AN AUDIT OF ORAL KAPOSI SARCOMA AT THE UNIVERSITY OF NAIROBI DENTAL HOSPITAL

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BDS LEVEL 3

V28/1965/2010

A Project report submitted in partial fulfillment of the requirements for bachelor’s degree
in dental surgery (BDS), University of Nairobi.

2013
DECLARATION

I Muyirha Racheal Chepkwemoi, declare that this thesis is my own original work and has never been submitted before for any degree or examination at this or any other University.

Signed......................................................................................... Date.................................................................
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UNIVERSITY OF NAIROBI

Signed ................................................................. Date .................................................................
DEDICATION

I dedicate this research to my parents, Joseph muyira and Beatrice Muyira and all the people who supported me during the research.
ACKNOWLEDGEMENTS

I would like to thank Jehovah God, who gave me renewed strength every challenging day, without whom I would not have accomplished this task.

I am grateful to my family for the daily encouragement and full confidence in me all these years.

I also express my utmost gratitude to my two supervisors, Prof Loice Gathece and Dr. Elizabeth Dimba who spent hours reading through, correcting and providing extensive advice throughout the study period.

Lastly I would like to thank the oral pathology laboratory technicians Mr. Josiah Otwoma Gichana and Alice Kan’gogo Limo for their constant support in the laboratory.
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<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>AIDS</td>
<td>Acquired immunodeficiency syndrome</td>
</tr>
<tr>
<td>ART</td>
<td>Antiretroviral Therapy</td>
</tr>
<tr>
<td>BDS</td>
<td>Bachelor of Dental surgery</td>
</tr>
<tr>
<td>HAART</td>
<td>Highly active antiretroviral therapy</td>
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<tr>
<td>HHV 8</td>
<td>Human herpes virus 8</td>
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<tr>
<td>HIV</td>
<td>Human immunodeficiency virus</td>
</tr>
<tr>
<td>KNH</td>
<td>Kenyatta National Hospital</td>
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<tr>
<td>KS</td>
<td>Kaposi sarcoma</td>
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<td>UoN</td>
<td>University of Nairobi</td>
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ABSTRACT

INTRODUCTION

Kaposi Sarcoma (KS) is a malignancy associated with HHV8 that is commonly seen among HIV/AIDS patients. Available data shows 7.8% of Kenyans are currently infected with HIV/AIDS. Kaposi sarcoma is one of the most common malignancies associated with this pandemic. High morbidity and mortality rates have associated with KS. Currently there is scanty of information on the pattern of oral KS in our population hence the need for this research.

OBJECTIVE

To determine the pattern of oral KS among specimens of patients analyzed at the University of Nairobi Oral pathology laboratory between 1992 – 2012.

STUDY AREA

University of Nairobi Dental Hospital, oral pathology laboratory.

STUDY POPULATION

Records of patients diagnosed with oral KS at the School of Dental Sciences (SDS) oral pathology laboratory.

SAMPLING

All specimens presented at the School of Dental Sciences Oral pathology laboratory.

SAMPLE SIZE

A total of 47 records were included in the study

DATA COLLECTION TOOLS

Data collection form

DATA COLLECTION TECHNIQUE
The data collected was analyzed using SPSS version 13.0 and then presented using texts, charts and graphs.

RESULTS

Of the 47 histopathology records that were retrieved, 25 (53.2%) were male and 22 (46.8%) were female. The age range was 3 - 67 years. Mean age for females was less than that of males. The palate was the most common site of occurrence with 28(59.6%) lesions followed by 21(44.7%) gingival lesions and the tongue was affected in 20(42.6%) of cases. The lesions reported were edematous (78.7%), erythematous (70.2%) painful (29.8%) and ulcerated (21.3%). 23.4% of the cases were self reported to be HIV positive.

DISCUSSION

The findings of this study reflected HIV/AIDS epidemiological statistics where majority of the cases occur in age group 20-45 years with females being younger (peak age 25-29 years) than males whose peak age is 30-34 years.

Many of the patients were not aware or didn’t disclose their serostatus probably due to fear of being stigmatized.

The lesions were more common among male patients than female patients. The reason for this could be there are a significant number of males in our population who are not revealing their sexual orientation or some genetic factors have a role.
CONCLUSION

In this study Kaposi sarcoma was more prevalent among males. The most common site of occurrence was the palate, with most of the lesions being erythematous swellings. Few of the patients reported their serostatus to be positive.

