THE SCIENCE WORLD
A Monthly e Magazine
ISSN:2583-2212
Nov, 2023 3(11), 2801-2803

Popular Article

Aspergillosis in poultry

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https://doi.org/10.5281/zenodo.10067333

Introduction

Avian Aspergillosis is the major mycotic non-contagious disease of birds. It is also known as brooder pneumonia. It is mainly the disease of respiratory system affecting domestic poultry, wild birds and zoo birds. This is considered as disease of typical mishandling of birds mainly backyard and commercial poultry. The aspergillosis is mainly caused by Aspergillus fumigatus fungus, however other species such as *A. flavus, A. niger*, *A. nidulans*, and *A. terreus* may also be isolated from cases of aspergillosis in birds (occasionally in mixed infections).

In 1863, Fresenius discovered this filamentous fungus for the first time in the lungs of a Great Bustard (*Otis tarda*) birds. The organism has worldwide distribution. These organisms, which are typical soil saprophytes, flourish in warm, humid environments (above 25°C) with presence of organic material. Examples of such environments include hatcheries with cracked eggs and inadequate ventilation.

The disease can occur in two forms. i.e., acute and chronic. Young birds of 1-3 weeks of age are typically affected by acute aspergillosis, which has a high morbidity and mortality rate. The chronic variety typically affects older birds (3 days to 20 weeks) with weakened immune systems and is more sporadic, with lower mortality.

Transmission

Infection mainly occurs by inhalation of fungal spores. In poultry farm, inhaling high concentration of tiny, hydrophobic fungal spores (conidia) from air ducts or air or contaminated equipment or feed or litter can result in infection. This fungus may penetrate the eggshell during incubation hence may results into infection in newly hatched chicks.

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Published: 31.10.2023

Clinical Signs

Many outbreaks are so acute that clinical signs are not observed and chickens die in high number.

Acute aspergillosis

- Clinically expressed wide range of nonspecific clinical symptoms, such as anorexia, lethargy, ruffled feathers, respiratory symptoms, polydipsia, polyuria, stunting, or abrupt mortality.
- In chicks below 10 days of age disease is extremely fatal as it causes severe respiratory distress in these chicks infected in the egg or after hatching. So this infection is also known as brooder pneumonia.
- Dyspnea, gasping, hyperpnoea with panting, nonproductive coughing, wheezing, cyanosis, and occasionally nasal discharge are respiratory symptoms.

Chronic aspergillosis

- Clinical signs like dyspnea, depression, dehydration, emaciation, ataxia, tremors and opisthotonous are reported.
- Nervous symptoms such as lateral recumbence, torticollis, seizures, convulsions and, hind limb paresis may benoted.

Lesions

It could be either localized or generalized throughout the body depending on the site of infection.

Macroscopic Lesions

- In respiratory tract/lining miliary 1-2 mm sized white to yellowish granulomas are seen along with granulomas on serosae and parenchyma of one or more organs.
- In the cerebrum and cerebellum of broiler breeders, white to grey patches are seen.
- Mycotic pod dermatitis is characterized by encrustations, acute inflammation, clouded cornea, swollen and adherent eyelids with turbid discharge, and cheesy yellow exudates within the conjunctival sac seen in footpads.

Microscopic Lesions

- In lung, perivascular edema and congestion are reported.
- In air sacs and in lung, disseminated pyo-Granulomatous foci reported.
- In granuloma the caseous necrosis in centre is surrounded by inflammatory cells, including heterophils, lymphocytes, macrophages, and multinucleated giant cells.

Diagnosis

- The history of respiratory problem in the brooder house along with typical accelerated breathing without any respiratory sound is indication of aspergillosis.

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- Diagnosis is typically dependent on a collection of data from the history, clinical presentation, postmortem findings.
- For confirmation of fungus culture isolation and identification can be done.
- Impression smear from lesions can be taken and these smear sca n be used for microscopic examination after addition of one or two drops of 10% potassium hydroxide (KOH) on that and then heating it.
- Postmortem lesions (typical nodules) are also suggestive of diagnosis.

Differential Diagnosis

- Aspergillosis should be ruled out in cases of early broiler chick mortality because it can be triggered by mycotoxicosis, acute bacterial septicemia, or carbon monoxide poisoning.
- Dyspnea and watery, greenish diarrhea are symptoms of infectious laryngotracheitis, infectious bronchitis, and Newcastle disease.
- Granulomatous lesions may be commonly used to differentiate pulmonary aspergillosis from other avian respiratory diseases.

Treatment And Control

Treatment with fungicides (nystatin, trichomycin, amphotericin B, hamycin) has been reported in experimental flocks.

The treatment is usually useless. The whole flock be killed and disposed off property.

There is no cure for aspergillosis, and vaccination is not a commercially sustainable method of prevention. Prevention is better than cure. Major control measures include:

- The removal of the birds from the contaminated area.
- Cleaning and disinfecting the contaminated equipments, premises and litter. To avoid an aspergillosis outbreak, resist using mouldy litter or feed.
- Eggs that are seriously infected or fractured should not incubated because they stimulate fungal growth and since they may rupture and release spores into the hatching machine
- Higher air exchange rates or ventilation perhaps lessens the severity of the epidemic.

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