

# The Rise of Fungal Pneumonia

*Unfortunately, the increasing number of cases may be an effect of global warming*

**F**ungal disease is something we are likely to see more of as our planet continues to warm. In dogs, fungi typically cause infection in the skin, eyes, nose, bones, and lungs. When fungi infect the lungs, fungal pneumonia is the result. The prognosis depends heavily on which fungus and how quickly the disease is diagnosed.

Pneumonia is inflammation of the lungs resulting in fluid accumulation in the tiny air sacs called alveoli.

Dogs can get pneumonia for a multitude of reasons. The most common cause of pneumonia in dogs is bacterial infection, either primary or secondary to aspiration. Other causes include viruses, parasites, toxic inhalation (smoke and/or chemical), and fungi.

“Fungal pneumonia is common in dogs in certain regions and uncommon to rare outside of those areas,” says Patrick Carney, DVM, PhD, assistant professor, community practice service, Cornell University’s College of Veterinary Medicine. “In the United States, the major river valleys and the Southwest

are where infections are most likely to be seen.”

Veterinarians who practice in endemic areas are typically aware of the possibility of fungal pneumonia and well-versed in its treatment. If you live outside these areas, but have traveled to them with your dog, alert your local veterinarian if your dog is showing signs of pneumonia.

### Signs of Pneumonia

- ▶ Lethargy
- ▶ Loss of appetite
- ▶ Exercise intolerance
- ▶ Unwillingness to exercise
- ▶ Difficulty breathing

### Diagnosis

Thoracic radiographs (chest x-rays) are the first-line diagnostic test for pneumonia, but interpretation of the radiographs can be tricky.

“Thoracic radiographs alone are not diagnostic for fungal pneumonia,” says Dr. Carney. “A diffuse ‘miliary’ (looks like lots of tiny seeds or beads in the lungs) is the classic appearance, but other diseases can share that appearance (e.g., certain cancers, mycoplasmal pneumonia). Additionally, some fungal pneumonias can take on very different appearances, sometimes showing up as masses or consolidated lung lobes.”

“Appropriate travel/geographical history and radiographs are a great start, but should be accompanied by a more definitive diagnostic,” says Dr. Carney. “Sometimes the organism can be found in lung washes (endotracheal/transtracheal/bronchoalveolar lavage), but most practitioners rely on blood or urine tests.”

One reason for this may be that blood and urine samples are easily obtained in the clinic setting. Not all general practitioners have the skill set or the equipment necessary for performing lung washes, which means the dog may be referred to a specialty center. These tests are more invasive and require deep sedation or light anesthesia of the patient, things many pet owners prefer to avoid if possible.

“The fungal organisms found in the major river valleys are usually best identified by a urine enzyme immunoassay (EIA); the ones found

in the Southwest are usually best identified by serum testing (EIA, with or without confirmation via agar gel immunodiffusion),” says Dr. Carney. “If the dog has other organ involvement, that sometimes points toward a particular organism and might offer another opportunity to find the organism on aspirate or biopsies.”

### Treatments

“Fungal pneumonias usually require many weeks to months of treatment,” says Dr. Carney.

Monitoring during treatment is important, both to assess healing in the lungs (thoracic radiographs) and to check for drug-related organ toxicity, especially in the liver (chemistry screen blood test).

Antifungal medications like fluconazole, ketoconazole, and itraconazole are necessary to kill the fungal organisms. These are administered by mouth. Other medications such as appetite stimulants and non-steroidal anti-inflammatory drugs (NSAIDs) for pain and inflammation may be prescribed. In the early stages for dogs with severe disease, hospitalization may be required for supportive care including intravenous fluids and oxygen therapy.

“Prognosis is generally fair to good as long as other organs are not involved,” says Dr. Carney. “Disease that has spread from the lungs to other parts of the body requires more aggressive and prolonged treatments, and the prognosis is often much poorer.”

### Bottom Line

Fungal pneumonia in dogs is predicted to become increasingly common as our planet continues to warm. Treatment for fungal pneumonia caught early, properly diagnosed, and appropriately treated is often successful. The hardest part can be getting to the diagnosis quickly. ■



The infection is most common in the Southwest and around major river valleys.



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