Case Reports

Cutaneous cryptococcosis in an adult male of sub-saharan origin

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Abstract

Cryptococcosis is caused by the inhalation of the desiccated encapsulated yeast or basidiospores, which are found in the environment. After the infectious particles reach the lungs, get disseminated hematogenously in various organs. Meningoencephalitis is one of the most common manifestations, especially in sub-Saharan Africa. The dermal lesions can be either primary due to the traumatic implantation of infectious propagule or secondary in patients with disseminated infection due to cryptococcus. The typical presentations of the cutaneous lesions are like umbilicated lesions of molluscum contagiosum. The dermal lesions can also be similar to Kaposi sarcoma or talaromycosis (formerly penicilliosis). Here, we present a 34-year-old male HIV-positive and antiretroviral therapy-naive. The patient had a very low CD4 cell count and a high viral load. The patient was referred to the dermatology clinic for multiple eruptions due to umbilicated skin colored lesions 3–5 mm in diameter on the nose.The patient was first treated for the opportunistic infection. The causes of the dermal umbilicated skin lesions are several. We must find out whether the dermal lesion is due to infection with a single organism or more than one. It can be colesional also. Punch biopsy, India ink, and culture on Sabouraud dextrose agar confirmed the diagnosis of *Cryptococcus neoformans*.

Key words: Acquired immunodeficiency syndrome, antiretroviral therapy, molluscum contagiosum

Introduction

Cryptococcal meningitis (CM) is a serious fungal opportunistic disease found worldwide, especially in sub-Saharan Africa (SSA) countries which have the highest burden of HIV and acquired immunodeficiency syndrome (AIDS).[1] Those with low CD4 counts have the highest risk of opportunistic infections and mortality.[2] It has been found that HIV-associated CM causes around 181,100 deaths per year and 73% of which occur in SSA.[3] An HIV-positive patient may develop cutaneous lesions, prior to the onset of meningoencephalitis.[4] Dissemination can happen to involve the brain and meninges, skin, bones, and visceral organs. Molluscum contagiosum is very common in HIV-seropositive patients and presents as small, discrete lesions with a central umbilication. Unlike the cutaneous lesions of cryptococcosis, these do not ulcerate or bleed.[5] It is very crucial to diagnose and treat the opportunistic infection/infections first, before treating HIV/AIDS. The early initiation of antiretroviral therapy (ART) can lead to the development of "immune reconstitution inflammatory syndrome" (IRIS). The term "IRIS" describes multiple inflammatory disorders associated with the paradoxical worsening of preexisting infectious processes after the initiation of ART in HIV-infected patients.[6]

Case Report

A 34-year-old male was referred to the dermatology clinic from the HIV/AIDS ward, with umbilicated skin colored lesions 3-5 mm in diameter on the nose [Figure 1a]. The patient was admitted with a history of a severe headache, fever, and loss of weight. The patient knew his HIV status 2 years back, but did not attend the HIV clinic for treatment. Since the patient was ART-naive, he was investigated for comorbidities such as cryptococcosis, tuberculosis, and *Pneumocystis jirovecii*. The patient was started an antifungal treatment for CM. The other relevant investigations were done as shown in Table 1.

Treatment

The details of the diagnosis were explained to the patient,

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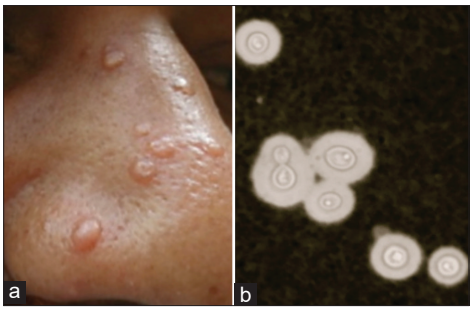

Figure 1: (a) Umbilicated maculopapular lesion on the nose (b) Capsulated budding yeast cells seen in India Ink preparation