RECOMMENDATION

More studies should be carried out to ascertain the exact incidence and prevalence of Kaposi sarcoma in Kenya. There is need to formulate strategies aimed at educating the public on recognition of the clinical features of Kaposi sarcoma and its association with HIV/AIDS to ensure early treatment is sought.
1.0 **INTRODUCTION**

Kaposi sarcoma was originally described by Moritz Kaposi a Hungarian Dermatologist practicing at the University of Vienna in 1872. \(^{(1)}\) Kaposi sarcoma has been described to be a malignant neoplasm of endothelial cells, a multi focal tumor characterized by deregulated angiogenesis, proliferation of spindle cells and extravasations of inflammatory cells and erythrocytes. \(^{(1)}\) It is caused by Human Herpes Virus 8 (Human Kaposi Sarcoma Virus). \(^{(2)}\) Kaposi sarcoma is divided into four subtypes, 1. Classical KS seen most often in middle aged to elderly men of Southern Mediterranean or Eastern Europe origin. 2. African endemic KS – occurs mainly among young people of Sub Saharan Africa. 3. KS in immunocompromised / transplant related and 4. AIDS related KS. \(^{(1)}\) Kaposi sarcoma was initially diagnosed in Europe and Mediterranean countries where it affects more men than women. \(^{(3-5)}\) In Africa a high prevalence of HHV8 has been demonstrated especially in Equatorial Africa. \(^{(6)}\) The proportion of KS has been shown to be 3.84% among malignant tumors examined in Kenya. With the AIDS pandemic where over 40 million people are infected, neoplasm’s like KS are taking a higher toll. \(^{(7, 8)}\)

KS presents with nodules or blotches that may be red, purple, brown or black. They are typically found on skin but have also been reported to occur elsewhere for example the mouth, GIT and the respiratory tract. \(^{(9)}\) In the oral cavity the most commonly affected site has been shown to be the palate. \(^{(10)}\) Growth rates of the lesion have been observed to vary from slow to explosively fast and it is associated with significant mortality and morbidity. Research shows KS is mainly transmitted via saliva, sexually organ transplant and rarely blood transfusion. \(^{(6)}\)
There is scanty of information on pattern of KS in Kenya, the aim of this study was to determine the pattern of KS among patients visiting the UoN Dental hospital between 1992 and 2012. This information could be used by policy makers in the management of KS patients.

2.0 LITERATURE REVIEW

Since the discovery of HIV/AIDS pandemic, slightly over two decades ago, statistics show over 40 million people are infected worldwide. HIV/AIDS has been established to be a major cause of morbidity and mortality. In Kenya research shows about 7.8% of adults are infected with HIV/AIDS. With such high levels of infection, reports of AIDS defining malignancies of which KS is the most common are also high. HIV has been demonstrated to greatly contribute to the pathogenesis of KS by promoting HHV8 replication, cytokine production and immunodepression; this explains the regression of KS lesions on administration of HAART. Studies have demonstrated an inflammatory state due to cytokines including Tumor Necrosis Factor alpha, interferon gamma and interleukin 6. Consequently presence of HIV, HHV8 and opportunistic infections only serve to initiate, perpetuate and contribute to progression of inflammatory state observed in KS.

Research shows that KS presents as reddish purple macules, papules plaque or nodules. It has also been observed that the lesions may coalesce forming large plaques and tumors with fungating masses and ulcerations. In some cases it has been documented to be multifocal lesions on skin and mucous membrane as well as lymph nodes, GIT and other visceral organs. Studies show oral cavity involvement in 10% to 15% of patients with AIDS associated KS, with the palate accounting for 95% of the intraoral sites. Patients report discomfort and difficulty in eating and swallowing due to KS lesions.
It has been noted that the various types of KS are similar on histology. Generally it has been observed to consist of interweaving bands of spindle cells may show a wide range of nuclear pleomorphism. Studies also show extravasated erythrocytes and hemosiderin laden macrophages are commonly present.\(^{(12)}\)

