



Disease Caused by *Blastomyces*, a Type of Fungus (Blastomycosis)

Basics

OVERVIEW

- A generalized (systemic), fungal infection caused by the soil organism *Blastomyces dermatitidis*

SIGNALMENT/DESCRIPTION OF PET

Species

- Dogs
- Cats—occasionally

Breed Predispositions

- Large-breed dogs weighing 55 lbs (25 kg) or more, especially sporting breeds; may reflect increased exposure rather than increased likelihood of developing disease

Mean Age and Range

- Dogs—most common 2–4 years of age; uncommon after 7 years of age
- Cats—young to middle-aged

Predominant Sex

- Dogs—males in most studies

SIGNS/OBSERVED CHANGES IN THE PET

- Weight loss
- Decreased appetite
- Cough and difficulty breathing (known as “dyspnea”)
- Eye inflammation and discharge
- Lameness
- Draining skin lesions

Dogs

- Fever up to 104.0°F (40°C)—approximately 50% of affected pets
- Harsh, dry lung sounds associated with increased breathing effort—common
- Generalized or regional enlarged lymph nodes (known as “lymphadenopathy”), with or without skin lesions
- Inflammation of the iris (the colored part of the eye) and other areas in the front part of the eye (known as “uveitis”), with or without secondary increased pressure within the eye (known as “secondary glaucoma”) and inflammation of moist tissue of the eye (known as “conjunctivitis”), discharge from the eye, and fluid buildup in the clear part of the eye (known as “corneal edema”)
- Lameness—common because of fungal infection/inflammation of the bone marrow and bone (known as “osteomyelitis”)

- Enlargement of the testicles and prostate—occasionally seen
- Heart murmur, if inflammation of the lining of the heart (known as “myocarditis”) or the muscle of the heart (known as “myocarditis”) is present

Cats

- Increased breathing effort
- Nodular (known as “granulomatous”) skin lesions

CAUSES

- Infection with *Blastomyces dermatitidis*

RISK FACTORS

- Depend on environmental and soil conditions that favor growth of *Blastomyces*
- Wet environment—fosters growth of the fungus; banks of rivers, streams, and lakes or in swamps; most affected dogs live within 400 m of water
- Exposure to recently excavated areas
- Blastomycosis can occur in indoor-only cats
- Most common along the Mississippi, Ohio, and Tennessee river basins; also found in the area of the Great Lakes, the St. Lawrence River, southern Canada, and has been found in Colorado

Treatment

HEALTH CARE

- Dogs with severe difficulty breathing (dyspnea)—require an oxygen cage for a minimum of 1 week before lung improvement is sufficient for comfort in room air; about 25% of dogs have worsening of their lung disease during the first few days of treatment, attributed to an inflammatory response after the *Blastomyces* organisms die

ACTIVITY

- Pets with breathing compromise must be restricted

DIET

- Palatable (tasty) and high-quality to stimulate the appetite

SURGERY

- Removal of an abscessed lung lobe may be required when medical treatment cannot resolve the infection
- Blind eyes should be removed surgically (known as being “enucleated”) to eliminate potential sites of residual infection

Medications

- Medications presented in this section are intended to provide general information about possible treatment. The treatment for a particular condition may evolve as medical advances are made; therefore, the medications should not be considered as all inclusive

ITRACONAZOLE (ANTIFUNGAL MEDICATION)

- Dogs—as directed by your pet's veterinarian; administer by mouth with a fat-rich meal, such as canned dog food, to increase absorption of the drug into the body
- Cats—open the 100-mg capsules containing pellets and mix the desired amount of pellets with palatable food, as directed by your pet's veterinarian
- Avoid administering antacid-type drugs, as they can decrease absorption of itraconazole
- Treat for a minimum of 60 days or for 1 month after all signs of disease have disappeared
- Beware of compounded itraconazole, as drug absorption is not reliable

OTHER MEDICATIONS

- Dogs with nervous system signs should be treated with amphotericin B
- Amphotericin B can be administered to dogs that cannot take medications by mouth (oral medications) or that do not respond to itraconazole

- Ketoconazole—cheaper alternative to itraconazole; lower response rate and higher recurrence rate

Follow-Up Care

PATIENT MONITORING

- Bloodwork (serum chemistry)—monthly to monitor for liver toxicity or if lack of appetite (known as “anorexia”) develops
- Chest x-rays (radiographs)—determine duration of and response to treatment; considerable permanent changes in the lungs may occur after the infection has resolved, making determination of persistent active disease difficult

PREVENTIONS AND AVOIDANCE

- Location of environmental growth of *Blastomyces* organisms unknown; thus difficult to avoid exposure; restricting exposure to lakes and streams could be done, but is not very practical
- Dogs that recover from the infection are probably immune to reinfection

POSSIBLE COMPLICATIONS

- Blindness
- Death

EXPECTED COURSE AND PROGNOSIS

- Death—25% of dogs die during the first week of treatment; early diagnosis improves chance of survival
- Severity of lung involvement and invasion into the brain affect prognosis
- Recurrence—about 20% of dogs; usually within 3–6 months after completion of treatment, even with 60–90 days of treatment; may occur up to 15 months after treatment; a second course of itraconazole treatment will cure most affected pets; drug resistance to itraconazole has not been observed
- With early detection of blastomycosis, the prognosis in cats appears similar to dogs

Key Points

- Treatment is costly and requires a minimum of 60–90 days
- Considerable permanent changes in the lungs may occur after the infection has resolved, making determination of persistent active disease difficult
- Not spread from animals to people, except through bite wounds; inoculation of *Blastomyces* organisms from dog bites has been reported
- Blastomycosis is acquired from an environmental source; people in the family may have been exposed at the same time as the pet; common source exposure has been documented in duck and coon hunters
- Family members with breathing problems and skin lesions should inform their physicians that they may have been exposed to *Blastomyces*

Notes

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