

# AIDS-associated Kaposi's sarcoma in Northeastern Nigeria

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## ABSTRACT

**Introduction:** Kaposi's sarcoma is an acquired immunodeficiency syndrome (AIDS)-defining illness, and with the size of the human immunodeficiency virus (HIV)/AIDS pandemic in sub-Saharan Africa, AIDS-related Kaposi's sarcoma (KS) are now being diagnosed more frequently, although the true incidence of HIV-associated KS is not known. The clinical presentations of AIDS-related KS varied markedly across the African continent. This article reports a series of unusual clinical presentations of the tumour in Northeastern Nigeria.

**Methods:** This is a prospective study carried out from September 2003 to August 2005, at the University of Maiduguri Teaching Hospital, Borno State, Northeastern Nigeria.

**Results:** 20 cases of histologically-confirmed KS were prospectively studied. There were 17 (85 percent) men and three (15 percent) women, giving a male to female ratio of 5.7:1. Their ages ranged from 21-45 (median 37) years. 18 (90 percent) of the patients were anaemic. Mean haematocrit value, CD4+ cell count and duration of symptoms for all the patients were 29.5 +/- 7.5 percent, 119.0 +/- 91.4 cells per microlitre and 3.5 +/- 1.7 months, respectively. Multiple lesions were a common presentation affecting sites such as lower limbs, trunk, conjunctiva, upper limbs and rectum as well as penis, lymph node, scrotum and oropharynx.

**Conclusion:** Contrary to other reports that KS is not associated with HIV infection, our study has demonstrated otherwise. This study also showed that both sexes are affected but with a male preponderance. KS is also a late presentation of the HIV/AIDS disease spectrum in our environment and has varied clinical manifestations. There is an urgent need to develop health education programmes

to enhance the understanding of this disease and how it spreads, particularly among the young generation.

**Keywords:** acquired immunodeficiency syndrome, human immunodeficiency virus, Kaposi's sarcoma

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## INTRODUCTION

Kaposi's sarcoma (KS) is a malignant neoplasm of the vascular endothelium that is multifocal in origin. It was first described in 1872 by Moritz Kohn, a Hungarian dermatologist who later dropped the name Kohn and adopted the name Kaposi after his birthplace, Kaposivar on the Kapos River. Before the acquired immunodeficiency syndrome (AIDS) epidemic, three clinical forms of KS lesions with identical histological features were recognised: the classical KS described by Kaposi, seen in elderly men and women of Mediterranean and Eastern European origin; the African-endemic KS; and KS seen in post-transplant patients as a result of immunosuppression complicating organ transplantation.

The first case of epidemic or AIDS-associated KS was reported in 1981<sup>(1)</sup>. The precise incidence of epidemic or AIDS-associated KS and the clinical presentations vary markedly across the African continent. In Uganda and eastern Congo, KS is as common as colon cancer is in Europe and the USA, representing up to 9% of all cancers in men<sup>(2,3)</sup>. Globally, the highest incidence is recorded in tropical Africa, with a narrow belt stretching westward across the Congo to the coast of Cameroon and southward down the Rift Valley into Malawi and parts of South Africa<sup>(2,4-7)</sup>. KS is an AIDS-defining illness. In association with the problem of the HIV/AIDS pandemic in sub-Saharan Africa<sup>(8-11)</sup>, many HIV positive individuals, including children, are now developing the tumour.

The prevalence of HIV/AIDS in Nigeria is estimated to be 5.8%. It is projected that by the year

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2015, 8.4 million Nigerians will be infected<sup>(12)</sup>. Until recently, most health centres in Nigerian hospitals do not have functional cancer registration units for the proper documentation of the exact incidence of this AIDS-associated KS. There are few reported cases of AIDS-associated KS in Nigeria. The current upsurge in the seroprevalence of HIV-infection and the human herpes virus type-8 (HHV-8) in most of these African countries may have contributed to the increased prevalence of this sarcoma among our HIV/AIDS patients<sup>(2)</sup>. Earlier reports also suggested that HIV-associated KS is more prevalent in males than it is in females and it usually occurs as a late manifestation of HIV/AIDS<sup>(2,6-8)</sup>. We report a series of unusual presentations of epidemic or AIDS-associated KS seen at the University of Maiduguri Teaching Hospital, Borno State of Nigeria, between September 2003 and August 2005.

