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PHOTOLETTER TO THE EDITOR

Atypical primary cutaneous mucormycosis of the scalp

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Abstract

Mucormycosis of the scalp is a rare cutaneous presentation of the disease. It is also an unusual infection in children. We present the case of a 4-year-old girl with acute lymphoblastic leukemia, who presented with atypical cutaneous mucormycosis simulating an *ecthyma gangrenosum* lesion.
Risk factors for the infection are diabetes, neoplastic diseases, immunosuppression in organ transplant recipients, and neutropenia. The cutaneos forms have been associated with trauma, burns and surgical wounds. First line treatment is amphotericin B. Posaconazole was recently approved to treat invasive mucormycosis. Surgical removal of the infected tissue is indicated. (*J Dermatol Case Rep*. 2017; 11(2): 32-34)

Keywords:

amphotericin B, diabetes, fungus, immunodeficiency, infection, posaconazole, tumor, ulcer

Mucormycosis is caused by fungi of the order Mucorales. It is acquired by inhalation of airborne spores, percutaneous inoculation or ingestion. It is a potentially fatal disease that can present with diverse clinical manifestations and at different anatomic sites.[1] Mucormycosis in children is infrequent and usually does not affect the scalp.[2] It is commonly presented in immunocompromised patients.[3]

A 4-year-old girl with a history of relapsed acute lymphoblastic leukemia. She presented erythema in the occipital area of the scalp, hair loss, and fever of one week of evolution. On physical examination, a 4-cm erythematous plaque with a wide necrotic central area and suppurative exudate was found (Fig. 1). Laboratory findings showed severe pancytopenia.

After a platelet transfusion, an incisional skin biopsy was performed. Histopathology findings included thin walled, non-dichotomous, irregular aseptated broad hyphae branching at right angles. The causal agent was identified in culture macroscopically as a quick growing white and fluff fungal colony and microscopically as a nonseptate hyphae with long sporangiophores and bear terminal round spore-filled sporangia (Fig. 2). The genomic DNA of the fungal strain was extracted. The non-coding fungal regions ITS and D1/D2 were amplified and sequenced by the Sanger method. BLAST sequence analysis led to the identification of *Mucor circinelloides f. circinelloides*.

Computed tomography was performed to discard bone or central nervous system invasion.

