Acute and Chronic Aspergillosis in Birds: Causes, Signs, Treatment, and Prevention

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What is aspergillosis and what causes it?

Aspergillosis is a respiratory disease of birds caused by the fungus *Aspergillus*, which is found almost everywhere in the environment.

A. fumigatus is the most common species of the fungus to cause disease, although *A. flavus*, *A. niger*, and others can also cause problems. *Aspergillus* grows readily in warm and moist environments. The microscopic spores of the fungus become airborne, and poor ventilation, poor sanitation, dusty conditions, and close confinement increase the chance the spores will be inhaled.

Usually, the fungus does not cause disease, however, if a bird does not have a healthy immune system, it can cause illness. Predisposing factors include other illnesses, stress, poor nutrition, poor husbandry or unsanitary conditions, another injury to the respiratory system (e.g.; smoke inhalation), and prolonged use of certain medications such as antibiotics or corticosteroids.

The combination of the number of spores in the environment and the presence of predisposing factors determine which birds are most at risk of disease. Aspergillosis appears to be more common in parrots and mynahs than other pet birds.

What are the signs of aspergillosis?

Aspergillosis can follow one of two courses - acute or chronic. Birds with acute aspergillosis have severe difficulty breathing, decreased or loss of appetite, frequent drinking and urination, cyanosis (a bluish coloration of mucous membranes and/or skin), and even sudden death. The fungus generally affects the trachea, syrinx (voice box), and air sacs. The lungs may also be involved. Diagnosis is generally made through a post-mortem examination.

Chronic aspergillosis is much more common, and unfortunately, much more deadly due to its insidious nature. The bird may not become symptomatic until the disease has progressed too far for a cure. The respiratory system is the primary location of infection. White nodules appear and ultimately erode through the tissue, and large numbers of spores enter the bloodstream. The spores then travel throughout the body, infecting multiple organs including kidneys, skin, muscle, gastrointestinal tract, liver, eyes, and brain.

Respiratory symptoms will be the first to occur but will depend on the location of the greatest areas of colonization. Difficulty breathing, rapid breathing and/or exercise intolerance are common. If the syrinx (voice box) is involved, a change in voice, reluctance to talk, or a "click" may occur. Nares may become plugged or you may see a discharge. Eventually, severe respiratory compromise may kill the bird.

Other signs and symptoms will vary, depending on the other organs involved. If any portion of the central nervous system has become involved, the bird may have tremors, an uneven or wobbly gait, seizures, or paralysis. With liver involvement, a green discoloration to the urates may be seen, and the veterinarian may feel an enlarged liver. Generalized, non-specific symptoms can include loss of appetite leading to weight loss, muscle wasting, gout (painful, inflamed joints due to urate deposits), regurgitation, abnormal feces or diarrhea, excessive urination, depression, and lethargy.

Spores can penetrate fresh or incubating eggs and will kill the embryos.

How is aspergillosis diagnosed?

Aspergillosis can be very difficult to diagnose since the signs of disease mimic those of many other illnesses, especially in the chronic form. The veterinarian will need a detailed history of the course of the illness, and an accurate description of the diet and husbandry of the bird. Radiographs, a complete blood count, and a chemistry panel may help support a diagnosis. Endoscopy can be used to view lesions in the syrinx or trachea, and a sample can be taken for culture and microscopic examination, and possibly PCR testing for the presence of *Aspergillus*, which can confirm a diagnosis. A diagnosis can also be supported by a specific blood test panel to look for aspergillosis. Sometimes, however, the test can be falsely negative or falsely positive, so the tests must be interpreted in combination with the other findings.

How is aspergillosis treated?

Surgery may be performed to remove accessible lesions. Antifungal drugs such as itraconazole and amphotericin B may be administered orally, topically, by injection, or nebulizing, depending upon the drug. There are several reports that itraconazole may be more toxic to African grey parrots, when compared to other species. Therapy needs to be continued for weeks to months and more than one antifungal drug may be used. Supportive care such as oxygen, supplemental heat, tube feeding, and treatment of underlying conditions are often needed. Unfortunately, the prognosis is always guarded.

How can aspergillosis be prevented?

The importance of good husbandry and diet to prevent outbreaks of aspergillosis cannot be overstated. Keep your bird in a

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well-ventilated environment. Clean food and water dishes every day. Replace substrate (material lining the cage bottom) regularly. Remove your bird and thoroughly clean cages, toys, perches, etc., at least once a month. Pay attention to good nutrition, offering the right combination of fruits, vegetables, pellets, and only a sprinkling of "treats." Essentially, you want to do everything you can to alleviate stress in your bird's life and provide a scrupulously clean environment.

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