Case Report

Ocular Kaposi Sarcoma as the Initial Manifestation of Human Immunodeficiency Virus (HIV) Infection: A Case Report

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ABSTRACT

Kaposi sarcoma associated with Human Herpesvirus-8 (HHV8) infection, is a low-grade malignant vascular spindle-cell tumour, commonly linked to acquired immunodeficiency syndrome (AIDS). This case report highlights a rare presentation of ocular KS leading to diagnosis of Human Immunodeficiency Virus (HIV) infection. A 25-year-old otherwise healthy Indonesian male presented with slow-growing erythematous masses on the superior eyelid and conjunctiva, two months after colliding with a door. Excisional biopsy confirmed KS, and subsequent HIV test was positive. A multidisciplinary approach was initiated to evaluate and treat the underlying AIDS and KS. Recognizing ocular KS as an initial sign of HIV through thorough examination is crucial for accurate diagnosis, prompt treatment, and improved prognosis.

Keywords: Kaposi Sarcoma, Acquired Immunodeficiency Syndrome, Human Herpesvirus-8.

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INTRODUCTION

Kaposi sarcoma (KS) is a multicentric vascular spindle-cell tumour with low-grade malignant potential that is associated with the Human Herpesvirus-8 (HHV8) infection.[1] It is the most common neoplasm in patients with acquired immunodeficiency syndrome (AIDS) and its manifestations could involve mucocutaneous sites and conjunctiva. In Indonesia, approximately 540,000 people are living with HIV, with 28,000 new infections and 24,000 AIDS-related deaths annually.[2] Currently, there are only few cases reported on ocular KS leading to the diagnosis of Human Immunodeficiency Virus (HIV).[3,4] In this report, we present a case of eyelid and conjunctival tumours which was later confirmed as KS, as an initial presentation leading to HIV positive status in a young homosexual male.

Case Presentation

A 25-year-old Indonesian male presented with complaint of erythematous mass on the conjunctiva of the left eye. Two months back the patient had mild trauma to the left eye after bumping into a door. Redness of the eye was observed, and a progressively growing mass was noticed in the surrounding area. Additionally, the patient complained of foreign body sensation in the affected eye. Complaints such as

blurry vision, diplopia, and pain were denied. Prior to the visit, the patient had visited an ophthalmologist and was prescribed artificial tears and polymyxin-neomycin-dexamethasone drops; no clinical improvement was observed. Past medical histories were unremarkable.

On physical examinations, visual acuity of both eyes was 6/6. Oedema with circumscribed-reddish nodules were palpated in both superior and inferior eyelids (Figure 1). Three other masses of sizes: 1×0.5×0.3 cm, 1.3×1×0.5 cm and 1.5×0.7×0.4 cm was also noted on the left tarsal and bulbar conjunctiva (Figure 2A & B). All the masses were described as hyperdense and painless. They had smooth surface with no stalk attachment and were negative on transillumination test. No evidence of scleral or orbital invasion was observed. A well-circumscribed erythematous papule was also observed on the left superior eyelid. The masses were first suspected as lymphatic malformation given the sizes of the masses; excisional biopsy was then performed to establish the diagnosis.

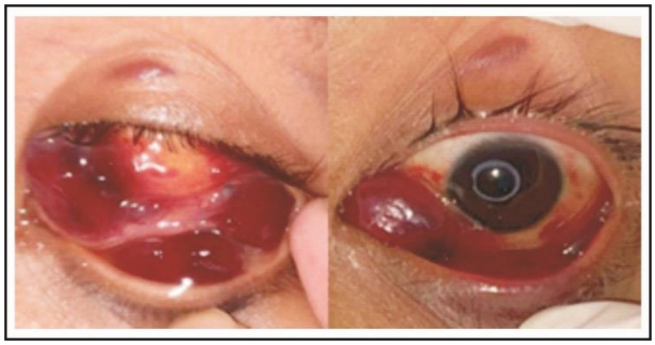

Figure 1: Reddish masses located at left tarsal conjunctiva, left bulbar conjunctiva and a nodule at left upper eyelid.