Diagnosis of KS is confirmed using biopsy. Research has also used blood tests to detect antibodies against KS however this is not used clinically. It has been shown that epithelioid angiomatosis, haemangiomas, lymphomas and purpura may need to be differentiated from KS.\(^{(1)}\)

Research has shown with the introduction of HAART incidences of KS has greatly reduced in western countries but still remains a challenge among African countries due to poor access to HAART therapy. Research has shown that early introduction of ART decreases incidences of KS. It has also been demonstrated that intralesional therapy among patients with few local lesions using vincristine the prognosis is good. However in cases with widespread lesions or lesions affecting internal organs, therapy using alpha interferon, vinca alkaloids, liposomal anthracycline or paclitaxel has been demonstrated to be successful.\(^{(1, 13)}\)
2.1 PROBLEM STATEMENT

Despite the fact that KS affects a small percentage of our population the numbers have increased with the HIV/AIDS pandemic where over 40 million people worldwide and over 7.8% of Kenyans are infected. Therefore there is need to describe the pattern of KS since there is scanty of information about it.

2.2 JUSTIFICATION

This study provides a pattern of KS lesions presenting at the UoN Oral Pathology Laboratory. Literature search shows that few studies have been documented worldwide and hardly any in Kenya describing the pattern of KS. This study will illustrate the pattern of the lesions including site, age of presentation and HIV/AIDS status. The results of this study may be used by clinicians in more effective diagnosis and management of KS.

2.3 GENERAL OBJECTIVE

To describe the pattern and occurrence of Kaposi sarcoma among patients who visited the University of Nairobi Dental Hospital between 1992 – 2012

2.3.1 SPECIFIC OBJECTIVE

1. To document the number of cases of Kaposi sarcoma seen at University of Nairobi Dental Hospital between 1992 and 2012
2. To describe the sociodemographic characteristics among the patients seen between 1992 and 2012.

3. To describe the clinical features among the patients seen between 1992 and 2012.

2.5 HYPOTHESIS

1. Kaposi sarcoma is associated with HIV/AIDS.

2. The clinical presentation of KS is associated with sociodemographic characteristics.

2.6 NULL HYPOTHESIS

1. Kaposi sarcoma is not always associated with HIV/AIDS.

2. The clinical presentation of KS is not associated with sociodemographic characteristics.

2.7 STUDY VARIABLES

<table>
<thead>
<tr>
<th>INDEPENDENT VARIABLES</th>
<th>MEASUREMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>male/female</td>
</tr>
<tr>
<td>Age</td>
<td>years</td>
</tr>
<tr>
<td>Year of diagnosis</td>
<td>year</td>
</tr>
<tr>
<td>HIV status</td>
<td>positive/negative</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DEPENDENT VARIABLES</th>
<th></th>
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<tbody>
<tr>
<td>Clinical history</td>
<td>chief complaint</td>
</tr>
<tr>
<td>Site</td>
<td>intraoral/ extra oral</td>
</tr>
<tr>
<td>Duration</td>
<td>months</td>
</tr>
</tbody>
</table>
3.0 METHODOLOGY

3.1 STUDY AREA
The study was conducted at the UON Dental hospital along Argwings Kodhek Road about 3 Kilometers from the city centre. It is a teaching hospital located opposite Nairobi hospital Doctors plaza and Lee funeral home. Since its inception in 1990 the UoN Oral Pathology Laboratory has enhanced Kenyan research on oral and maxillofacial diseases. Despite the limited resources available, the qualitative data on oral diseases derived from this laboratory has played a key role in documentation of disease patterns. The laboratory provides diagnostic services for patients from Nairobi as well as the major referral hospitals in Kenya.

3.2 STUDY DESIGN
This was a cross sectional study.

3.3 STUDY POPULATION
Records of patients diagnosed with Kaposi sarcoma at the the UON Oral pathology laboratory between 1992 and 2012.

3.4 SAMPLE SIZE
Prevalence 3.84%

Confidence level chosen for this study 95%

Sample size for this study will be computed as follows:

\[ N = \frac{z^2 \cdot \pi \cdot (1-\pi)}{C^2} \]

Where \( N = \) size of the population
Z = value corresponding to 95% confidence level

C = 1 – confidence level

P = prevalence

Therefore: \[ N = \frac{1.96^2 \times 0.384 (1-0.384)}{1-0.95} = 18 \]

3.5 SAMPLING METHOD

All patients’ files diagnosed with KS between 1992 – 2012 were included.

