Blastomycosis presenting as multiple splenic masses

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T IJAZ, S EL-SAYED, G SCHROEDER, R O'CONNOR, J PINTIN-QUEZADA, H GREENBERG. Blastomycosis presenting as multiple splenic masses. *Can J Infect Dis* 1995;6(3):145-147. *Blastomyces dermatitidis* is a fungus that causes a wide spectrum of disease in humans. The clinical and pathological entity of splenic abscess due to blastomycosis is extremely rare. A case of splenic blastomycosis is reported, and its cytopathological and radiological features are described.

Key Words: *Blastomycosis, Retroperitoneal adenopathy, Spleen abscess*

Blastomycose sous forme de masses spléniques multiples

RÉSUMÉ : *Blastomyces dermatitidis* est un champignon qui provoque un vaste spectre de maladies chez l'humain. L'entité clinique et pathologique de l'abcès clinique dû à la blastomycose est extrêmement rare. Un cas de blastomycose splénique est rapporté et ses caractéristiques cytopathologiques et radiologiques sont décrites.

BLASTOMYCES DERMATITIDIS IS A DIMORPHIC FUNGUS THAT causes acute or chronic pneumonia from inhalation of spores from the environment (1). Hematogenous dissemination can follow, usually involving the skin, bone, urogenital tract and central nervous system, in that order of frequency (2).

Splenic abscess as the presenting feature due to *B dermatitidis* is very rare. We report a case of a patient who presented with an enlarged spleen and retroperitoneal adenopathy who, on clinical and radiological grounds, was thought to have a metastatic disease or lymphoma. A computed tomography (CT) guided needle aspiration biopsy of the spleen established the diagnosis of blastomycosis. To our knowledge, this is the first case of splenic blastomycosis diagnosed by such a technique. Associated retroperitoneal adenopathy also has not been previously reported.

CASE PRESENTATION

A 54-year-old female resident of northwestern Ontario presented to her family physician in September 1993 with a four-month history of 20 kg weight loss, night sweats and fatigue. She denied cough or hemoptysis. There were no gastrointestinal symptoms. She had a 30-pack per year smoking history. Past history was noncontributory.

Physical examination at the time was unremarkable apart from a palpable liver edge. She was afebrile. Bloodwork revealed a hemoglobin of 101 g/L, white blood cell count of $10.6 \times 10^9/L$, mean corpuscular volume 79.9 fL; electrolytes and liver function tests were normal. Chest radiograph showed an area of consolidation in the right upper lobe with volume loss and cavitation. She was referred for bronchoscopy. Cultures from bronchoscopy specimens were negative for mycobacteria and fungus. No tumour cells were found.

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Figure 1) Computed tomography scan of abdomen (November 1993) showing multiple low attenuation splenic masses

A Mantoux skin test revealed greater than 15 mm induration. She was started empirically on isoniazid, pyrazinamide and rifampicin in October 1993. She symptomatically improved over two weeks in terms of energy level, but then deteriorated with profound weakness.

A CT scan of the abdomen in November 1993 (Figure 1) showed multiple low attenuation splenic masses and mild retroperitoneal adenopathy. She was referred to oncology for investigation of possible lymphoma or metastatic disease to the spleen. There was evidence of an enlarged and tender spleen on physical examination in December 1993. No other adenopathy was evident. Further investigation, including a bone marrow examination, was normal. A CT scan in January 1994, compared with that in November 1993, revealed marked decrease in size of the lesions. Retroperitoneal adenopathy was also evident.

CT guided splenic needle aspiration biopsy was performed. Numerous budding yeast organisms consistent with *B dermatitidis* were identified in the Papanicolaou, Giemsa and hematoxylin-eosin stained material. Morphological detail was especially clear in the Papanicolaou stained smears. Organisms were identified intracellularly within giant macrophages and extracellularly within a predominantly suppurative background. Both the characteristic single broad-based budding of *B dermatitidis* and thick refractile wall surrounding protoplasm and nuclear contents (Figure 2) were easily identified. No hyphae were seen. There was no evidence of malignancy in the aspiration biopsy material. Because the suspicion of malignancy, such as lymphoma, was high, the very limited amount of aspirated material available was sent for cytopathology and immunohistochemistry. No further material was available for culture after it was realized the cytology suggested budding organisms.

The patient was started on amphotericin B 0.5 mg/ kg/day in early January 1994, a day after the needle aspiration biopsy was performed. Response to antifungal therapy was rapid. Within a few days, the night sweats and fatigue ameliorated. She regained the weight she had lost within three

Figure 2) Characteristic broad-based budding of *Blastomyces dermatitidis* (thick arrow) and thick refractile cell wall (thin arrow) surrounding protoplasm and nuclear contents (Papanicolaou stain x740)

months. An ultrasound examination of the spleen in May 1994 was absolutely normal. She remains clinically free from disease.

DISCUSSION

Blastomycosis is endemic in the Mississippi, Ohio and St Lawrence River valleys and in northwestern Ontario, extending into Manitoba (3).

The lungs are the portal of entry for *B dermatitidis* via inhalation of conidia from the soil in endemic areas. Patients may present with acute pneumonia, but the usual presentation is that of chronic pneumonia with fatigue, weight loss, productive cough and possible hemoptysis. Diagnosis is established by culture or histopathological evaluation of sputum or bronchial washings obtained by bronchoscopy (1). Biopsy of an involved organ, such as skin, may establish the diagnosis.

The clinical and pathological diagnosis of an overt splenic abscess due to blastomycosis is very rare. We are aware of only two cases previously reported in the English-language literature (4,5). Both were diagnosed by laparotomy. Subclinical splenic involvement has been documented in autopsy series of deaths due to blastomycosis. In one series of

blastomycosis cases from the Veterans' Administration Hospitals in the United States in the 1940s and '50s (over a 12-year period), splenic involvement was found in eight of 198 cases, all discovered postmortem (6).

Many factors made our case an especially difficult diagnostic challenge. No active pulmonary disease was identified and respiratory cultures were negative for mycobacteria and fungi. The primary site may have resolved spontaneously, or the diagnostic tests may have been falsely negative.

The initial favourable clinical response to triple therapy for tuberculosis and the fact that the splenic lesions partially responded radiologically were interesting observations. To our knowledge, there is no published information on the sensitivity of *B dermatitidis* to antituberculosis agents.

The presence of constitutional symptoms (weight loss, night sweats) and CT evidence of multiple hypoattenuating lesions with retroperitoneal lymphadenopathy put lymphoma high on the differential diagnosis. Other pathological processes that may exhibit similar features as visualized by CT include metastatic involvement of spleen, tuberculosis and sarcoidosis. Similar splenic lesions without associated lymphadenopathy may be caused by candidiasis, staphylococcus or streptococcus infections in association with

endocarditis and by aerobic Gram-negative rods, including salmonella.

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