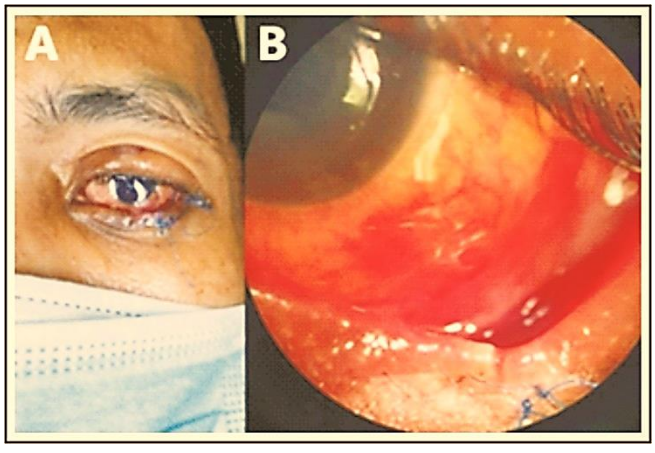

Figure 2: (A) Patient was installed a conformer after having excisional biopsy. **(B)** The patient's condition three weeks after surgery.

The tumour showed a characteristic of highly vascularized lesion intraoperatively. Four samples were taken for histological examinations which confirmed the diagnosis of KS. The histological slides with haematoxylin and eosin (H&E) stain showed discrete tumour nodules below the conjunctival epithelium (Figure 3A) which were composed of intersecting fascicles of uniform spindle cells (Figure 3B) with minimal pleomorphism, rough chromatin, eosinophilic cytoplasm, and mitotic activity. These cells formed threadlike slits containing red blood cells and hemosiderin deposits (Figure 3C).

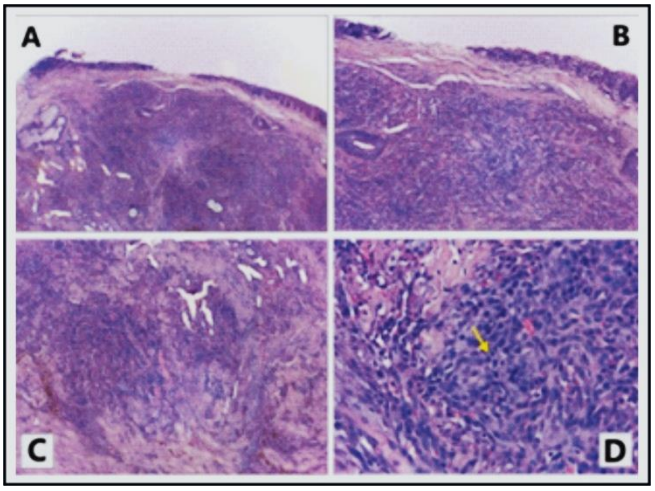

Figure 3: Histological examinations with H&E stain showing characteristics of Kaposi Sarcoma through **(A):** 40 times magnification, **(B, C):** 100 times magnification, and **(D):** 400 times magnification. Plump spindle cells with numerous vascular channels and some mitosis were identified (yellow arrow).

Further assessment revealed history of unprotected sex with a male partner three years ago without prior HIV testing. History of immunosuppressive drugs was denied. Thereafter, HIV tests with consent from the patient followed and they showed positive results with cluster of differentiation 4 ($CD4^+$) count of 135.1 cells/ml and HIV viral load of 8.03x10^5 copies/ml; this reaffirmed the diagnosis of AIDS-related KS. No KS involvement was observed in another anatomical region besides the eye. Chest X-ray demonstrated heterogenous opacity with fibrotic components at the upper and middle part of the right lung and the upper part of the left lung, indicative of tuberculosis

infection. In view of the HIV status and a possible concomitant tuberculosis infection, the patient was promptly treated with the antiretroviral therapy (ART) and anti-tuberculosis treatment (ATT). The ART treatment regimen was initiated two weeks post ATT, consisting of a fixed dose drug of TLD (tenofovir 300 mg, lamivudine 300 mg and dolutegravir 50 mg) once a day and an additional dolutegravir 50 mg once a day. Cotrimoxazole 960 mg once a day was also prescribed as prophylaxis against opportunistic infections. At three weeks post-surgery, the patient came to ophthalmology outpatient and showed no relapse of the tumour on the left eye but had new reddish well-circumscribed mass on the right eye with subconjunctival bleeding. The last visit was at internal medicine outpatient; five months after the initial visit and one month of ART regimen, showing occasional complaints of persistent productive cough, fever and shortness of breath were noted. Unfortunately, the patient passed away one day after the last visit.