Table 1: Investigations and results

Investigations	Results
FBC, U and E, LFT	Normal
CD4+count	45 cells/μL
HIV viral load	24,480/μL
Serum cryptococcal antigen	1:512
CSF cryptococcal antigen	1:1024
Induced sputum	Negative for *P. jirovecii*, AFB, fungal microscopy, and culture
CT brain	Normal
CSF analysis	Protein - 0.8 g/mL Sugar - 20 mg/100 mL Cell count - 12 cells/mm3 mostly lymphocytes
CT chest	Normal
India ink test	Positive [Figure 1b]
Culture on Sabouraud dextrose agar (without cycloheximide)	Heavy growth of *C. neoformans* after 48 h of incubation [Figure 2a]
Growth of BSA Agar	Dark brown colonies of *C. neoformans* [Figure 2b]
Cutaneous lesions' punch biopsy	Histopathology: Positive for *C. neoformans* GMS staining: *C. neoformans* seen [Figure 2c] Tzanck smear: Negative

P. *jirovecii*: *Pneumocystis jirovecii*, *C. neoformans*: *Cryptococcus neoformans*, CSF: Cerebrospinal fluid, GMS: Grocott methenamine silver, CT: Computed tomography, BSA: Bird seed agar, FBC: Full blood count FBC: Full blood count, LFT: Liver function test, AFB: Acid-fast bacilli

and the initial treatment for disseminated cryptococcosis was started with intravenous amphotericin B, 1 mg/kg daily. During the treatment period, his renal function was monitored. The patient was given this treatment for 2 weeks, and no side effect was noticed. There was a marked improvement in the cutaneous lesions. He was then switched to the consolidation phase of 800 mg of fluconazole for 8 weeks. After the completion of consolidation therapy, the patient was advised to attend the HIV/AIDS clinic for ART treatment and maintenance dose of fluconazole. The patient was given zidovudine 300 mg twice daily, lamivudine 300 mg daily, and efavirenz 600 mg orally once daily. The CD4+ count after treatment was 200 cells/μL.

Discussion

Patients with HIV/AIDS and with low CD4 cell counts in SSA are prone to many dermal infections; for example, cutaneous cryptococcosis, molluscum contagiosum, and Kaposi sarcoma. A history of travel to Thailand, China, and South-East Asia must be asked from the patient. These countries are endemic for *Talaromyces marneffei,* and it has become the third-most common opportunistic infection in patients with AIDS, after tuberculosis and cryptococcosis.[7] The cutaneous lesions may occur in 15% of patients with disseminated cryptococcosis and may be the first indicator of infection.[8]

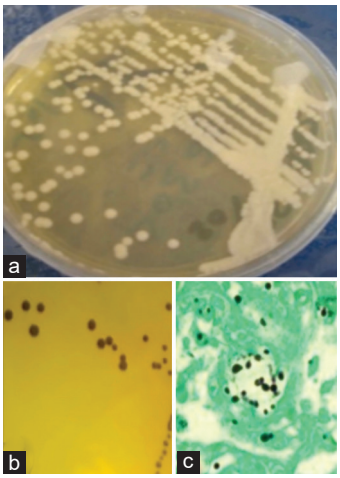

Figure 2: (a) Heavy growth of *Cryptococcus neoformans* on Sabouraud dextrose agar (SDA) after 48 h of incubation (b) Coffee colored colonies of *Cryptococcus neoformans* on Bird Seed Agar (BSA) (c) Grocott's Methenamine Silver Stain

It is very important to find out the cause of dermal lesions, because it is always treated first and then ART is prescribed. The early initiation of ART can lead to IRIS. Punch biopsy of the dermal lesions should be stained and cultured according to the clinical suspicion and manifestations. Coinfection of Cryptococcus and molluscum contagiosum,[9] cutaneous cryptococcosis and Kaposi's sarcoma occurring in the same lesions, and cutaneous cryptococcosis and histoplasmosis coinfection in a patient with AIDS[10] have been observed.

Conclusion

The papular cutaneous lesions in HIV/AIDS patients are very common. The flesh colored lesions with a central umbilication due to molluscum contagiosum are very common in sub-Saharan region. Other similar lesions could be due to herpes zoster, *Histoplasma capsulatum*, *Coccidioides immitis*, and *T. marneffei*. Culture and staining of the biopsy material are very important to find out the exact organism/organisms and treat accordingly before initiating the ART treatment.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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