## METHODS

This is a prospective study carried out at the University of Maiduguri Teaching Hospital. The hospital is a 530-bed facility located in the Northeastern part of the country, which shares borders with Cameroon, Niger and Chad. The hospital caters not only to patients within the Northeast sub-region which comprises six states, but also receives patients from the neighbouring countries. Consent was duly obtained from all prospective subjects after proper counselling and before collection of blood sample, tissue specimen and taking pictures of the easily accessible lesions. The third generation rapid immunochromatographic test kit, SD BIOLINE HIV1/2 3.0 (Standard Diagnostic Inc, Kyonoggi-do, South Korea) and Immunocomb<sup>®</sup> II HIV-1 & HIV-2 Combifirm (M/S Organics Ltd, Israel) were used for the HIV screening and confirmation tests, respectively, in half (ten) of the patients. The double ELISA, using Capillus HIV-1/HIV-2 Latex agglutination test device (Trinity Biotech, Jamestown, NY, USA) and SD BIOLINE HIV-1/HIV-2 3.0 (Standard Diagnostic Inc, Kyonoggi-do, South Korea) were used in the other half (ten) of the patients. The screening tests were carried out following the instruction manual provided by the manufacturers.

CD4+ cell count was carried out using the Dynabeads method (DynaL Biotech LLC, Milwaukee, WI, USA) utilising monosized, superparamagnetic polymer beads containing a sealed iron oxide core coated with monoclonal antibodies to provide a highly specific solid phase to isolate CD4+ and CD8+ lymphocyte directly from blood. Haematocrit was estimated for

all the patients using the micro-haematocrit method. Female and male patients, with haematocrit value of less than 36% and less than 40%, respectively, were classified as anaemic<sup>(13)</sup>. Diagnosis of KS was based primarily on microscopical examination of tissue specimens fixed in 10% formal saline embedded in paraffin wax and stained with haematoxylin and eosin. Verhoeff-Van Gieson and Orcein stains were employed in three of the patients to demonstrate elastic fibres in the blood vessels.

Relevant information was obtained from individual patients' case notes. The Statistical Package for Social Sciences software version 11.0 (Chicago, IL, USA) was used for all statistical analysis.

## RESULTS

20 cases of histologically-confirmed KS were prospectively studied. There were 17 (85%) men and three (15%) women, giving a male to female ratio of 5.7:1. Their ages ranged from 21-45 (median 37) years. 18 (90%) of the patients were anaemic. Median haematocrit value, CD4+ cell count and duration of symptoms for all the patients were  $29.5 \pm 7.5\%$ ,  $119.0 \pm 91.4$  cells/ $\mu$ L and  $3.5 \pm 1.7$  months, respectively. Only five of our patients had CD4+ cell count <100 cells/ $\mu$ L. Representative cases of the tumour are illustrated in Figs.1-9, while the distribution of tumour sites, occupations and sexual habits of the studied population are shown in Tables I-III.

**Table I. Kaposi's sarcoma and affected sites.**

Site	Male	Female	Total	%
Penis	3	-	3	4.5
Scrotum	3	-	3	4.5
Lymph node	2	-	2	3.0
Lower limb	26	3	29	44.0
Upper limb	6	-	6	9.1
Trunk	6	1	7	10.6
Oropharynx	4	-	4	6.1
Conjunctiva	7	1	8	12.1
Rectum	4	-	4	6.1