DISCUSSION

Patients with AIDS are susceptible to various conditions including opportunistic infections and other viral-induced cancers with multiple organ involvement. AIDS-related KS affects eye or ocular adnexa in 20% of patients diagnosed with KS, and can be an initial manifestation of AIDS.[3] In our hospital, there were a handful of cases of ocular KS reported from 2012 to 2021, one of which was histopathologically confirmed as the patient in our case.However, conjunctival Kaposi's sarcoma as the initial clinical manifestation of AIDS is rare, with only a few reports documented, the first dating back to 1967 and the most recent in 2020.[3,4]

Association between age and AIDS-related KS has also been studied. A study on United States (US) cohort of 3,458 HIV-infected men revealed a declining trend in AIDS-related KS incidence with increasing age. The peak age in KS was seen at the age of 30-39.[4] Although the patient in this case report did not fit the peak age reported by Luu et al,[5] another study found that AIDS-associated KS is common among young men who have sex with men (MSM) aged 20-50 years.[6] The higher frequency in MSM compared to other risk groups led to the idea that KS was caused by a sexually transmitted virus other than HIV. This was later proven when the HHV-8 or the Kaposi Sarcoma-associated herpes virus (KSHV) was etiologically connected to KS. The vast and expanding amounts of research has established that HHV-8 is sexually transmitted and mainly detected among MSM.[7]Hence, this evidence further support how the patient in this case study might have been infected with the HHV-8, resulting in the ocular KS.

Manifestations of ocular KS may involve the skin surface of the eyelids, tarsal, bulbar and forniceal conjunctiva. The caruncle, lacrimal sac and semilunaris are also involved. Rarely, the orbit and lacrimal gland are affected. Conjunctival KS are mostly found in the lower fornix, bulbar conjunctiva, and upper fornix, respectively. The lesions are typically mobile, considerably elevated, and bright red in colour. Sometimes, haemorrhage is also seen. As the lesion grows or the haemorrhage clears up, the shape of the lesions may change. Furthermore, these lesions are reported to have slow progress over several months. Early lesions of AIDS-related KS manifest clinically as inert purplish-red plaques or papules. Over time, the lesions may develop into nodular forms and exhibit more aggressive clinical features. Advanced macular papules in AIDS-related KS are characterized by the proliferation of spindle cells originating from the endothelium of blood and/or lymphatic vessels.

Following the lesions, patients often reported additional ocular symptoms like photophobia, epiphora, foreign body sensation, recurrent redness, and irritation, while pain and loss of vision are rarely observed.[6]

In this case report, the location of the tumour matched with the previous reports where masses were seen on the skin of the eyelids and the tarsal as well as bulbar conjunctiva. However, the descriptions of the lesions in this case were not exceptionally specific towards conjunctival KS. Indeed, conjunctival KS could be mistaken as foreign-body granuloma, pyogenic granuloma, cavernous haemangioma, malignant melanoma such as, lymphangioma or metastatic tumour and chronic subconjunctival haemorrhage. Hence, biopsy with immunohistochemistry and histopathological analysis is helpful in establishing the diagnosis.[6]

We noted a history of blunt trauma prior to the formation of masses in our patient. Indeed, prior trauma history has been reported to cause inflammatory alterations that recruit HHV-8 to the affected location, promoting endothelial precursors

and proliferation of spindle cell. KS lesions are not caused by trauma alone, but rather by an HIV-positive patient's propensity to KS, which results in a Koebner phenomenon.[6,8] Studies suggested that Koebner phenomenon in AIDS-related KS is the result of basic fibroblast growth factor (b-FGF) release from traumatized keratinocytes; b-FGF stimulates angiogenic cytokines release which may lead to development of KS at the site of trauma.[6,8]

There has yet to be a clear guideline in treatment for conjunctival KS and currently, best treatment is yet to be decided with collaboration between the ophthalmologist and oncologist. Generally, given its benign course, direct local treatment may not be needed in most cases of conjunctival KS. In one case of ocular KS, the tumour was resolved after eight months of highly active antiretroviral therapy (HAART) and chemotherapy.[9] Several studies found that ART alone showed similar response and survival rates compared to combination with systemic chemotherapy.[5] Meanwhile, a study proposed using chemotherapy prior to or concurrently with HAART due to its deleterious effects. They reported a rare, worsened condition post-HAART, presumably due to immune reconstitution syndrome.[10] However, in this patient, chemotherapy was not administered due to the concurrent tuberculosis infection. This case highlights the significance of recognizing rare ocular manifestations in diagnosing HIV/AIDS, particularly when ocular KS presents as an initial sign. Prompt and accurate diagnosis is essential for initiating timely management, although distinguishing it from other ocular tumours remains a challenge.

