Concurrence of talaromycosis and Kaposi sarcoma in a HIV-infected Patient: A case report

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Case report

Keywords: HIV infection, talaromycosis, Kaposi sarcoma, concurrence, case report.

DOI: https://doi.org/10.21203/rs.3.rs-40697/v2

Abstract

Background: Concurrence of talaromycosis, an opportunistic infection caused by the fungal pathogen *Talaromyces marneffei* and Kaposi sarcoma, a common vascular tumor in patients infected with human immunodeficiency virus (HIV) has only been rarely reported. Despite poor outcome, clinical characteristics and management strategies for HIV-infected patients with comorbid Kaposi sarcoma and talaromycosis has not been very well described.

Case presentation: A 33-year-old, HIV-positive male patient presented to the Department of Infectious Diseases at Wenzhou Central Hospital with cough, sputum expectoration, hemoptysis, rashes on the feet and violaceous plaques in the oral cavity. Chest computed tomography (*CT*) showed bilateral nodular, patchy shadows *and* lymphadenectasis*.* Skin biopsy and histopathological examination indicated Kaposi sarcoma. *T. marneffei* was isolated from blood cultures and suggested talaromycosis. The patient's conditions significantly improved following initiation of antiretroviral therapy and chemotherapy for Kaposi sarcoma in combination with *antifungal treatment for talaromycosis.*

Conclusions: Severe medical conditions such as Kaposi sarcoma and talaromycosis may coexist in HIV-infected patients and pose a high mortality risk. Etiological diagnosis and treatment are the key to successful management of HIV-infected patients who has severe comorbid conditions.

Background

Patients infected with human immunodeficiency virus (HIV) are prone to many opportunistic infections and malignancies [1]. Talaromycosis is a severe fungal infection caused by *Talaromyces marneffei* and has been frequently seen in HIV-infected patients in south and southeast Asia [2, 3]. A mortality rate as high as 50.6% has been reported for patients who were co-infected with HIV and *T. marneffei* and did not receive proper antifungal treatment [4]. Kaposi sarcoma is an endothelial tumor often affecting the skin, lymph nodes and other internal organs of human [5]. It remains the commonest neoplasm in HIV-infected patients [6]. Patients with Kaposi sarcoma often present pulmonary symptoms indistinguishable from pneumonia of microbial origins, leading to diagnostic challenges when comorbid diseases occur.

Here we report the coexistence of Kaposi sarcoma and talaromycosis in a HIV-infected patient with respiratory complaints and described their clinical characteristics and management strategies.

Case Presentation

A 33-year-old male patient visited the Department of Infectious Diseases at Wenzhou Central Hospital with cough, sputum expectoration (two months), and hemoptysis (twelve days). The patient was recently diagnosed with HIV at the Wenzhou Centers for Disease Control and Prevention. On admission he had a temperature of 36.5°C and a respiratory rate of 16 breaths per minute. A screening enzyme-linked immunosorbent assay (ELISA) and a confirmatory western blot test both detected HIV antibodies. Physical examination found violaceous plaques in the oral cavity and purple rashes on his feet (Fig. 1A.