**Table II. Occupation of the patients.**

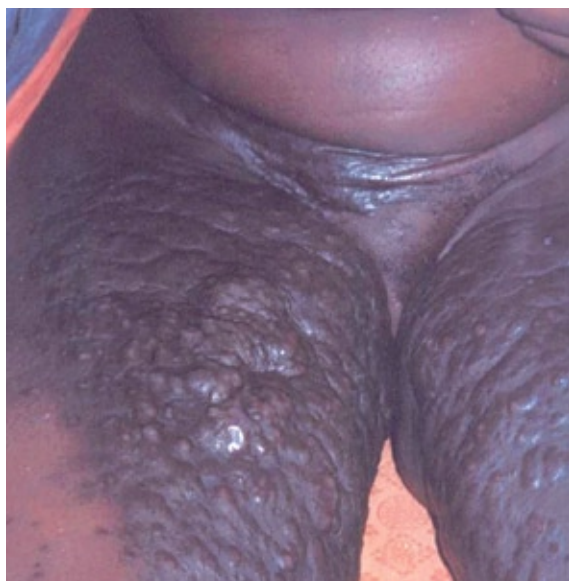
Occupation	Number	%
White collar workers	10	50
Blue collar workers	6	30
Students	4	20
Total	20	100

**Table III. Sexual habits of the patients.**

Type of exposure	Number of patients	%
Vaginal intercourse	17	85
Anal intercourse	1	5
Both anal and vaginal intercourse	2	10
Total	20	100



**Fig. 1** Photograph shows multiple hyperpigmented maculo-papular Kaposi's sarcoma lesions on the thighs, scrotum and the penis. Note the deformed penile shaft (saxoform appearance).



**Fig. 2** Photograph shows maculo-papular and plague-like Kaposi's sarcoma lesions involving both thighs and encroaching into the vulva.



**Fig. 3** Photograph shows crust-like Kaposi's sarcoma lesion on the left palm with destruction of the fingers and nails associated with seborrheic warts.



**Fig. 4** Photograph shows Kaposi's sarcoma presenting with induration of the left inguinal lymph nodes.



**Fig. 5** Photograph shows Kaposi's sarcoma presenting as hyperpigmented maculo-papular lesions on the lower limbs with severe oedema on the right.



**Fig. 6** Photograph shows Kaposi's sarcoma presenting as multiple nodules on the right sole of the foot.



**Fig. 7** Photograph shows painless hyperpigmented papular Kaposi's sarcoma lesions affecting both lower limbs.



**Fig. 8** Photograph shows Kaposi's sarcoma lesions involving the oral cavity.



**Fig. 9** Photograph shows ocular Kaposi's sarcoma lesions involving the right bulbar conjunctiva.

## DISCUSSION

It has been well over 20 years since the first case of epidemic or AIDS-associated KS was reported in Africa. Most African studies could not ascertain whether the epidemiology and risk of AIDS-associated KS are the same as observed in developed countries. Some of the reasons may be that the expertise is lacking and cancer registration units are non-existent. Contrary to the earlier report in Nigeria suggesting that KS is not associated with HIV-infection<sup>(14)</sup>, this study has shown that KS is more often seen in our HIV/AIDS patients. Accumulating evidence indicates that HHV-8 is an important co-factor in the pathogenesis of AIDS-associated KS<sup>(15-18)</sup>. Since infection by HHV-8 is now endemic in most of the African countries<sup>(2,16-18)</sup>, increasing number of cases of AIDS-associated KS are expected to be diagnosed and reported in the near future. Contrary to the earlier Nigerian report that KS is exclusively a disease of men<sup>(19)</sup>, we found AIDS-associated KS to affect both sexes but with a male preponderance.

The median age of 37 years reported in this study is similar to the early Caucasian and Nigerian studies<sup>(1,4,20,21)</sup>. Given the particular risk among young people and the socio economic impact to the country, primary education for HIV prevention should be instituted early before young people become sexually active. This could be incorporated into health education programmes in schools. The Nigerian culture and traditions promote chastity, in that sex education is hardly ever discussed until recently for fear that it will provide room for experimentation. As 50% of the affected patients are white collar workers and 3% are blue collar workers, proper education of the populace is important. This is because there was a general misconception that healthy-looking persons could not be HIV-positive and thus could be considered to be safe casual sex partners. This may in fact be responsible for an insidious spread among youths who engage in indiscriminate casual sexual intercourse with so-called "healthy persons".

