Virus (HIV) infection in 1981, there has been a widespread increase in the incidence of many malignancies including non – Hodgkin's lymphoma, cervical carcinoma and Kaposi's sarcoma. The scarcity of reports linking HIV infection with malignancies in Nigeria necessitated this study.**

We prospectively screened one hundred patients with various forms of malignancies seen at the University College Hospital Ibadan, Nigeria between October 2001 and June 2002 for HIV infection by the Enzyme Linked Immunosorbent Assay (ELISA) method and confirmed with the Western Blot method.

Results: **Six of the patients were found to be seropositive for HIV antibodies. There were 41 males (41%) and 59 females (59%) with age ranging from 7 months to 80 years and a median of 46 years. The HIV seropositive patients were between 29 and 35 years of age. Two patients with non – Hodgkin's lymphoma (NHL) and one patient each with carcinoma of the cervix, Kaposi's sarcoma. Hodgkin's lymphoma and carcinoma of the breast were HIV seropositive. All the p values were greater than 0.05.**

Conclusion: **The seroprevalence of HIV infection in patients with malignancies in this study was 6%. Despite the HIV/AIDS epidemic, there is yet no significant statistical relationship between HIV infection and malignancies in this environment. Larger, preferably multicenter studies need to be carried out to ascertain the relationship between HIV infection and malignancies in Nigeria.**

Key words: ***Seroprevalence, Human Immunodeficiency Virus (HIV), Association, Malignancies, Nigeria.***

Résumé

Introduction: A la suite de nombreux cas de l'infection du virus immunodeficitaire human (VIH) en 1981, il y a eu une augmentation, un accroissement important en matière de l'incidence de beaucoup de virulences y compris lymphome non-Hodgkin, carcinome cervical et sarcome de kaposi, Faute de rapports enchainement l'infection de VIH avec des virulences au Nigeria a provoqué cette étude.

Nous avons en perspective fait un test de dépistage de cent patients atteints des virulences diverses vues au Colleége Hospitalier Universitaire d'Ibadan Nigeria entre Octobre 2001 et juin 2002 pour l'infection de VIH à travers la méthode Enzyme Linke Immunosorbent Assay (ELISA) et confirmée avec la méthode Western Blot (Blot occidental).

Résultat: On avait noté que six parmi les patients étaient sépositifs pour anti corps de VIH. Il y a 41 patients du sexe masculin (41%) et 59 du sexe féminin (59%) avec une tranche d'âge de 7 mois à 80 ans et un médian de 46 ans. Les patients avec séropositifs VIH étaient âges entre 29 et 35 ans. Deux patients atteints du lymphome non-Hodgkin (NHL) et un patient atteint du carcinome du col, sarcome de Kaposi chacun. Lymphome de Hodgkin et carcinome du sein étaient séropositif VIH. Toutes les valeurs P étaient séropositif VIH. Toutes les valeurs P étaient plus élevées de 0,05.

Conclusion: La séroprevalence de l'infection du VIH chez des patients atteints de virulences dans cette étude était 6%. En depit d'épidémie de VIH/SIDA, Il n. y a pas encore aucun rapports statistique important entre l'infection VIH et des virulences dans ce milieu. C'est nécesaire d'effectuer des études plus approfondies de préférence multicentre-afin de confirmer le rapport entre l'infection VIH et des virulences au Nigeria.

Introduction

The Human Immunodeficiency Virus (HIV) is the aetiologic agent of the Acquired Immunodeficiency Syndrome (AIDS) [1,2,3]. It was previously described by various authors as the lymphadenopathy-associated virus (LAV)[4], human T-cell lymphotropic virus type III (HTLV-III)[5,6] and AIDS-related virus (ARV)[7].

Since the first report in 1981[8] by the Morbidity and Mortality Weekly Report (MMWR) of the Center for Disease Control (CDC), this disease entity has spread worldwide affecting every region, race, age and sex. Unfortunately, the sub-Saharan Africa, with about 10% of the world population, harbours 70% of the people infected with HIV[9]. In Nigeria, the first case of AIDS occurred in 1986[10] but despite attempts at controlling the disease, the National prevalence has risen to the current rate of 5.8%[11].

This study was carried out to provide information on the seroprevalence of HIV in patients with malignancies in this environment. It was approved by the UI/UCH Ethical Committee.

