



## **Blastomycosis**

by Alfred M. Legendre

### **What is blastomycosis?**

Blastomycosis is a disease caused by the fungus *Blastomyces dermatitidis*. This fungus is common, and it lives in the soil. The fungus produces small, light spores similar to bread mold that get into the air and can be inhaled deep into the lungs. The *Blastomyces* fungi grow best in wet areas such as riverbanks, lake shores, along streams, and in swamps. Most dogs become infected by going into these areas. Studies have shown that most infected dogs live within 400 yards of water. In addition to a wet environment, the organism requires special acid soil condition for good growth. Most cases of blastomycosis occur in states that are near the Mississippi, Ohio, and Tennessee Rivers and the Great Lakes, where growth conditions are favorable.

People also can develop blastomycosis from exposure to sites where the organism grows in the soil. Duck hunters and their dogs have developed infection from the same environmental exposure, but dogs are ten times more likely than people to become infected. This is probably because they are closer to the ground and inhale a larger number of the spores. Large dogs are most often infected than small dogs probably because they are more likely to roam into sites where the fungus grows. Cats rarely have blastomycosis.

### **What are the symptoms of blastomycosis?**

The *Blastomyces* spores that enter the lungs initially produce a lung infection called *fungal pneumonia*. Once the infection is established in the lungs, it can spread throughout the body. Common sites of infection are the eyes, bones, skin, and lymph nodes, but most tissues can become infected. Signs of blastomycosis depend on the sites of infection. Lung disease can cause an increased respiratory effort, exercise intolerance, and coughing. There may be loss of appetite, fever, and weight loss. Dogs with bone involvement are often lame. Blastomycosis of the skin results in raw, ulcerated lesions and draining abscesses. Infected eyes are usually red, painful, and have a discharge. Many of the changes are similar to bacterial infections but fungal infections do not improve with antibiotic treatment. In areas where blastomycosis is common, an infection unresponsive to antibiotics is suggestive of blastomycosis.

### **What tests are needed?**

Diagnosis of blastomycosis is best made by finding the typical yeast form of the fungus on microscopic examination of material from draining skin lesions or lymph nodes. If no

external lesions are present, chest radiographs are helpful in identifying the lung changes that can be characteristic of blastomycosis. The lung disease also may resemble bacterial pneumonia or spread of tumor cells to the lungs. It is difficult to make a definitive diagnosis from the radiographs. The finding of antibodies against *Blastomyces* spp. in the dog's serum strongly suggests a diagnosis of blastomycosis, but dogs with early infections often have not developed antibodies. A probable diagnosis is often made by considering all the signs, laboratory findings, and previous treatment.

## **What treatment is available?**

Blastomycosis is usually treated with an oral antifungal drug called *itraconazole*. Dogs that cannot take oral medication and those with brain disease are treated with an intravenously administered drug called amphotericin B. The mortality rate is high in dogs with respiratory difficulty and severe lung disease. Overall, 25% of dogs with blastomycosis will die despite treatment. The lung inflammation will sometimes get worse after the start of treatment because release of products from dead organisms may stimulate inflammation. Depending on the severity of disease, a 2- to 3-month course of treatment is required for elimination of the *Blastomyces* organisms. Dogs need to be monitored during treatment because the *itraconazole* may cause liver toxicity, whereas the amphotericin B can cause kidney damage. The response to treatment is monitored by radiographs in dogs with bone involvement. About 25% of dogs that respond well to treatment will have a recurrence of disease over the next year. Fortunately, a second course of treatment will produce a cure in more than 90% of dogs that have a recurrence. Dogs that recover from blastomycosis are probably immune and are unlikely to get reinfected even when exposed to sites where the fungus grows.

Dogs with blastomycosis are not considered infectious to their owners. In rare cases people were infected from bites by infected dogs in which the *Blastomyces* spp. were in the mouth and were inoculated into the bitten person. Because people and dogs may get infected at the same time from the same environmental site, it is important to tell your physician that your dog has blastomycosis, especially if you have respiratory symptoms or skin disease. The disease in dogs usually develops before the infection becomes evident in people.

Identification of the environmental sites that harbor the *Blastomyces* organisms is difficult. Even if the sites were known, no practical way exists for eradication of the organisms from the soil. The best way to reduce the likelihood of infection in susceptible dogs is to restrict their access to sites of water. Currently no commercial vaccine is available against blastomycosis.

**If you have further questions, please feel free to contact the clinic at the above telephone number.**