AIDS-related KS can affect any area of the skin as well as genital or ocular mucous membranes. The most common site in this series was the lower limb (44%), followed by conjunctiva (12.1%), trunk (10.6%), upper limb (9.1%), oropharynx (6.1%), rectum (6.1%), penis (4.5%), scrotum (4.5%) and lymph nodes (3.0%) (Table I). Multiple site involvement was seen in all the cases. Similar to the classical KS seen in elderly white male Ashkenazi Jews or people of Mediterranean descent, AIDS-associated KS lesions occur more commonly in the lower limbs in our environment. Unlike the classical KS lesions which

are indolent, AIDS-associated KS in this series was seen mostly in sexually-active young men and women, and usually follows an aggressive course. Apigmented lesions can be seen, and a higher degree of suspicion is warranted. Most of the lesions on the lower limb observed in this series are non-tender and do not blanch. A characteristic apigmented tender KS lesion on the sole of the foot was seen in one patient. However, widespread nodules have a tendency to ulcerate, bleed and be secondarily infected.

The pattern of ocular KS of the conjunctiva observed in this series is similar to other reports<sup>(22-24)</sup>. KS of the conjunctiva appears as flat, reddish lesions, most often located in the inferior conjunctiva and fornix, which may be easily mistaken for chronic subconjunctival haemorrhage, foreign body granuloma or cavernous haemangioma. Some of the KS lesions on the conjunctiva may be macular, plaque-like, or nodular. Conjunctival injection and chemosis are some of the presentation seen in our series. Involvement of the eyelids, adnexal structures and ocular surfaces have been reported by others<sup>(22,25)</sup>. The trunk and upper limb are also common sites of affection by KS. Involvement of the palm, fingers and nails presenting as a crust-like lesion complicated by a seborrhoeic warts was seen in one of the reported cases. Oropharyngeal KS can occur anywhere in the oral cavity. The hard palate, gingiva and base of the tongue were the most commonly affected sites in this series. The lesions are tender, bleed easily and are secondarily infected by oral thrush in all the cases seen. The pattern of involvement is similar to earlier reports<sup>(26,27)</sup>.

The rectum, penis and scrotum are also affected by KS lesion in this series. This may be attributable to the high-risk behaviour of homosexuality or bisexuality which is becoming more rampant in our environment. Lymph node involvement by AIDS-associated KS was seen in two adults (a man and a woman). This is contrary to earlier reports that lymph node involvement by KS is exclusively a disease of children<sup>(4)</sup>. As previously reported, anaemia is a common presentation in patients with AIDS-associated KS<sup>(28-30)</sup>. The causes of anaemia in AIDS-associated KS are numerous, and may include viral infections, chronic diseases, abnormal alterations in the level of cytokines, drug therapies, opportunistic infections, and tumours infiltrating the bone marrow. Recent data from the Spectrum of Disease Study indicate that correction of anaemia is associated with prolongation of survival in AIDS<sup>(31)</sup>. Thus efforts should be made to establish the cause of anaemia in AIDS-associated KS and appropriate treatment instituted<sup>(32)</sup>. The pattern of immunosuppression

observed in this study is also in keeping with the fact that AIDS-associated KS is a late manifestation of HIV/AIDS disease in our environment. Deep vein thrombosis was confirmed by Doppler ultrasonography in three of the patients (two women and a man). All the three patients had CD4 cell count of <100 cells/ $\mu$ L. This was similar to reports from the West<sup>(33,34)</sup>.

In conclusion, contrary to other reports that KS is not associated with HIV infection, this study has demonstrated otherwise. This study has also shown that both sexes are affected though there is a male preponderance. KS is also a late presentation of the HIV/AIDS disease spectrum in our environment and has varied clinical manifestations. There is an urgent need to develop health education programmes to enhance the understanding of this disease and how it spreads, particularly among the younger generation.

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