3.6 INCLUSION CRITERIA

All records of patients diagnosed with KS between 1992 and 2012 were included.

3.7 EXCLUSION CRITERIA

1. Records of patients not diagnosed with KS.

2. Records of patients diagnosed with KS before and after the study period.

3.8 ETHICAL CONSIDERATIONS

1. The research proposal was presented to the University of Nairobi / Kenyatta National Hospital Research Ethics and Standards Committee for approval to ensure compliance with the required standards and regulations.

2. Permission to conduct the research was sought from the authority UON Dental School and the Chairman Oral and Maxillofacial department.

3. Confidentiality of all the information gathered was ensured.
3.9 PERCEIVED BENEFIT

1. The findings of this study could be used by policy makers to improve management of KS.

2. The report will be submitted in partial fulfillment for a Degree in Bachelor in Dental Surgery

3.10 PROBLEMS ANTICIPATED

Financial constraint.
4.0 RESULTS

Socio-demographic characteristics.

A total of 47 cases were diagnosed during the 20 year period included in the study, 25 (53.2%) were males and 22 (46.8%) were females. The age range was from 3 years to 67 years with a mean of $34.91 \pm 12.231$ SD. Female were slightly younger (mean $31.86 \pm 10.43$ SD) compared to males (Mean $37.60 \pm 13.248$ SD). However the difference was not statistically significant ($t = 1.633$, $p = 0.109$). Figure 1 shows age and gender distribution. There were more females than males in age group 21-30 years and 51–60 years. There were no patients in age group 11 – 20. Years

Figure 1: Age and gender distribution
Among the sites examined intraoral were more common compared to extra oral which was found in only 4 (8.5%) of the cases examined. Among the intraoral sites the palate was the most common site of occurrence 28 (59.6 %), gingival was 21(44.7%) and tongue 20(42.6 %). Most lesions presented as localized lesions with only 9 (19.19 %) of the cases presenting as disseminated. There were more males presenting with lesions on the palate and tongue. An equal number of males and females presented with lesions on the tongue. However, the differences between gender and various sites were not statistically significant (Table 1).

Table 1: Site and gender distribution.

<table>
<thead>
<tr>
<th>SITE</th>
<th>MALES</th>
<th>FEMALES</th>
<th>X²</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palate Present</td>
<td>15 (53.6%)</td>
<td>13 (46.4%)</td>
<td>0.004</td>
<td>0.949</td>
</tr>
</tbody>
</table>
## Clinical presentation

Among all the cases examined only 11 (23.4%) were HIV positive. The main complaint was swelling 37 (78.7%), 35 (70.2%) of the lesions were erythematous; few were painful 14 (29.8%) and ulcerated 10 (21.3%). The range of duration of the lesions at the time of presenting to hospital was 1 month to 36 months with an average of 4.83 months, however 15 cases had no duration indicated.

![Figure 2 clinical presentations.](image)

### Table 1

<table>
<thead>
<tr>
<th></th>
<th>Absent</th>
<th>Tongue present</th>
<th>Gingival present</th>
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<tr>
<td></td>
<td></td>
<td>absent</td>
<td>absent</td>
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<tr>
<td>Absent</td>
<td>10 (52.6%)</td>
<td>11 (52.4%)</td>
<td>10 (50%)</td>
</tr>
<tr>
<td>Tongue present</td>
<td>9 (47.4%)</td>
<td>10 (47.6%)</td>
<td>10 (50%)</td>
</tr>
<tr>
<td>Gingival</td>
<td>15 (55.5%)</td>
<td>12 (44.5%)</td>
<td>14 (53.8%)</td>
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<tbody>
<tr>
<td></td>
<td>10 (52.4%)</td>
<td>15 (55.5%)</td>
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<td></td>
<td>10 (50%)</td>
<td>10 (50%)</td>
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<tr>
<td></td>
<td>10 (50%)</td>
<td>12 (46.2%)</td>
</tr>
</tbody>
</table>

**Notes:**

- **Tongue present absent**
  - Absent: 11 (52.4%)
  - Present: 10 (47.6%)
  - **p** = 0.010
  - **χ²** = 0.920

- **Gingival present absent**
  - Absent: 10 (50%)
  - Present: 10 (50%)
  - **p** = 0.142
  - **χ²** = 0.706
4.3 HISTOLOGY

All the lesions composed of numerous proliferating blood vessels extending and maturing to a fibrous tissue containing many neoplastic spindle cells associated with mitotic figures and marked pleomorphism which is consistent with histological diagnosis of Kaposi sarcoma. Extravasated red blood cells are interspersed among the neoplastic endothelial cells. Below is a histological image of classic Kaposi sarcoma (Figure 3).

