

Avian Biotech International

PO Box 107, Truro, Cornwall TR1 2YR England.

Tele/Fax (44) 01872-262737 email: abiuk@avianbiotech.co.uk web: www.avianbiotech.co.uk

Disease information.

Aspergillosis

Description:

Aspergillus - The genus *Aspergillus* includes a variety of related fungi, which cause aspergillosis. An important member of these genera is *Aspergillus fumigatus*. This fungus produces endotoxins which are generally responsible for the disease known as aspergillosis. *Aspergillus* species are common in the environment. Spores often become airborne in dry windy weather spreading from one location to another. Spores can enter an individual and develop in the respiratory system, lungs, eyes, and ears. Sick Building Syndrome is a condition caused by continuous fungal growth in areas of buildings and ventilation systems. Growth leads to the release of more spores. This can potentially lead to large-scale respiratory infections and distress associated with aspergillosis.

Aspergillosis can be fatal, especially to those with immunodeficiency. This opportunistic pathogen is common among domesticated and cage birds.

**Penicillium notatum* and the antibiotic revolution

Not all fungi are problematic; in fact some are vital in fighting numerous bacterial infections. In 1941 Albert Alexander had an infection at the corner of his mouth caused by the bacteria *Staphylococci* and *Streptococci*. Over time the infection spread to the rest of his face, eyes, and lungs. At the time, two scientists Howard Florey and Ernest Chain had just begun purifying a substance produced by the fungus *Penicillium notatum* that killed bacteria and was discovered by Alexander Fleming. Albert Alexander's doctor Charles Fletcher knew that Florey and Chain were looking to test this drug on a human volunteer, and so on February 1941 Albert Alexander became the first human treated with penicillin. Within 24 hours of his initial treatment his temperature dropped, his appetite returned and his infection began to heal.

Transmission: Inhalation of conidia (spores) from contaminated feed, faecal material, bedding material and soil. The spores are often present in the environment and healthy unstressed birds are generally resistant to even high levels of spores. However, young and old birds, birds on antibiotics, and those birds whose immune systems are suppressed by surgery, reproduction, environmental changes, capture, shipping, or age are frequently infected.

Aspergillus can also infect the developing embryo by penetrating the egg while the embryo is developing. Infected eggs may develop a slightly greenish tint when candled. Well-developed lesions may appear on infected embryos after they hatch.

Symptoms: Symptoms range from respiratory distress, gasping, accelerated breathing, voice changes, abnormal droppings, emaciation, regurgitation, poor appetite, diarrhoea, anorexia, gout, increased thirst, nasal discharge, conjunctivitis, dyspnea, neuromuscular disease, somnolence, lesions (yellow or grey nodules and/or plaques in the lungs, air sacs, or trachea; less often in the peritoneal cavity, liver or other sites)

Prevention: Minimise stress and overcrowding. Provide proper ventilation. Reduce contact with mould or spore contaminated nesting materials. Prevent malnutrition with a proper diet. Make sure feed is properly stored and is free of fungal growth. *Aspergillus* spores may be present in corn and grain products as well as manufactured pellets or extruded food and may develop into fungal growth if conditions are favourable.

Treatment: Antifungal treatment - Amphotericin, Flucytosine, Fluconazole & Itraconazole. Immunostimulants. Surgery may be required with certain localised Aspergillomas

Continued over

Diagnosis:

Tentative diagnosis can be made with clinical signs along with the absence of bacterial infection. A blood test showing an elevation in white blood cell count, mild anaemia, and an elevation in the monocytes also supports this diagnosis. X-rays can be taken on any suspect patient. A radiograph can reveal densities or nodules consistent with aspergillomas. Samples of the fungus can also be taken, and cultured in specially prepared culture media. Caution - Aspergillus is a common environmental contaminant.

PCR and sequence assays to identify the presence of Aspergillus and identify specific strains.

Sample: When testing individual birds, a cloacal swab and throat culture is recommended. If the sample tests positive and clinical signs are positive, the bird should be placed in quarantine and aggressive treatment should begin immediately.

Environmental testing using swabs of aviaries, countertops, fans, air-filters, nest-boxes etc. is extremely effective in determining the presence of Aspergillus in the environment. Remember Aspergillus is found naturally in certain environments without causing any harm.