CASE REPORT

Cutaneous *Cryptococcus*: marker for disseminated infectionG N Srivastava,¹ Ragini Tilak,² Jyoti Yadav,³ Manish Bansal³¹Department of Tuberculosis and Respiratory Diseases, Institute of Medical Sciences, Varanasi, Uttar Pradesh, India²Department of Microbiology, Institute of Medical Sciences, Varanasi, Uttar Pradesh, India³Department of Dermatology and Venereology, Institute of Medical Sciences, Banaras Hindu University, Varanasi, Uttar Pradesh, India**Correspondence to**Dr Manish Bansal,
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SUMMARY

Cryptococcosis is an infection caused by the encapsulated yeast, *Cryptococcus neoformans*, a dimorphic fungus recovered from pigeon excreta, soil, dust and human skin. After a primary infection in the lungs, the disease can disseminate via a haematogenous route to various organs, including the central nervous system and skin, in susceptible individuals. Cryptococcosis can present with a variety of skin and soft tissue manifestations including acneiform lesions, purpura, vesicles, nodules, abscesses, ulcers, granulomas, pustules, draining sinuses and cellulitis. We present a case of a young man with HIV infection who developed molluscum-like cutaneous lesions secondary to pulmonary cryptococcosis. The diagnosis was confirmed by Indian ink preparation of the cutaneous lesions. Primary cutaneous infection occurs rarely due to direct inoculation. Cutaneous lesions are usually secondary and act as a key marker of disseminated infection, especially in patients with impaired cell-mediated immunity, such as those infected with HIV, solid-organ transplant recipients, and those on chronic corticosteroid therapy.

present. Non-tender, non-matted cervical and axillary 1×1 cm lymph nodes were present. Systemic examination did not reveal any abnormality. Twenty-five skin-coloured papulonodular lesions varying from 1×1 mm to 1.5×1 cm with central ulceration were present over the face (figure 1).

INVESTIGATIONS

The patient had megaloblastic anaemia with haemoglobin levels of 9.7 g/dL and mean corpuscular volume 112.2 fL/mm³. Total leucocyte counts were increased (18 100 cell/mm³). Liver and renal parameters, blood glucose levels and thyroid function tests were within normal range. Blood and urine cultures were negative for growth. Cerebrospinal fluid examination was normal. A sputum sample was taken and sent for examination. Potassium hydroxide (KOH) examination from both the sputum and skin swab from the cutaneous lesions revealed multiple round yeast cells. An India ink preparation of the specimen collected on sterile swabs from the skin lesions showed round yeast cells with capsule (figure 2). Gram staining of sputum showed numerous budding yeast cells

BACKGROUND

Cutaneous cryptococcal infection should be presumed to be disseminated until proven otherwise, and a search for other sites of involvement must be immediately undertaken. Cutaneous signs may be the first indication of infection, preceding the diagnosis of disseminated disease by 2–8 months, making its recognition crucial to early treatment.

CASE PRESENTATION

A 23-year-old man was referred to the dermatology outpatient department from the department of pulmonary medicine for the evaluation of cutaneous lesions over his face. The patient was apparently asymptomatic 2 years earlier, when he developed moderate grade, continuous fever associated with chills and rigour. His symptoms were not relieved with antipyretics and analgesics. He had decreased appetite and significant weight loss (15 kg in the previous year). During the course of his illness, he was empirically started antitubercular drugs on the basis of symptoms, but had no relief and continued to lose weight. Antitubercular drugs were stopped after 4 months. One month prior to the current presentation, the patient started developing multiple small asymptomatic skin-coloured raised lesions over his face. The lesions grew in size for the following 2 weeks and subsequently ulcerated in the centre. On general examination, pallor was

Figure 1 Multiple, discrete, skin coloured papulonodular lesions of varying sizes with ulceration and haemorrhagic crust in the centre, resembling molluscum contagiosum, are seen on the face of a male patient with HIV infection.

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Figure 2 India ink preparation of specimen taken on sterile swabs from cutaneous lesions showing yeast cells with capsule (x100).

(figure 3). The patient was detected positive for antibodies against HIV 1 and 2.

DIFFERENTIAL DIAGNOSIS

Giant molluscum contagiosum and cutaneous histoplasmosis.

TREATMENT

The patient was started on intravenous amphotericin B (0.7–1 mg/kg/day) plus flucytosine (100 mg/kg/day) and was referred to an antiretroviral therapy centre for management of the associated HIV infection. The cutaneous and pulmonary symptoms improved with therapy. After initial intravenous therapy for cryptococcosis, the patient was discharged on oral fluconazole maintenance therapy (400 mg/kg/day) and asked to follow-up after 2 weeks.

OUTCOME AND FOLLOW-UP

The patient was lost to follow-up.

DISCUSSION

Cryptococcosis is an infection caused by the encapsulated yeast, *Cryptococcus neoformans*, a dimorphic fungus recovered from pigeon excreta, soil, dust and human skin. After a primary infection in the lungs, the disease can disseminate via a haematogenous route to various organs, including the central nervous system and skin, in certain susceptible individuals. *Cryptococcus*

is classified into four serotypes (serotypes A, B, C and D) based on immunological reactivity of the capsular polysaccharides.¹ Patients with impaired cell-mediated immunity, such as those infected with HIV, solid-organ transplant recipients, and those on chronic corticosteroid therapy, are most vulnerable to cryptococcal infections.² Primary cutaneous infection occurs rarely as a result of direct inoculation of organisms into the skin by an infected object. Clinical manifestations of the disease depend on the host response, inoculum size and innate virulence of the organism. Symptoms may range from mild fever with cough to meningitis, hepatitis, osteomyelitis, prostatitis, pyelonephritis and peritonitis. Cryptococcosis can present with a variety of skin and soft tissue manifestations including acneiform lesions, purpura, vesicles, nodules, abscesses, ulcers, granulomas, pustules, draining sinuses and cellulitis.^{3 4} Most skin and soft tissue manifestations occur in the setting of disseminated disease, which is apparent in 10–15% of patients with systemic cryptococcosis.⁴ Neuville *et al*⁵ observed that the skin lesions of primary cutaneous cryptococcosis (PCC) usually presented as solitary lesions resembling cellulitis, ulceration or whitlow, and were located on unclothed areas; in contrast, lesions from disseminated disease usually presented as scattered umbilicated papules resembling molluscum contagiosum. The French cryptococcosis study group highlighted the fact that the spectrum of skin manifestations due to either disseminated or PCC overlaps with other skin infections, necessitating biopsy for histopathological and microbiological diagnosis.⁵

In patients with HIV infection, cryptococcal infection is typically seen when the CD4 count is less than 50–100 cells/ μ L and the HIV illness has progressed to AIDS.

Learning points

- ▶ Patients with impaired cell-mediated immunity, such as those infected with HIV, solid-organ transplant recipients, and those on chronic corticosteroid therapy, are most vulnerable to cryptococcal infections.
- ▶ Cutaneous cryptococcal infection should be presumed to be disseminated until proven otherwise, and a search for other sites of involvement must be immediately undertaken.
- ▶ Cutaneous signs may be the first indication of infection, preceding the diagnosis of disseminated disease by 2–8 months, making its recognition crucial to early treatment.

Figure 3 Gram staining of sputum showing budding yeast cells (x100, oil immersion field).

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Competing interests None declared.

Patient consent Obtained.

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