Osseous blastomycosis mimicking malignancy

Sammantha Kouba,¹ Takaaki Kobayashi ,² Jeffery Meier,² Poorani Sekar²

¹Department of Infectious Diseases, University of Iowa Hospitals and Clinics, Iowa City, Iowa, USA

²Department of Internal Medicine, University of Iowa Hospitals and Clinics, Iowa City, Iowa, USA

Correspondence to

Dr Sammantha Kouba;
Sammantha.Kouba@gmail.com

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DESCRIPTION

A 33-year-old man presented with a 10-month history of left back and flank pain with radiation to his lower extremity. The symptoms started gradually without preceding trauma or activity. He is a school teacher, living in the Midwestern United States. He noted construction at his workplace for several months prior. Patient eventually saw a primary care physician and completed physical therapy with minimal improvement. He later underwent CT, which revealed mixed lytic and sclerotic appearance to the left iliac wing most consistent with a neoplastic process such as sarcoma myeloma or lymphoma (figure 1). He was referred to our facility for further evaluation by orthopaedic oncology. Physical examination demonstrated tenderness over left iliac wing with normal range of motion of the hip. MRI demonstrated cystic lesions in the left iliac wing, more concerning for infection (figure 2). Fine needle aspiration and biopsy were performed, which revealed necrotising granulomatous inflammation without malignant cells. He underwent incisional biopsy, where copious purulent material was present. Cultures subsequently grew *Blastomyces dermatitidis*. He was then started on itraconazole. His symptoms improved slowly after the initiation of itraconazole and eventually resolved a few months later. Treatment was continued for 12 months with a repeat MRI at 8 months showing near resolution of prior lesions (figure 3).

Blastomycosis is caused by inhalation of the spores of the dimorphic fungus, *B. dermatitidis*. Blastomycosis is endemic in the Mississippi and Ohio river valleys, the Great Lakes region and the Saint Lawrence Seaway.¹ Risk factors include living or travelling to an endemic area, and activities

Figure 2 MRI revealed lesion with soft tissue and cystic components centred in the left iliac.

Figure 3 Follow-up MRI demonstrating resolution of prior lesions.

Figure 1 CT of the pelvis revealed mixed lytic and sclerotic appearance to the left iliac wing with abnormal soft tissue in the region of the iliacus.

involving soil disruption or water. Symptoms of blastomycosis range from subclinical infection to severe systemic disease. The lungs (91%) are the most common site of infection, followed by the skin (18%), bones (4%) and genitourinary tract (2%).² Though any bone can be involved, the most common areas affected include vertebrae, ribs, long bones and skull.³ Cutaneous and pulmonary involvements are often seen at 73% and 64% in patients with osteoarticular blastomycosis.⁴ Osseous blastomycosis is frequently initially misdiagnosed as malignancy. A high degree of suspicion is needed for accurate diagnosis given delayed recognition of blastomycosis impairs the optimal prognosis from early initiation of appropriate therapy. Definitive diagnosis requires growth of the organism from a clinical specimen. Microscopic visualisation of the broad-based budding yeast forms from the primary specimen would provide a rapid diagnosis, as this is pathognomonic for this condition, however a negative result would not exclude the possibility of blastomycosis.³ The detection of *Blastomyces* antigen in serum and urine has also proven useful in rapid diagnosis. Its sensitivity is

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Images in...

reported at 93%, whereas the specificity is reported 79% due to cross-reactivity with *Histoplasma*.⁵ In addition, antigen levels decline with successful treatment and increase with recurrence. However, our patient had negative antigen in both serum and urine. Although commercially available, serologic antibody testing for blastomycosis is rarely employed due to poor test performance characteristics.³ Treatment is recommended for all patients with symptomatic blastomycosis. Oral itraconazole is recommended for mild-to-moderate disseminated extrapulmonary blastomycosis. Amphotericin B is recommended for severe disease.⁶ Treatment duration is based on site, severity of infection and immune status of the patient. Due to the risk

of recurrence, osteoarticular blastomycosis requires at least 12 months of treatment.

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ORCID iD

Takaaki Kobayashi <http://orcid.org/0000-0003-4643-4798>

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Learning points

- Blastomycosis is caused by inhalation of spores of the dimorphic fungus, *Blastomyces dermatitidis*.
- Bone involvement is the second most common manifestation of extrapulmonary blastomycosis, after skin involvement.
- Blastomycosis is often misdiagnosed and can mimic malignancy. A high degree of suspicion is needed for accurate diagnosis given delayed recognition of blastomycosis impairs the optimal prognosis.

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