

Blastomycosis: Case Report of an Isolated Lesion in the Distal Fibula

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ABSTRACT

Blastomycosis (*Blastomyces dermatitidis*) is a fungal infection that occurs primarily in the lungs, but 15% to 60% of patients with systemic blastomycosis have skeletal involvement. Because the symptoms and radiographic appearance of bony lesions are variable, diagnosis and treatment may be delayed if fungal infections are not included in the differential diagnosis for a patient with a lytic bone lesion.

We present the case of a man in his late 30s with no local or systemic signs of infection in whom biopsy-curettage of a painful ankle lesion identified budding yeast consistent with North American blastomycosis. After treatment with itraconazole, the patient was symptom-free and had returned to his previous activities without pain or difficulty.

Blastomycosis (*Blastomyces dermatitidis*) is a fungal infection that occurs primarily in the lungs; however, skeletal and cutaneous manifestations of blastomycosis are common. Skeletal involvement has been estimated to occur in 15% to 60% of patients with systemic blastomycosis.¹⁻⁴ Occasionally, blastomycosis occurs as an isolated osseous lesion. In the absence of pulmonary or cutaneous manifestations, diagnosis and treatment may be delayed if fungal infections are not included in the differential diagnosis for a patient with a lytic bone lesion.^{4,5}

Blastomycosis osteomyelitis has been described in the vertebrae, skull, ribs, tibia, tarsal, knee, metatarsals, distal radius, ulna, calcaneus, carpals, metacarpals, face, cuneiform, navicular, pelvis, distal femur, and scaphoid.^{1,2,4,6-13} To our knowledge, however, the English-language literature does not include any cases of isolated blastomycosis of the fibula. Oppenheimer and colleagues¹¹ indicated that 3 of 45 patients with blastomycosis had lesions in the fibula, but no other information was given.

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In the present article, we describe a case of blastomycosis that occurred as a localized osteolytic lesion in the distal fibula, which caused ankle pain and swelling in an otherwise asymptomatic patient. The authors have obtained the patient's written informed consent for print and electronic publication of the case report and images.

CASE REPORT

A man in his late 30s with no significant medical history presented with a 2-month history of left ankle pain that began after a ski trip. The patient could not recall a specific episode of trauma. Physical examination revealed diffuse swelling over the left lateral malleolus. The ankle was nontender and compartments soft. Range of motion in the left ankle was from 10° of dorsiflexion to 30° of plantar flexion. There were no focal motor or sensory deficits, and the ankle was stable. Plain radiographs of the ankle showed a permeative lytic lesion of the distal fibula with a small amount of periosteal reaction (Figure 1). Magnetic resonance imaging (MRI) showed a 2.4 × 0.6-cm lesion in the distal fibula (Figure 2). The lesion had eroded the cortex, and there was some fluid in the soft tissue with surrounding edema. MRI also showed an oblique line in the lesion suggestive of a fracture. Bone scan demonstrated increased activity in the left distal fibula.



Figure 1. Radiograph of left ankle shows ill-defined radiolucent lesion in distal fibula.

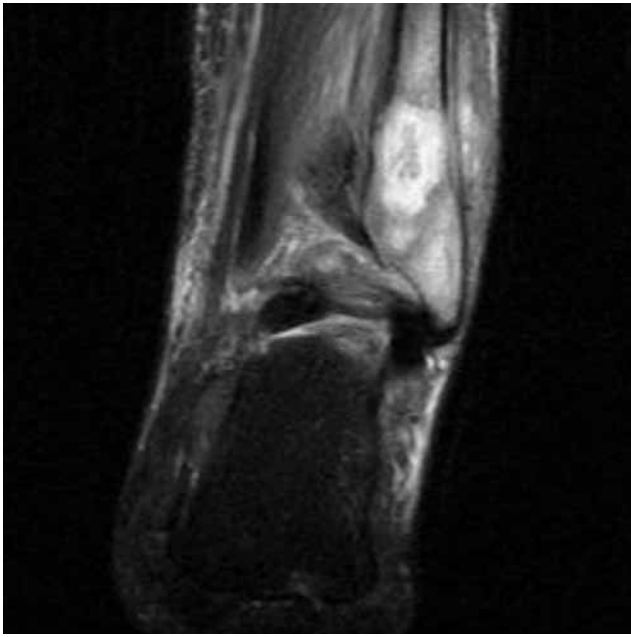


Figure 2. Coronal magnetic resonance imaging shows signal abnormality in distal fibula with linear density consistent with pathologic fracture.

