

The Animal Medical Clinic

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Blastomycosis in Dogs

Blastomycosis is a fungal disease caused by the organism *Blastomyces dermatitidis*.

Contributing Factors

Dogs with weakened immune systems are at increased risk for infection by this fungus. The weakness in the immune system may be inapparent. The fact that a dog appears healthy does not decrease its risk for contracting blastomycosis.

Prevalence

Blastomycosis is a relatively common fungal disease of dogs, especially in the Southeastern United States. Young, male dogs of the sporting breeds are most commonly infected.

Although researchers in human medicine have been mostly unsuccessful in reliably isolating the organism from the environment, it does appear that both humans and animals become infected from particular environmental sources, probably the soil. In the United States, the disease is most prevalent in the warm, moist environment found in the Ohio and Mississippi River valleys.

Causes/Transmission

This fungus most commonly infects humans and animals through the respiratory tract. After spores are breathed in, they settle in the small airways and begin to reproduce. Subsequent to this, the organism spreads throughout the body to involve many organs. Infrequently, infection occurs through inoculation of an open wound.

Clinical Signs

The organism seems to have preferences for certain body systems, although it is usually disseminated (spread) throughout the entire body. Fever, depression, weight loss, and anorexia are common. Draining lesions on the skin are seen in most cases. Some degree of respiratory distress is present in advanced cases. Blindness may occur suddenly because the eyes are frequently involved. Lameness, orchitis (testicular inflammation), seizures, coughing, enlarged lymph nodes and a variety of other signs are reported.

Diagnosis

The only tests that conclusively diagnose blastomycosis are cytology and histopathology. Cytology, the microscopic study of cells, may be performed in the veterinarian's office on some of the fluid draining from an open wound or aspirated from a nodule or lymph node. Histopathology is the study of cells and tissue architecture - a tissue sample is sent to a veterinary pathologist. Because the organism is shed in large numbers in the draining lesions, blastomycosis is usually diagnosed in the office with cytology.

Be aware that there is a *screening blood test* (AGID) to determine potential exposure. A positive result on this test does not equate with infection; it only shows exposure to the organism. Many humans and animals have positive screening tests but this does not mean that they have (or had) blastomycosis.

Treatment

Blastomycosis is a treatable disease, although not all animals will survive. Fortunately, the newest antifungal agent on the market is well tolerated by most animals and has relatively few side effects when compared to the agents being used several years ago. The drug, itraconazole (Sporanox®), is quite expensive. Large dogs may require several months of therapy. The drug is given once or twice daily with food.

Prognosis

There is no accurate means for determining prognosis prior to initiation of treatment, although an animal in poor condition and with advanced disease is less likely to survive than a relatively healthier animal.

For many, the critical period comes during the first 24-72 hours of treatment; this is when the antifungal drug begins to take effect. Typically, the lungs harbor a large number of organisms. A severe inflammatory response may occur in the lungs as the fungal elements begin to die. Respiratory distress may be a significant problem in the first few days of therapy. Some dogs with very severe fungal pneumonia may die during this early period of treatment. The animal's chest will be X-rayed prior to therapy to determine the presence and significance of a fungal pneumonia, although the chest X-ray cannot predict the outcome of treatment.

Relapse of infection is more common when the organism involves the nervous system, the testicles, or the eyes. Many drugs have difficulty penetrating the natural barriers of these body systems, making infections here harder to treat. Male dogs may need to be castrated to remove one potential source of organisms. For similar reasons, one or both eyes may be removed, especially if the disease has already blinded the animal. The risk of relapse is very real with this disease, even when treatment appears successful.

Transmission to Humans

Studies on the fungal organism have found that once an animal is infected, the organism enters a different form or phase; this does not appear to be particularly infectious to other animals or to humans. However, common sense would dictate that strict hygiene should be followed in handling the draining lesions. Thorough hand washing should follow contact with these animals.

The infected pet does not need to be segregated from the owner or other household pets. The true risk of infection to others probably comes from sharing the same environment that infected the pet (ie., soil, etc). Because the *Blastomyces* organism may be harbored near your home, we would recommend that you advise your family physician of your pet's diagnosis. Also, if anyone in your family falls into one of the following categories, we would recommend that you consult with your physician:

1. Infants or small children
2. Transplant patients
3. Chemotherapy patients
4. HIV/AIDS
5. Elderly family members
6. Anyone with a known immunosuppressed state

Prevention

Nothing can be done to prevent development of blastomycosis. The organism is ubiquitous, meaning it lives everywhere.