and 1B) and dry rales in the bilateral lobes. Blood test results were as below: white cell count 2.4 x 10^9/L with lymphocytes 1.0 x 10^9/L, CD4 T-cell count 1 cell/mm^3, hemoglobin 126 g/L, C-reactive protein (CRP) 5.0 mg/L, procalcitonin (PCT) 0.29 ng/mL, aspartate aminotransferase (AST) 53 U/L, lactate dehydrogenase (LDH) 314 U/L, 1,3-β-D-glucan 90 pg/mL. Other tests, including the detection of galactomannan antigenemia, interferon gamma release assay (IGRA), sputum X-pert MTB/RIF assay for *Mycobacterium tuberculosis*, tumor markers, blood clotting, and antinuclear antibodies all had normal results. Bronchoscopy was carried out and microbial cultures of bronchoalveolar lavage fluid (BALF) yielded negative results. Histopathological analysis of BALF did not find any tumor cells. Chest computerized tomography (CT), however, showed bilateral nodular and patchy shadows *(Fig. 2A).* Abdominal CT also showed small inguinal lymph nodes. Histopathological examination of skin biopsy suggested Kaposi sarcoma (Fig. 3). *T. marneffei* was isolated from blood cultures nine days after patient's admission. Diagnoses of acquired immune deficiency syndrome (AIDS), Kaposi sarcoma and talaromycosis were established, based on the evidence listed below: 1) a confirmatory positive HIV test, 2) a CD4 T-cell count of 1 cells/mm^3 (less than 200 cells/mm^3), 3) a typical clinical sign of violaceous skin rashes and oral plaques, 4) results of skin histopathological examination, 5) isolation of *T. marneffei* from blood cultures. The patient received antiretroviral therapy (ART, 3TC+TDF+DTG, Lamivudine 300 mg qd/ tenofovirdisoproxil 300 mg qd/ dolutegravir 50 mg qd) four days after admission. Additional treatments were initiated 9 days after admission due to his severe pulmonary *symptoms*, including pegylated liposomal doxorubicin 30 mg/d q2w for Kaposi sarcoma and itraconazole 0.2 g q12h for talaromycosis, following the Chinese Guidelines for Diagnosis and Treatment of Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome and National Comprehensive Cancer Network (NCCN) Clinical Practice Guidelines in Oncology about AIDS-related Kaposi Sarcoma. The patient's respiratory symptoms resolved and oral plaques/skin rashes dramatically regressed 4-5 days after administering doxorubicin and itraconazole (Fig. 1C & D). Repeated chest CT suggested a significant absorption of the bilateral pulmonary shadow (Fig. 2B*). The patient was discharged from the hospital on day 42 after 4 repeated blood cultures that were all negative for T. marneffei. His* CD4 T-cell count was 11 cells/mm^3 at discharge *and increased to 49* cells/mm^3 at 4 months of follow-up.

Discussion And Conclusion

Immunosuppression resulted from HIV infection often allows opportunistic microbial infections and malignancies in AIDS patients. Concurrence of talaromycosis and Kaposi sarcoma, however, seems to be rare, with a recent study reporting low prevalence of each conditions in HIV-infected patients in China (1.4% for talaromycosis and 0.8% for Kaposi sarcoma) [7]. Coexistence of these two conditions, though being a rare event, may suggest a high risk of mortality [8]. In the only study that reported the concurrence of talaromycosis and Kaposi sarcoma in HIV-infected patients, 2 out of 3 patients died; important clinical information, including disease features and management strategies was not discussed in that study [8].

Kaposi sarcoma is a malignant vascular tumor frequently found in HIV-infected patients [1] and has been linked to human gammaherpesvirus 8 [9]. *D*iagnosis of Kaposi sarcoma mainly relies on clinical

manifestations and histopathological examination. Radiographic characteristics of pulmonary Kaposi sarcoma are non-specific, often presented as nodules, pleural effusions, hilar or mediatinal lymphadenopathy, and p*atchy shadows [9].* In this case, the patient's chest CT showed multiple nodules and infiltrates in the bilateral lungs, in combination with purple rashes in his feet and violaceous plaques in the oral cavity, suggesting a possibility of Kaposi sarcoma, that was subsequentially confirmed by histopathological analysis of skin biopsies. Highly active antiretroviral therapy（HAART）is the recommended treatment for HIV-infected patients with Kaposi sarcoma [10]. Oral plaques, foot rashes and respiratory tract symptoms of the patient significantly resolved upon the initiation of HAART. Relief of respiratory symptoms of this patient, along with remarkable pulmonary improvement on the Chest CT, however, could also be owing to antifungal therapy for talaromycosis. Talaromycosis is a common opportunistic infection that often occurs in the respiratory system of HIV-infected patients in southern and eastern China [3, 7]. Patients with talaromycosis may also present cough, sputum expectoration, skin rash, and lymphadenopathy [11], and have non-specific hilar or mediastinal lymphadenopathy and multiple nodular on the chest CT [12]. Talaromycosis often progress rapidly in HIV-infected patients and also has a high mortality rate if antifungal treatment is delayed [4]. No further investigation was carried out in this study to clarify the cause of severe pulmonary symptoms, that is an obvious limitation.

