DANADA VETERINARY HOSPITAL, P.C.

Blastomycosis

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.

Blastomycosis spores are found in with warm, wet soil. Therefore, the prevalence is much greater around bodies of water. 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. Spores are kicked up from the soil because of activity from people or animals. 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 including deep productive cough and labored breathing.

Blindness may occur suddenly because the eyes are frequently involved. Lameness, orchitis (testicular inflammation), seizures, enlarged lymph nodes, and a variety of other signs are reported.

Diagnosis

The most sensitive test for Blastomycosis is an antigen test that looks to identify particles of blastomycosis in blood or urine. This test can take multiple days to obtain results, but it is the most likely test to confirm the disease.

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. Budding yeast forms of Blastomycosis may be visible in these samples, and if they can be identified then a definitive diagnosis can be made before PCR testing returns.

Chest x-rays are used to identify the presence and severity of fungal lung disease which helps to inform treatment choices.

Treatment

Blastomycosis is a treatable disease, although it may take weeks for improvements to be seen, and some animals will not survive treatment. Fortunately, the usual antifungal agents used for Blastomycosis are well-tolerated by most animals and has relatively few side effects. However, the drugs may need to be continued for 4-6 months in most patients. In most cases, treatment is carried out until urine antigen tests are negative on multiple samples taken a few months apart. Failure to carry out treatment to completion can lead to high likelihood of disease relapse.

In severe cases, injectable antifungal medications or surgery may be necessary to eliminate the disease. (See Prognosis).

In addition to anti-fungal treatments, some dogs will require the use of steroids (prednisone) to manage inflammation during early stages of treatment. This is especially likely if fungal pneumonia is present at the time of diagnosis.

Antibiotics and additional medications may be warranted to manage secondary bacterial infections during treatment. Antibiotics do not have any effect on Blastomycosis though since it is a fungal disease.

Prognosis

There is no accurate means for determining prognosis prior to initiation of treatment, although full recovery is expected in 50-75% of all affected patients. An animal in poor condition and with advanced disease is less likely to survive than a 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 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.

Transmission to Humans

Studies on fungal organisms 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 comes from sharing the same environment that infected the pet (i.e., 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 patients
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.