Patients and methods

One hundred patients diagnosed with malignancies at the University College Hospital (UCH), Ibadan were

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Table 1 Frequency distribution of malignancies by HIV serostatus

Type of Malignancy	Total No of patients	Number HIV Pos	Number HIV Neg	X^2	P
NHL	20	2 (10.0)	18 (90.0)	0.10	0.75
Ca breast	19	1 (5.3)	18 (94.7)	0.69	0.68
Ca cervix	11	1 (9.1)	10 (90.9)	0.82	0.51
Hodgkin's lymphoma	4	1 (25.0)	3(75.0)	0.57	0.22
Kaposi's sarcoma	1	1 (100.0)	0 (0.0)	0.063	0.06
Others	45	0 (0.0)	45 (100.0)	-	-
Total	100	6 (6.0)	94 (94.0)	-	-

recruited into the study between October 2001 and June 2002. Informed consent was obtained from the patients or their parents. These patients were all screened for Human Immunodeficiency Virus (HIV) infection by the Enzyme Linked Immunosorbent Assay (ELISA) method. Confirmation of HIV infection was done using the Western Blot technique.

Statistical analysis

Statistical analysis was done using the Chi-square and Fisher's exact probability test with the statistical significance set at $P < 0.05$.

Result

There were 41 males (41%) and 59 females (59%). Although, there were more females than males, there was no significant statistical relationship between sex and malignancies. The age of the patients ranged from 7 months to 80 years, with a median of 46 years. Most of the patients (33%) were between 20 and 49 years old.

Six (6%) of the 100 patients were seropositive for antibodies to HIV, putting the seroprevalence of HIV in patients with malignancies at the time of this study at the University College Hospital, Ibadan at 6% (Table I). All the children in this study were seronegative. Three of the seropositive patients were males while three were females. Of the 6 patients who were seropositive for HIV, 4 (66.7%) had persistent fever while 2 (33.3%) did not have fever. Whereas out of the 94 patients who had negative HIV serostatus, only 21 (22.3%) had fever while 73 (77.7%) had no fever. There was a significant statistical relationship between HIV infection and fever (fishers exact probability $P = 0.03$). Weight loss was more common in the HIV infected patients. Oral lesions such as rashes and ulceration were seen in 33.3% of the HIV seropositive patients but were only seen in 2.1% of the seronegative patients ($P>0.05$). Skin lesions such as rashes, nodular swellings, ulcerations and itching were seen in two of the HIV seropositive patients.

Table 2 Frequency distribution of malignancies most commonly seen

Type of Malignancy	Frequency	%
NHL	20	20.0
Ca breast	19	19.0
Ca cervix	11	11.0
CLL	10	10.0
Multiple myeloma	5	5.0
Hodgkin's lymphoma	4	4.0
CML	4	4.0
AML	4	4.0
Others	33	33.0
Total	100	100

Malignancies

The four most common diagnosis which altogether accounted for 60% of all the cases were Non-Hodgkin's Lymphoma, NHL (20%), carcinoma of the breast (19%), carcinoma of the cervix (11%) and chronic lymphocytic Leukaemia, CLL (10%) (Table II). In all, 20 (20%) cases of NHL were seen. The median age was 32 with a range of 5-75 years. There were 7 males and 13 females. Two of the patients with NHL were seropositive for HIV while the remaining 18 were seronegative, giving a P value of 0.752 which did not reach statistical significance. Eleven (11%) of the patients had carcinoma of the cervix. Only one patient was seropositive for HIV.

Nineteen patients had carcinoma of the breast. One was a male and 18 were females. The patient with carcinoma of the breast who was seropositive for HIV was a female giving a p value of 0.0004. Thus, there is a statistically significant relationship between carcinoma of the breast and sex. There is a greater chance for a female to have carcinoma of the breast than a male.

There were 10 patients with CLL. Six were males while 4

were females. Their age range was 42-80 with a median of 63.5 years. All the patients were seronegative for HIV. There were 4 patients with Hodgkin's lymphoma, 2 males and 2 females. The age range was 10-33 years. One of the patients was seropositive for HIV. The other malignancies included Acute lymphoblastic leukaemia, Wilm's tumor, Kaposi's sarcoma, osteosarcoma, ovarian carcinoma, carcinomas of the vulva, larynx, nasopharynx, rhabdomyosarcoma, basal cell carcinoma, neuroblastoma, chronic myelocytic leukaemia and pleomorphic sarcoma of the mediastinum. The only patient with Kaposi's sarcoma, aged 35 years who was a male was seropositive for HIV. Table 2 shows the frequency distribution of malignancies by HIV serostatus. Two patients with NHL and one patient each with carcinoma of the breast, carcinoma of the cervix, Kaposi's sarcoma and Hodgkin's lymphoma were HIV seropositive. All the cases of Burkitt's lymphoma were seronegative. Although there was a slight evidence suggesting that Kaposi's sarcoma was associated with HIV serostatus ($p = 0.06$), it was not statistically significant.