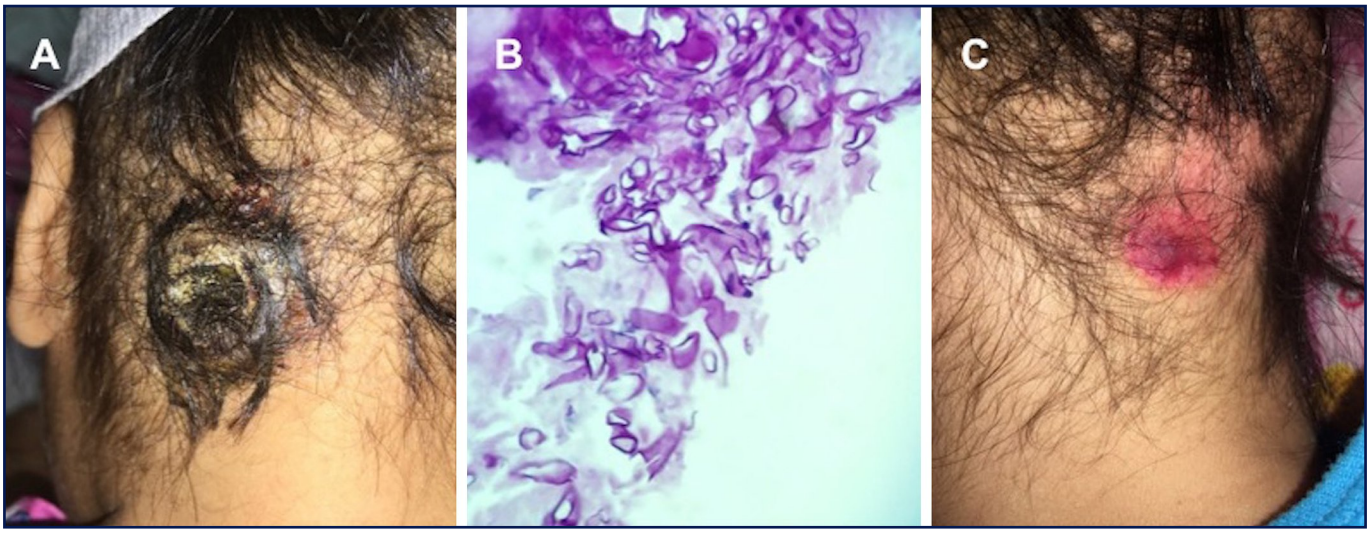

Figure 1

A) Lesion of the scalp at the moment of hospitalization. B) Histopathology showing broad hyphae. C) Lesion of the scalp after debridement and antifungal treatment.

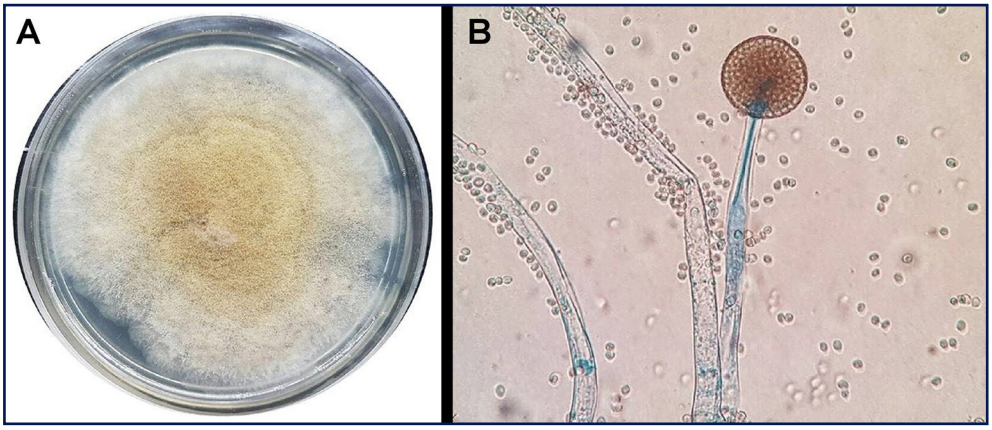

Figure 2

Microbiological study of the isolated strain of Mucor circinelloides f. circinelloides. A) Macroscopic examination of the fungal growth in Potato-dextrose agar after 48 h of incubation at 30°C. B) Microscopic morphology showing a characteristic spore-filled sporangia.

Partial debridement of the necrotic central zone was performed. In addition, granulocyte colony stimulating factor was administered together with a new chemotherapy regimen. Intravenous amphotericin B at 4 mg/kg was given for 31 days. However, it was discontinued because of acute kidney injury and severe hypokalemia. An oral azole was started with an adequate response (Fig 1).

Despite the patient's clinical improvement and our effort to correct immunosuppression, two weeks later the patient presented a neutropenic enterocolitis, and a second necrotic skin lesion in the genital area. Multi-organ failure ensued and the patient died 2 days later after readmission to the hospital.

Currently they are a few cases of mucormycosis in children, specially primary cutaneous form, Bonifaz and cols reported that cutaneous form accounts for 18.18% of all cases of mucormycosis in pediatric patients.[4] Risk factors for the infection are diabetes, neoplastic diseases, immunosuppression in organ transplant recipients and neutropenia. The cutaneos forms have been associated with broken skin barrier by trauma, burns or surgical wounds. First line treatment is amphotericin B. Posaconazole was recently approved to treat invasive mucormycosis. Surgical removal of the infected tissue is recommended.[5]

The diagnosis of mucormycosis requires a combination of clinical data, direct examination, histopathology, and fungal isolation in culture. Mucormycosis of the scalp was an unusual location of mucormycosis.

It is important to consider *ecthyma gangrenosum*, cutaneous *mycobacterium* and another fungal entities among the differential diagnoses. Treatment requires a rapid diagnosis, correction of predisposing factors, surgical debridement and appropriate antifungal therapy.

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