Blastomycotic Osteomyelitis: An Unusual Cause of Hand Swelling

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Isolated blastomycosis hand infections are extremely rare, and are often clinically unsuspected, leading to delays in clinical diagnosis. Conclusive diagnosis often necessitates fungal cultures and histopathological demonstration of budding yeasts in tissues. In this report, we describe the rare occurrence of isolated blastomycotic hand infection, without any other organ involvement, in a 42-year-old male patient. Analyzing tissue specimens with frozen section has been shown in the past to demonstrate granulomatous inflammation and yeast forms of the organism; however, as demonstrated in this patient, the presence of pseudoepitheliomatous cells may deceptively appear as malignant, causing substantial concern and anxiety. Definitive diagnosis often necessitates fungal culture and histopathological examination with special fungal stains including polymerase chain reaction for speciation. *(J Hand Surg Am. 2017;42(11):932.e1-e6. Copyright © 2017 by the American Society for Surgery of the Hand. All rights reserved.)*

Key words Blastomycosis, hand, swelling, metacarpal, osteomyelitis.

Online Exclusive

Described by Gilchrist in 1894, *Blastomyces* species are dimorphic fungi causing endemic infections in the region of the Great Lakes of the United States and Canada, and also in the Ohio and Mississippi River Valleys.[1] They are commonly found in wet soil composed of decaying organic matter contaminated with animal droppings. Infections occur in susceptible hosts from inhalation of infective conidiospores released from mycelia after disruption of the contaminated soil from human activities.

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Less commonly, direct inoculation from animal bites, penetrating injuries, or laboratory accidents can lead to blastomycosis infections.[2] These modes of transmission lead to lung and skin involvement, which are the organs most commonly affected by this infection.[1] Bone is the third most common site of organ involvement.[3] However, bone and joint infections without pulmonary or dermatological manifestations are relatively rare.[4] Furthermore, isolated hand osteomyelitis is exceptionally rare with only a few cases reported in literature.[2,5,6] The aim of this report is to present a rare case of hand osteomyelitis from blastomycosis infection occurring in the absence of other organ involvement.

CASE REPORT

A 42-year-old right-handed man with a history of diabetes mellitus, depression, hyperlipidemia, and nicotine dependence presented to our clinic complaining of the gradual onset of painful swelling in the left hand of 4 months' duration. Of note, he had a recent hospitalization for central retinal artery occlusion in his left eye and had infiltration of an

FIGURE 1: **A** Anteroposterior and **B** lateral radiograph demonstrating cortical erosion and periosteal reaction at the base of the middle finger and ring finger metacarpal shafts. **C, D** Magnified anteroposterior and lateral view demonstrating cortical erosion on the **C** radial aspect of the middle finger metacarpal and ulnar aspect of the ring finger metacarpal and **D** dorsum of the middle and ring finger metacarpals.

intravenous line in the dorsum of the left hand during the hospital course. A week after discharge, he started developing painful, generalized swelling over the dorsum of the left hand. He denied any history of trauma or systemic symptoms of fever, cough, chills, night sweats, or unintentional weight loss. He had received massage therapy, physical therapy, and anti-inflammatory medications in the intervening period without much relief.

On physical examination, the dorsal surface of his left hand was noticeably swollen. It was warm and tender to palpation over the third and fourth metacarpals without any overlying rash, discharging sinus, fluctuance, erythema, or ecchymosis. His grip strength was substantially reduced but the hand itself was well perfused and neurologically intact. Radiographs demonstrated cortical erosion along the radial border of the third metacarpal shaft (Fig. 1). His laboratory markers included a white blood cell count of $10.6 \times 10^3/\mu L$, erythrocyte sedimentation rate 23, and C-reactive protein of 0.23 mg/L. His Disabilities of the Arm, Shoulder, and Hand score on presentation was 84 points. Magnetic resonance imaging scans revealed nonspecific findings of irregular periosteal reaction and cortical destruction along the ring and middle finger metacarpal shafts with soft tissue masses