A 62-Year-Old Man with Multiple Pulmonary Nodular Opacities*

Ahmed Masood, MD; and Eric S. Bensadoun, MD, FCCP

A 62-year-old man was referred to our clinic with a 4- to 6-week history of dyspnea and an abnormal finding on a chest radiograph. He had been in his usual state of health until 6 to 8 weeks previously, when he developed a low-grade fever and arthralgias. He denied having any cough or chest pain. Early in the course of his illness, he had lost six pounds, but by the time he was seen in the clinic he had regained the weight and his symptoms had improved. In the clinic, his only complaints were fatigue and mild-to-moderate dyspnea on exertion.

He had no other active medical problems and was receiving only some pain medications. His medical history was significant for pneumonia about 10 years before and a negative purified protein derivative skin test result 8 years earlier. He had smoked one pack of cigarettes per day for the last 50 years, and he was retired, spending most of his time taking care of household chores and going fishing.

On physical examination, he was afebrile. BP was 152/94 mm Hg, heart rate was 92 beats/min, and respiratory rate was 16 breaths/min. The remainder of his examination was significant only for occasional crackles heard over the left chest. Blood test results, including a CBC, chemistry panel, and hepatic functions, were within normal limits. A chest radiograph and CT of the chest (Fig 1, 2) showed bilateral peripheral nodular opacities. The CT scan showed that the nodules were often poorly defined and varied in size; some were coalescent, some contained air bronchograms, and one nodule was cavitating. No significant mediastinal or hilar adenopathy was noted.

What is the diagnosis?

*From the Division of Pulmonary and Critical Care Medicine, University of Kentucky, Lexington, KY.
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Correspondence to: Eric S. Bensadoun, MD, FCCP, Division of Pulmonary and Critical Care Medicine, University of Kentucky, 800 Rose St, MN614, Lexington, KY, 40536-0298; e-mail: ebens0@pop.uky.edu
Figure 1. Chest radiograph showing bilateral peripheral nodular opacities.

Figure 2. CT scan of the chest showing multiple nodular opacities of varying sizes in the periphery of both lungs.
Diagnosis: Pulmonary blastomycosis

The patient underwent bronchoscopy with transbronchial biopsies. Histopathology showed mild fibrosis and a single noncaseating granuloma. Special stains for mycobacteria and fungal organisms were negative. Subsequently, the cultures of the bronchial washings grew Blastomyces dermatitidis.

Blastomycosis is the illness caused by the dimorphic soil fungus B dermatitidis that is endemic to much of the central, south central, and southeastern United States. The clinical spectrum of disease ranges from asymptomatic to fulminant respiratory or disseminated illness. Almost all cases of blastomycosis are acquired by the inhalation of aerosolized spores. Some of the spores reach the alveoli, where they transform into the parasitic yeast form, which elicits a mixed pyogenic and granulomatous inflammatory reaction. From the lungs, the organism may disseminate to extrapulmonary sites, such as the skin, bone, joints, and CNS.

The onset of symptoms can be abrupt, with fever and chills, followed by cough that rapidly becomes productive of mucopurulent sputum mimicking bacterial pneumonia; symptoms can be more chronic, with low-grade fever, productive cough, and weight loss mimicking tuberculosis or malignancy.

The chest radiographic findings are quite variable; however, several radiographic patterns of disease have been observed. Airspace infiltrates are the most common finding, followed by mass-like lesions and interstitial infiltrates. Some studies have noted an upper-lobe predilection, especially when involvement was limited to one lobe. Some authors have found an association between an acute presentation and airspace infiltrates and between chronic symptomatology and mass-like infiltrates. The mass-like lesions are often peripheral in distribution, and one study using CT scan revealed that air bronchograms were present within the mass-like lesions 86% of the time. Cavitation, pleural effusion, and adenopathy are infrequent in most studies, but when do occur, it is usually in association with one of the more common radiographic patterns.

The diagnosis can be rapidly made by microscopic examination of sputum or aspirated material after digestion with 10% potassium hydroxide. The organism appears as a 8- to 20-μm yeast with a double refractile cell wall and multiple nuclei. When budding is present, there is a broad base of attachment between the parent and daughter cell. The organism can also be well visualized in cytologic or histologic specimens using silver stains. Cultural identification is relatively easy and reliable; however, it is slower, often taking several weeks for growth to occur. Serologic tests are of limited value for diagnosing blastomycosis due to the low sensitivity of immunodiffusion and complement fixation tests; while the enzyme immunoassay is a more sensitive test, it also has the lowest specificity.

Itraconazole is the treatment of choice for mild-to-moderate cases of pulmonary blastomycosis. While it is possible that some of these patients might recover without treatment, withholding therapy is controversial. Itraconazole is highly effective for blastomycosis and is usually given as 400 mg/d for at least 6 months. Severely ill patients with pulmonary blastomycosis will require amphotericin B.

Although there is no specific diagnostic radiographic pattern for pulmonary blastomycosis, the presence of mass-like lesions in a patient from an endemic area should raise the possibility of pulmonary blastomycosis in addition to tuberculosis, histoplasmosis, and malignancy. Our patient was treated with itraconazole for 6 months and had an excellent clinical and radiographic response.

References