

ASPERGILLOSIS IN A FLOCK OF PHEASANTS (*PHASIANUS COLCHICUS*)

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SUMMARY

Aspergillus fumigatus was identified as the causative agent in a respiratory disease outbreak in a flock of pheasants (*Phasianus colchicus*). Affected birds had periorbital oedema, ocular discharge and yellowish cheesy plaque underneath the nictitating membrane. The source of infection was the feed that had been contaminated with *Aspergillus fumigatus*.

Keywords: Pheasant, *Phasianus colchicus*, *Aspergillus fumigatus*.

Aspergillosis is a mycotic disease caused mainly by *Aspergillus fumigatus* and rarely by other *Aspergillus* species. It is an acute or chronic infection usually affecting the respiratory tract and occasionally the peritoneum and abdominal cavity (Patgiri, 1987). The disease has been reported in poultry, turkeys and birds such as parrots, penguins and hummingbirds (Flach *et al.*, 1990; Simpson and Euden, 1991; Clark and Grass, 1993). Bygrave (1981) reported lung, air sacs and spinal cord infection by *Aspergillus fumigatus* leading to leg paralysis in pheasant poults. Newly imported birds are of high risk if they are subjected to adverse management. Stress factors such as capture, transport, dietary change, trauma, surgery and debilitating conditions can predispose birds to *Aspergillus fumigatus* infection (Patgiri, 1987). This paper reports an outbreak of *Aspergillus fumigatus* infection in a flock of pheasants (*Phasianus colchicus*).

Five out of 22 pheasants aged 6 months, with clinical manifestation of inappetance, emaciation, swollen eyes and respiratory distress, were submitted to Universiti Putra Malaysia (UPM) Veterinary Clinic. The pheasants which were imported from Holland were of various species, including Reeves, Swinehoe and Golden pheasant. Physical examination of the affected birds revealed unilateral and bilateral eye swellings and signs of respiratory distress such as dyspnoea and rales. The nictitating membrane when everted showed the presence of yellowish cheesy plaque. Eye and tracheal swabs were taken for bacteriological culture. Erythromycin (Gallimycin, Sanofi, Inc.) in drinking water was instituted for two weeks and for the eyes, chloramphenicol (Nicol, Upha) eye drop, three times a day were recommended for seven days. One week after the treatment was instituted, it was found that there was no improvement in their conditions. Two birds died and in birds that survived, the respiratory problem became worse with the birds exhibiting open mouth

breathing. The treatment was continued for another week. Later, other birds in this flock were also affected and manifested similar clinical signs. Morbidity and mortality rates were 60% (13/22) and 41% (9/22) respectively.

Gross necropsy findings conducted on 4 birds showed caseous-like plaque approximately 5 to 10 mm in diameter embedded in the lung tissue. One bird had similar caseous material in the abdominal cavity. Greenish to darkish green material was noticed underneath the lung tissue when the caseous material was removed.

Bacteriology: Eye and tracheal swabs taken from the affected birds on three separate occasions were cultured on special media (blood agar with x, v factors and *Staphylococcus* streak under carbon dioxide) for the isolation of *Haemophilus* and on *pleuropneumonia like organism* or PPLO agar, for *Mycoplasma* species. All cultures were negative for the two organisms. However on routine culture, *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Pseudomonas aeruginosa*, *Klebsiella pneumonia* and *Escherichia coli* were isolated in mixed culture from some of the swab.

Caseous material obtained from the lungs and abdominal cavity was cultured onto routine bacteriological media as well as on Sabouraud's dextrose agar for the isolation of pathogenic fungi. *Aspergillus fumigatus* was isolated from the lungs and airsacs of two of the birds. Identification of the isolate was based on colonial morphology and microscopic examination of lactophenol cotton blue wet mounts of the culture, according to the methods of Quinn *et al.* (1994).

Feed sample submitted for bacteriological culture from the remaining feed in a bag used to feed the birds, was also positive for *Aspergillus fumigatus*.

Histopathology: Lung tissues sent for histopathology examination revealed the presence of

chronic multifocal granulomatous pneumonia. Conidia was occasionally observed within the necrotic tissues. The necrotic areas were surrounded with giant cells, macrophages, lymphocytes and fibrous tissues.

Clinical signs mentioned above are common to infectious coryza, mycoplasmosis and aspergillosis. The swollen eyes were mainly due to secondary bacterial infection. The bacteria isolated were the ones that commonly cause eye infection.

Based on post mortem findings and laboratory results, the case was confirmed as aspergillosis. The affected areas in this case were the lung and abdominal cavity. The source for the aspergillosis came most probably from the feed as the feed was mouldy and confirmed to be contaminated with *Aspergillus fumigatus*. Infectious coryza and mycoplasmosis were ruled out since there was no response to erythromycin treatment (Yoder, 1991; Yamamoto, 1991) and no isolation of either *Haemophilus* or *Mycoplasma* species.

In the case of aspergillosis, antemortem diagnosis can be difficult. A tentative diagnosis can be made with signs of dyspnoea and a history of environmental conditions suitable for fungal growth and recent exposure to stress. A stronger tentative diagnosis can be made if the bird's respiratory condition is unresponsive to antibiotics and radiographs revealed increased density or nodules involving the lungs or airsacs (Campbell, 1986). In this case, radiography was not performed. Characteristic symptoms of aspergillosis mentioned by Clark and Grass (1993) are loss of flying ability, inability to perch, head tilted backwards, prolapsed tongue, open-mouthed breathing, seizure-like episodes and severe weight loss. The clinical signs observed were similar to earlier reports namely open mouthed breathing and severe weight loss.

A variety of therapeutic regimens have been used for avian aspergillosis with variable results. In general, this disease is given a poor to grave prognosis with or without therapy. Systemic amphotericin B (Fungizone, E.R.Squibb & Sons, Inc.) has been frequently used in the treatment of aspergillosis (Nakeeb *et al.*, 1981; Schultz, 1981). Ketoconazole and miconazole may not be effective in the treatment of aspergillosis (Campbell, 1986). In the report by Flach *et al.* (1990), late treatment may give no response. Prevention of avian aspergillosis is centered on the limitation of fungal growth in the environment and reduction of stressful conditions. Good hygienic practices should be applied to the daily care of captive birds. Oral 5-fluorocytosine

given twice a day for 10 to 14 days has been suggested for use in birds subjected to stressful situations as a precautionary measure against aspergillosis (Redig, 1983).

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RINGKASAN

ASPERGILOSIS DALAM SEKELOMPOK KUANG (*PHASIANUS COLCHICUS*)

Aspergillus fumigatus telah dikenal pasti sebagai agen penyebab wabak penyakit pernafasan dalam sekelompok kuang (*Phasianus colchicus*). Unggas terkesan menunjukkan edema periorbit, lelehan okulus dan plak seperti keju kekuningan di bawah membran niktitan. Sumber penyakit ialah makan yang tercemari dengan *Aspergillus fumigatus*.