A biopsy was performed through a small cortical window in the lateral aspect of the distal fibula. A cystic cavity was entered, and a curette was used to remove a portion of the cyst lining. The results of the histologic examination of the frozen section of this sample were consistent with benign-appearing edematous tissue with some reactive bone formation without any evidence of neoplasm. Cultures of the lesion were taken and sent for identification of anaerobic, aerobic, fungal, or tubercular organisms. The lesion was then enlarged with a power burr, and the remainder of the cyst lining was removed (Figure 3). The cavity was irrigated and filled with a calcium phosphate bone graft substitute (Figure 4). The patient's leg was immobilized in a cast.

Pathologic evaluation, using Gomori methenamine-silver stain for fungi, demonstrated budding yeast consistent with North American blastomycosis (Figure 5).

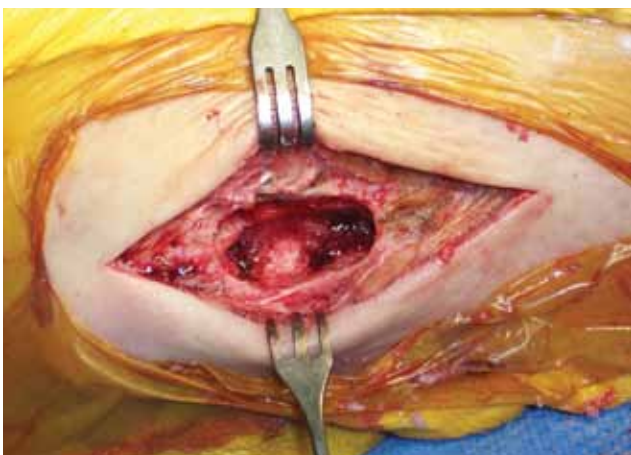


Figure 3. Intraoperative photograph of cystic cavity.



Figure 4. Intraoperative photograph after placement of calcium phosphate bone graft substitute.

An infectious disease consultation was obtained, and the patient was treated with itraconazole 100 mg oral twice a day for 20 weeks.

Two years after treatment, the patient was asymptomatic and engaging in all his previous activities without pain or difficulty (Figure 6).

DISCUSSION

Blastomycosis (*Blastomyces dermatitidis*) is a dimorphic fungus that can cause systemic illness. Most infections occur in the southeast, central, and mid-Atlantic United States, including the Ohio and Mississippi river areas, as well as portions of central Canada.⁵ The disease is predominantly contracted by inhalation of soil mold spores, which in the lungs transform to budding yeast.⁵ The primary manifestation of the disease is pulmonary symptoms, but, once it becomes systemic, blastomycosis can manifest (in order of decreasing prevalence) as cutaneous, osseous, or genitourinary lesions or central nervous system (CNS) involvement.^{4,5,11}

Skeletal involvement, the result of hematogenous spread, has been estimated to occur in 15% to 60% of patients with systemic blastomycosis.^{1,3,13} Bony lesions can cause a variety of symptoms, including pain, swelling, abscesses, and draining sinuses. The radiographic appearance is variable, but a blastomycotic cyst often appears as an eccentric lytic lesion without sequestrum or periosteal reaction.^{2,5,13} Because imaging studies are nonspecific, these lesions often are misdiagnosed as benign or malignant neoplasms rather than an infectious process.^{10,14} As in our patient, local and systemic signs of infection may be absent. Unless biopsy specimens are sent for appropriate cultures, the diagnosis can be easily missed.