Discussion

HIV produces a slow but progressive and lethal immune suppression which can lead to opportunistic infections, neurologic disorders and malignancies [12,13,14,15]. This results from the progressive depletion of the body's cells bearing the CD4 molecule particularly the helper/inducer subsets of T-lymphocytes, monocytes and macrophages[2].

The association between HIV infection and malignancies is now well described [15,16,17]. It has been estimated that cancer complicates the lives of more than 40% of all patients with human immunodeficiency virus (HIV) infections serving both as an immediate cause of death and as a source of great morbidity[18]. The first recognized AIDS-related malignancy was aggressive or epidemic Kaposi's sarcoma[19]. A number of other cancers have now been reported to be associated with HIV infection. As a result of their close association with HIV infection, three malignancies i.e Kaposi's sarcoma, intermediate or high grade B cell lymphoma and cervical carcinoma have now been considered to be acquired immune deficiency syndrome-defining conditions[18].

While Kaposi's sarcoma has been associated with AIDS since the onset of the epidemic in 1981[13], intermediate or high grade B-cell lymphoma became AIDS-defining in 1985[20] and cervical carcinoma became AIDS-defining with effect from January 1, 1993[21]. In recent years however there have been reports indicating that the profile of cancers have been affected by the HIV epidemic [18,22], and in fact, some patients, who previously had no risk factors for HIV infection have been found to be HIV seropositive after being diagnosed with a malignant condition [23,24]. For instance, about 3 to 10% of AIDS patients present with lymphoma[25]. However, the full neoplastic manifestations of HIV infection remain unclear, encompassing not only the above named three but others which are presently non-AIDS defining[26] such as Hodgkin's disease, malignant melanoma, multiple myeloma, plasmacytoma, germ cell tumours, squamous cell carcinoma of the anus, head and neck.

The presence of HIV infection in patients with malignancy presents additional challenges to the management of these patients. Standard chemotherapy for cancer which is intensive may not be appropriate in the HIV setting as these patients often have decreased immune status with high risk of infectious complications[23]. The myelosuppressive effects of the cytotoxic drugs in themselves cause further immune suppression thereby increasing the level of complications. In addition, the direct myelosuppressive effects of the HIV makes it difficult for the patients to be able to receive the full standard doses of the chemotherapeutic agents. Reducing the dose of the drugs implies that one may not get the desired cytoreduction of the tumour. Because of these challenges, it is rational to know the HIV status of patients with cancers before commencing chemotherapy.

While there have been previous studies to determine the association between malignancies and HIV infection in other countries [23], there has been only few studies in the Nigerian populace. The relationship between HIV infection and Kaposi's sarcoma has not yet been properly documented in Nigeria. In a particular study of patients with Kaposi's sarcoma, none of them was found to be seropositive for HIV[27]. In another study in which 13% of the patients with Kaposi's sarcoma were seropositive for HIV, the authors did not find any relationship between Kaposi's sarcoma and HIV infection[28]. Data from the Ibadan Cancer Registry does not indicate any significant increase in the frequency rate of Kaposi's sarcoma[25], although another Nigerian report indicated a rising frequency of Kaposi's sarcoma [29]. Although there has been a rising trend of AIDS-associated non-Hodgkin's lymphomas worldwide, there is an apparently lower risk in Africa compared with that in the developed world[25].

In this study the seroprevalence of HIV infection in patients with malignancies is six percent. Among the 6 seropositive patients, the youngest age was 29 years while the oldest was 35 years with a mean age of 33.17 years. There was a significant statistical relationship between HIV infection and multiple sexual partners ($P = 0.04$). A report from Lagos[30] Nigeria, also supports the finding that HIV infection is associated with multiple sexual partners. There appears to be no significant relationship between malignancies and HIV infection in this environment as the overall National seroprevalence rate of HIV in Nigeria is 5.8% [11]. This report is different from the findings of Levine AM [18] in USA where a seroprevalence rate of HIV infection was 40% in patients with malignancies. This report however supports the findings of other studies[25,27,28] where no significant relationship was found between malignancies and HIV infection.

In this study HIV infection occurred in patients with non-Hodgkin's lymphoma, carcinoma of the cervix, Kaposis sarcoma, carcinoma of the breast and Hodgkin's lym-

phoma, with p values of 0.75, 0.51, 0.06, and 0.22 respectively indicating that there is no significant statistical relationship between HIV infection and any of these malignancies. In the few other studies which have been carried out in Nigeria so far, no significant statistical relationship has been documented between HIV infection and malignancies[25,27,28] unlike the various reports[13,15,16,17,18,22,26] in the developed world which have done so. Although there has been a rising trend of AIDS-associated non-Hodgkin's lymphomas worldwide[15,17,18,22], there is an apparently lower incidence in this environment[25].

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