Figure 3. Classical histology of Kaposi sarcoma. Haematoxylin and eosin stain, x 100 magnification.
5.0 DISCUSSION, CONCLUSION & RECOMMENDATION.

5.1 DISCUSSION

Majority of the lesions in the current study presented were in 21 and 40 years age group. Studies done in Brazil report that most of the cases occurred between age 30 and 39 years\(^{(13)}\). The findings could be reflection of epidemiological statistics of HIV/AIDS pandemic in Kenya which have shown that 75% of AIDS cases occur in age group 20-45. Females were younger than males, which are consistent with data on HIV/AIDS in Kenya, where the peak age for females is 25-29 and peak age for males is 30-34 years.

In this study only 23.4% of the cases reported to be HIV positive. Considering the association between HIV/AIDS and KS these findings could indicate that quite a large percentage of our population is not aware of their serostatus or are afraid to disclose their serostatus due to fear of being stigmatized.

The lesions were more common among male patients (53.2%) compared to female patients (46.8%). This is comparable with studies done in Italy, South America and Asia which showed ratios as high as 3: 1 male to female ratio\(^{(3-7)}\). This was the case in classical, African and immunosuppressed forms of KS. In Africa risky sexual behavior is associated with factors like gender inequalities that view women as subordinate, beliefs that men have stronger sexual drives and the notion that men cannot do without sex. These beliefs exacerbate the transmission of STDs. These could account for the reason why KS is more common among men than women.

The higher prevalence of oral Kaposi sarcoma among males could also have a genetic basis that predisposes males more than females.
The above mentioned studies also show Kaposi sarcoma to have a high prevalence among homosexual men. Given the stigmas associated with homosexuality, our data could indicate a significant number of homosexual men in our population who are not revealing their true sexual orientation.

The most common sites of occurrence were intraoral in palate (59.6%), gingival (44.7%) and tongue (42.6 %). The findings of this study are in line with a review done by Mahanaz Fatahzadeh in New Jersey. \(^\text{[14]}\)

In terms of clinical presentation 78.7% of the lesions were non ulcerated swellings and 70.2% were painless and erythematous. The patients presented with lesions that were on average 4.83 months old. This figure could in reality be higher since almost one fifth of the cases had not stated the duration of the lesion. These shed more light on health seeking behavior among Kenyans. For as long as the lesion seems not to be interfering with the quality of life of patients do not consult with medical practitioners.

**5.2 CONCLUSION**

Most of the patients diagnosed were between age 21 and 40. Kaposi sarcoma lesions were more common in males than females. Patients seem not to seek medical attention early enough the average duration of the tumor at the time of first diagnosis was 4.83 months.

Erythematous swellings were the most common clinical presentation. The commonest site of presentation was the palate followed by the gingival and tongue. Less than quarter of the patients diagnosed were self reported to be HIV/AIDS positive, I therefore accept my null hypothesis however there is still room for further research.
5.3 RECOMMENDATION

1. There is need to formulate strategies aimed at educating the public on recognition of the clinical features of Kaposi sarcoma and its association with HIV/AIDS to ensure early treatment is sought.

2. More studies should be carried out to ascertain the exact incidence and prevalence of Kaposi sarcoma in Kenya.
6.0 REFERENCES


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APPENDIX 1: DATA COLLECTION FORM

AN AUDIT OF KAPOSI SARCOMA AT THE UNIVERSITY OF NAIROBI DENTAL HOSPITAL
BETWEEN 1992 AND 2012

Clinical history

<table>
<thead>
<tr>
<th>No.</th>
<th>Gender</th>
<th>Age (years)</th>
<th>Year of diagnosis</th>
<th>Clinical history</th>
<th>HIV status</th>
<th>site</th>
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