High mortality rate of HIV-infected patients with comorbid talaromycosis and Kaposi sarcoma has been linked to low CD4 T-cell count and hemoglobin level [8]. Although our patient had a normal hemoglobin level of 126 g/L, a very low CD4 T-cell count of 1 cell/mm^3 suggested a high mortality risk. The patient rapidly recovered after timely ART, HAART and antifungals were given. Although Amphotericin B is the recommended antifungal drug for induction therapy for patients with talaromycosis [13], Itraconazole alone was used for this patient due to his moderate clinical symptoms [14].

In conclusion, Kaposi sarcoma and talaromycosis may concur in patients with HIV, due to their immunodeficient status. Cautions should be taken when seeing HIV-infected patients suspected of such severe comorbid conditions. Timely etiological investigation, diagnosis, and treatment are the key to successful management of the patient.

List Of Abbreviations

AIDS: Acquired immunodeficiency syndrome; HIV: Human immunodeficiency virus; CT: Computed tomography; CRP: C-reactive protein; PCT: procalcitonin; AST: Aspartate aminotransferase; LDH: Lactate dehydrogenase; HAART: Highly active antiretroviral therapy; NCCN: National Comprehensive Cancer Network.

Declarations

Ethics approval and consent to participate

Consent to participate was shown and explained to the patient. The written-consent was received from the patient.

Consent for publication

Verbal and written consent for publication was obtained from patient.

Availability of data and materials

On request.

Funding

Not applicable.

Authors' contributions

FFS designed the study. XM□HY, and SY collected clinical data. XGM and FFS wrote the manuscript. All authors read and approved the final manuscript.

Acknowledgements

The authors thank Dr. Yue Qu and Dr. Christina Chang form Monash University, Australia for critically reading the manuscript.

Competing interests

The authors declare no competing interests.