The treatment of blastomycosis has changed over the past several years. Before the development of antifungal therapy, the mortality rate for systemic blastomycosis exceeded 90%.^{5,9,12} Since the introduction of amphotericin B in the 1950s for treatment of blastomycosis, cure rates of 70% to 91% have been reported.^{5,15} Amphotericin B, however, has serious side effects, including nephrotoxicity and hepatotoxicity. Amphotericin B can be delivered only intravenously, which makes administration more burdensome to the patient than an oral antibiotic.

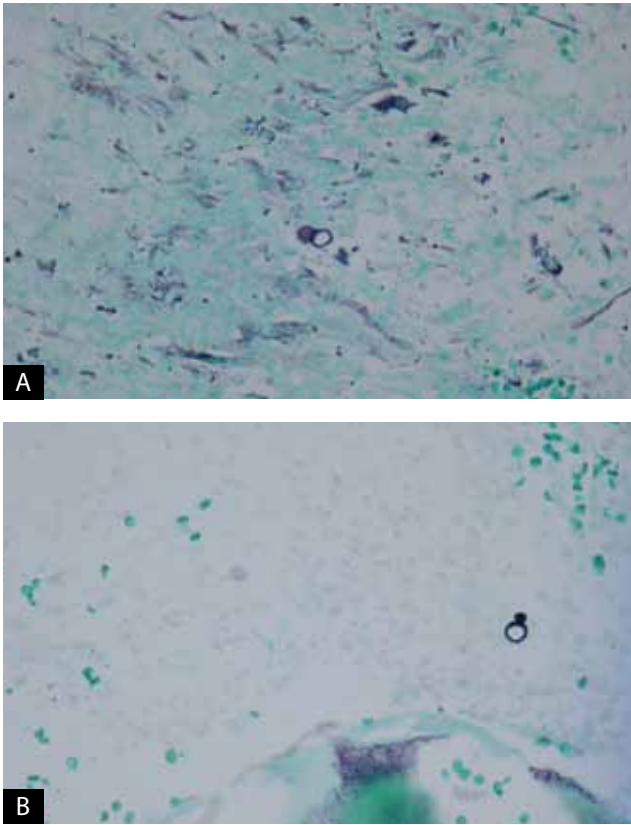


Figure 5. (A,B) Gomori methenamine silver stain shows budding yeasts diagnostic of North American blastomycosis.

Ketoconazole was the first azole shown to be an effective alternative to amphotericin B in the treatment of non-life-threatening blastomycosis, with a cure rate of nearly 85%.^{5,15} Itraconazole is a better oral treatment for blastomycosis and has replaced ketoconazole as the first-line treatment for non-life-threatening blastomycosis.^{5,15} Most patients respond to a lower dose of itraconazole (200 mg) than that required for ketoconazole, and the medication appears to be better tolerated than ketoconazole.⁵ The current recommendation for treatment of non-CNS blastomycosis is itraconazole 200 to 400 mg daily for a minimum of 6 months, with some authors recommending a total of 12 months of chemotherapy for lesions involving bone.^{5,13,15} Furthermore, although surgical débridement is not required for definitive treatment of blastomycosis osteomyelitis, cultures and pathologic specimens are crucial for diagnosis.^{13,15}

The present case of isolated blastomycotic osteomyelitis in the distal fibula illustrates the need to include fungal infections in the differential diagnosis for all lytic lesions so that the correct diagnosis can be made and appropriate treatment can be given promptly. If an intraoperative frozen section does not demonstrate a clear diagnosis, cultures for aerobic and anaerobic bacteria, fungus, and mycobacteria should be obtained.

AUTHORS' DISCLOSURE STATEMENT

The authors report no actual or potential conflict of interest in relation to this article.



Figure 6. Radiograph of left ankle 2 years later shows incorporation of bone graft with no sign of recurrence.

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This paper will be judged for the Resident Writer's Award.