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DISSEMINATED CRYPTOCOCCOSIS IN HUMAN IMMUNODEFICIENCY VIRUS SEROPOSITIVE PATIENT

S. Thasneem Banu[1], R. Deepa[2], C.S. Sripriya[3], G. Jayalakshmi[4]

ABSTRACT

Cryptococcus neoformans is known to cause opportunistic infection in the immunocompromised. If not detected at the earliest it can lead to dissemination and death. One of the first evidence of dissemination could be the appearance of skin lesions, when immediate antifungal therapy would prevent further complications. We report a human immunodeficiency virus seropositive individual with generalized skin lesions from whom C. neoformans was recovered by culture simultaneously from the skin and blood. The patient died before antifungal therapy could be initiated.

Key words: *Cryptococcus neoformans*, Human immunodeficiency virus, Meningoencephalitis

INTRODUCTION

Cryptococcus neoformans is an encapsulated heterobasidiomycetous fungus that has progressed from being a rare human pathogen to become a common worldwide opportunistic pathogen in immunocompromised hosts.[1] The genus *Cryptococcus* comprises of over 70 species, but human infection is seldom caused by species other than *Cryptococcus neoformans* and *Cryptococcus gattii*.[2] The spectrum of human cryptococcosis varies broadly from asymptomatic colonization of the respiratory tract to widespread disseminated infection. Cryptococcal meningoencephalitis is an acquired immunodeficiency syndrome (AIDS) defining condition in patients infected with human immunodeficiency virus (HIV) and generally occurs when CD4 count falls below 100 cells/µl.[3] Hematogenous lesions of the skin occur in about 10% of patients with cryptococcosis. The significance of skin lesions may provide the first evidence of dissemination and indicate a poor prognosis; however, early diagnosis and treatment would improve survival.[4,5] Herein, we report a case of disseminated cryptococcosis with cutaneous lesions in HIV seropositive patient.

CASE REPORT

A 52-year-old male patient working as a bus driver from Theni district presented with multiple elevated skin lesions over the face, nape of neck, trunk and right lower limb of 3 weeks duration and headache of 10 days duration, with no history of seizures [Figure 1]. There was no past history of diabetes, hypertension, and jaundice. He had a history of pulmonary tuberculosis and was on treatment with antituberculous drugs for 1 month. He was a known HIV seropositive individual on antiretroviral therapy. The differential diagnoses were AIDS with disseminated cryptococcosis, penicilliosis, and molluscum contagiosum. Basic blood investigations were normal except for anemia and low total leukocyte count. Liver function tests and renal function tests were within the normal limits. CD4 count was 67 cells/cumm. Chest X-ray was normal. Computed tomography brain revealed no significant abnormality. Skin excision biopsy was performed, and specimens showed plenty of spherical budding yeast cells with well-defined capsules by India ink preparation and gram staining. Specimens were inoculated into Sabouraud's dextrose agar (SDA) with antibiotics and incubated at 37°C and 25°C temperature. Yeast like highly mucoid creamy colored growth was observed after 3 days and confirmed as *C. neoformans* by gram stain, positive urease test and nonutilization of D-proline and D-tryptophan on Assimilation agar at 25°C [Figure 2]. Blood culture also yielded positive culture for *C. neoformans.* During the process of investigation, he developed generalized tonic-clonic seizures with the loss of consciousness. He was treated with corticosteroids and antiepileptic drugs. Before the institution of parenteral antifungal therapy with amphotericin-B, patient expired.