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Figures

Fig. 1

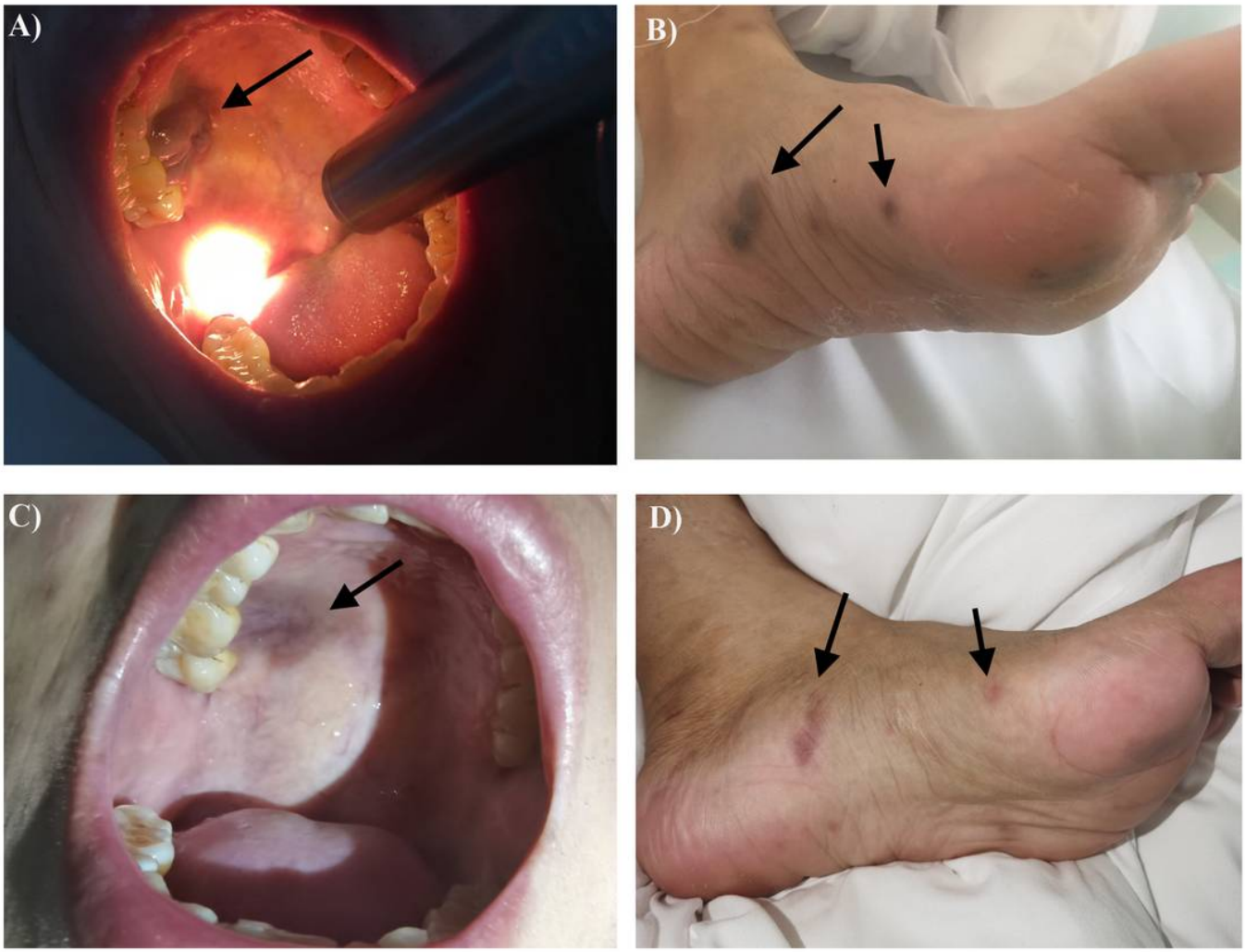

Figure 1

Oral plaques and foot rashes before (A and B respectively) and after antifungal and anti-Kaposi sarcoma treatments (C and D respectively).

Fig. 2

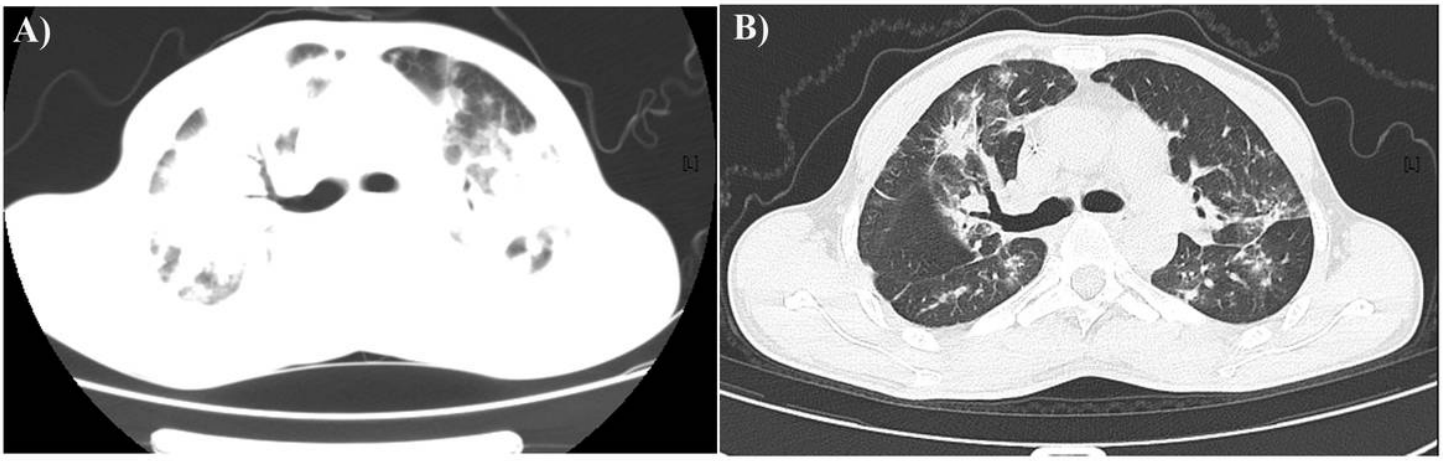

Figure 2

Chest CT before (A) and 4 days after (B) initiation of Kaposi sarcoma and antifungal treatments.