CONCLUSION

Ocular presentation of KS is rare, even rarer as the first sign of HIV infection or AIDS. Suspicion of ocular KS should be raised when vascular conjunctival tumours are present in younger adults especially when HIV status is unknown. Thorough history taking, accurate ophthalmic examinations, appropriate laboratory tests, histopathology examinations and multidisciplinary approaches would result in early diagnosis, allowing prompt treatment and thus a better prognosis.

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Conflict of Interest: Authors declared no conflict of interest.

REFERENCES

1. PDQ Adult Treatment Editorial Board. Kaposi Sarcoma Treatment (PDQ®): Health Professional Version2024 Dec 19. In: PDQ Cancer Information Summaries. Bethesda (MD): National Cancer Institute (US); Accessed August 1, 2024. Available from: http://www.ncbi.nlm.nih.gov/books/NBK65897.
2. **Jocelyn, Nasution FM, Nasution NA, Asshiddiqi MH, Kimura NH, Siburian MHT, et al.** HIV/AIDS in Indonesia: current treatment landscape, future therapeutic horizons, and herbal approaches. Front Pub Health. 2024;**12:**1298297. Doi: 10.3389/fpubh.2024.1298297.
3. **Donovan C, Patel H, Shetty S, Bierman L, Lustbader JM, Oboh-Weilke AM.** Aggressive conjunctival Kaposi sarcoma as the initial manifestation of acquired immunodeficiency syndrome. Am J Ophthalmol Case Rep. 2020;**19:**100832. Doi: 10.1016/j.ajoc.2020.100832.
4. **Akram MAR, Alzahrani MA, Mahmood A, Alghamdi TBO, Rehman D.** Ocular Manifestations in HIV/AIDS Patients Undergoing Highly Active Antiretroviral Therapy. Pak J Ophthalmol. 2019;**35(3):**157-161. Doi: 10.36351/pjo.v35i3.961.
5. **Luu HN, Amirian ES, Chiao EY, Scheurer ME.** Age patterns of Kaposi's sarcoma incidence in a cohort of HIV-infected men. Cancer Med. 2014;**3(6):**1635-1643. Doi: 10.1002/cam4.312.
6. **Venkateswaran N, Ramos JC, Cohen AK, Alvarez OP, Cohen NK, Galor A, et al.** Spotlight on ocular Kaposi's sarcoma: an update on the presentation, diagnosis, and management options. Expert Rev Ophthalmol. 2021;**16(6):**477-489. Doi: 10.1080/17469899.2021.1962294.
7. **Mikulska M, Balletto E, Mularoni A.** Human herpesvirus 8 and Kaposi sarcoma: how should we screen and manage the transplant recipient? Curr Opin Infect Dis. 2021;**34(6):**646-653. Doi: 10.1097/QCO.0000000000000792.
8. **Marino D, Calabrese F, Ottaviano G, La Torre FB, Vicario M, Alaibac M, et al.** Recurrent Kaposi sarcoma associated with Koebner phenomenon in two HIV-seronegative patients: Two case reports and a review of the literature. Medicine (Baltimore). 2017;**96(52):**e9467. Doi: 10.1097/MD.0000000000009467.
9. **Huang AM, Larochelle RD, Hink EM.** Ocular Kaposi Sarcoma Associated with Systemic Disease and Complete Resolution After Medical Therapy. JAMA Ophthalmol. 2022;**140(11):**e223945. Doi: 10.1001/jamaophthalmol.2022.3945.

10. **Loke WC, Spittle MF, Mitchell S, Kulasegaram R.** Timing of highly active antiretroviral therapy and chemotherapy for Kaposi's sarcoma in patients with HIV infection. Int J STD AIDS. 2006;**17(8):**565-566. Doi: 10.1258/095646206778145668.

Authors Designation and Contribution

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Agung Nugroho; Consultant Ophthalmologist: *Concepts, Design, Literature search, Data acquisition, Manuscript preparation, Manuscript editing.*

Eka Susanto; Consultant Pathologist: *Data acquisition, Manuscript preparation.*