DISCUSSION

Disseminated cryptococcosis is defined by (i) a positive culture from at least two different sites or (ii) a positive blood culture.[6] In the present case, positive cultures were obtained from tissue biopsy

[1]Professor, [2,3]Senior Assistant Professors, [4]Director and Professor, Institute of Microbiology, Madras Medical College, Chennai, Tamil Nadu, India

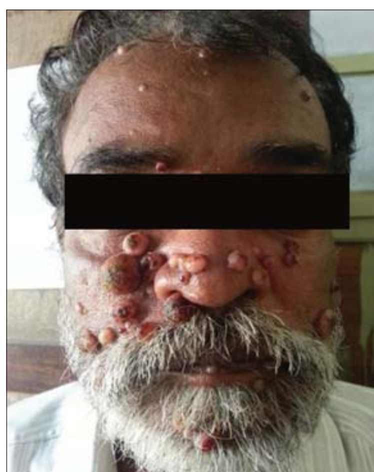

Figure 1: Multiple umblicated lesions all over the face

Figure 2: Sabouraud's dextrose agar Slopes showing growth of *Cryptococcus neoformans*

specimens and blood culture. In patients with AIDS, skin manifestations represent the second most common site of disseminated cryptococcosis. Skin findings in disseminated cryptococcosis indicate a poor prognosis. Lesions often occur on the head and neck and may present as papules, nodules, plaques, ulcers, abscesses, cutaneous ulcerated plaques, herpetiform lesions, lesions simulating both molluscum contagiosum, and Kaposi's sarcoma.[7] India ink preparation, gram stain, growth on SDA of biopsy specimen and a positive blood culture confirmed the diagnosis of *C. neoformans*. Cerebrospinal fluid was not tapped probably due to raised intra cranial tension in this case. However, studies indicate that lumbar puncture should be performed immediately on any patient suspected of having cryptococcal meningitis based on clinical evaluation.[8,9] The mortality of disseminated cryptococcosis is 70-80% in untreated patients compared with those treated with systemic antifungal agents.[10] In our case, clinical deterioration manifested by loss of consciousness and seizures was due to *C. neoformans* meningoencephalitis, with dissemination to skin before the institution of antifungal therapy.

CONCLUSION

In HIV seropositive patients with cutaneous lesions, a high index of clinical suspicion of cryptococcosis at an early stage supported by laboratory diagnosis is necessary. This is crucial to initiation of early systemic antifungal therapy and improving survival.

REFERENCES

1. Perfect JR. *Cryptococcus neoformans*. In: Mandel GL, Bennett JE, Dolin R, editors. Principles and Practice of Infectious Diseases. 6th ed. Philadelphia, PA: Churchill Livingstone; 2005. p. 2997-3009.
2. Khawcharoenporn T, Apisarnthanarak A, Mundy LM. Non-neoformans cryptococcal infections: A systematic review. Infection 2007;35:51-8.
3. Perfect JR, Casadevall A. Cryptococcosis. Infect Dis Clin North Am 2002;16:837-74.
4. Vasanthi S, Padmavathy BK, Gopal R, Sundaram RS, Manoharan G. Cutaneous cryptococcosis among HIV infected patients. Indian J Med Microbiol 2002;20:165-6.
5. Aberg JA, Powderly WG. Cryptococcosis and HIV-HIV insite knowledge base chapter. Available at http://www. hivinsite.uscf.edu. May 2006.
6. Suchitha S, Sheeladevi CS, Sunila R, Manjunath GV. Disseminated cryptococcosis in an immunocompetent patient: A case report. Case Rep Pathol 2012;2012:652351.
7. Cryptococcosis. Available from: http://www.mycology.adelaide.edu.au/Mycoses/Opportunistic/Cryptococcosis. [Last accessed on 2013 Aug 29].
8. WHO. Rapid Advice: Diagnosis, Prevention and Management of Cryptococcal Disease in HIV Infected Adults, Adolescents and Children. Geneva: WHO; 2011.
9. Perfect JR, Dismukes WE, Dromer F, Goldman DL, Graybill JR, Hamill RJ, *et al*. Clinical practice guidelines for the management of cryptococcal disease:2010 update by the infectious diseases society of america. Clin Infect Dis 2010;50:291-322.
10. Dharmshale SN, Patil SA, Gohil A, Chowdhary A, Oberoi C. Disseminated crytococcosis with extensive cutaneous involvement in AIDS. Indian J Med Microbiol 2006;24:228-30.

Corresponding Author: Dr. S. Thasneem Banu, Institute of Microbiology, Madras Medical College, Chennai, Tamil Nadu, India.
E-mail: thasneem98@yahoo.com