Fig. 3

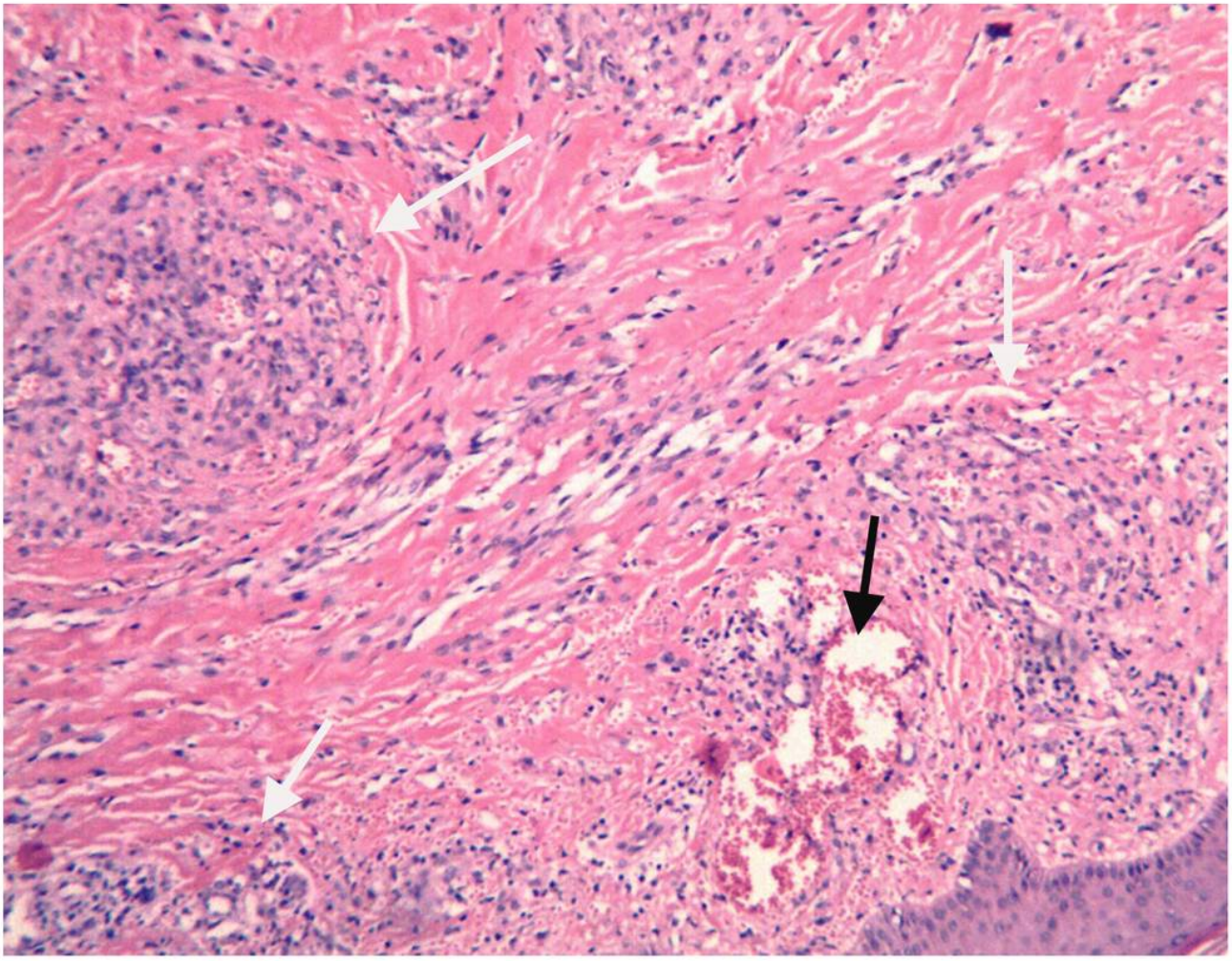

Figure 3

Skin biopsy and hematoxylin-eosin stain showing sheets of spindle cells, blood vessels (white arrows), red blood cells (black arrow) (40× magnification).