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A CASE OF ASPERGILLOSIS IN A BEARDED VULTURE (GYPAETOS BARBATUS)

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ABSTRACT

A clinical case of aspergillosis in a bearded vulture (Gypaetos barbatus), reared in captivity, is presented. The clinical signs, radiological alterations and the gross pathological findings are described. Mycological examinations via native microscopy and cultivation on Sabouraud dextrose agar were performed.

An Aspergillus fumigatus strain was isolated from the lungs and the air sacs of the bird.

Key words: aspergillosis, Gypaetos barbatus

INTRODUCTION

Aspergillosis is a non-contagious disease, caused by the representatives of the Aspergillus genus. It is described in humans, mammals, domestic (1) and wild birds (2, 3). Most commonly, A. fumigatus, A. flavus, A. nidulans, A. niger, are isolated but A. fumigatus is detected in 95% of the cases of aspergillosis in wild birds of prey (4). This species was isolated for the first time from the lungs of a great bustard (Otis tarda) in 1863 by Fresenius, who was the first to use the term aspergillosis for this respiratory disease (1). Recently, wild birds are more and more commonly reared in zoos or in aviaries for reproduction and settling in nature. The gathering together of such wild birds, often wounded or ill, the high level of stress, unnatural mode of feeding and rearing favourize the appearance of the distribution of a number of diseases, including aspergillosis. The present study describes a case of aspergillosis in a bearded vulture.

MATERIALS AND METHODS

History:

The information about the origin, rearing and feeding was obtained from the <u>Wildlife</u> <u>Rehabilitation Centre</u> at the Green Balkans

Organization. They provided also data about the clinical signs and the course of the disease.

Post mortem examinations: *Radiography*:

The radiography was taken in ventrodorsal view. The central beam was directed to the middle of the pleuroperitoneal cavity.

Gross pathological examination

The dissection was performed by the routine protocol used for pathoanatomical examination in birds.

Mycological studies:

Native microscopy:

Native preparations (stained with c lactophenol cotton blue) were prepared by a careful application of a colourless scotch tape to the areas from air sacs with typical aspergillomas.

Culturing:

Smears from the lungs and the air sacs were made on Sabouraud dextrose agar. The samples were incubated at 27 °C and aerobic conditions for 5 days. The identification of grown colonies was done on the basis of their macro- and micromorphological features (4). From grown colonies, lactophenol cotton blue-stained preparations were made.

RESULTS

A male bearded vulture, at the age of about 1.5 years was hatched on February 28 2006 in Hanover, Germany. By the age of about 15 months, it was moved into an assembly in Austria. It was given to the representatives of the Green Balkans organization on July 15 2007 together with a female from the same species. At its arrival in Bulgaria, the bird's weight was 4.255 kg. There were no deviations from the normal in the general condition of the bird. It was kept in an aviary with dimensions of 10x8x5 m, that previously served to keep other birds. Episodes of aggression from the part of the female bird to the male were noticed.

On August 18 2007 the staff taking care of birds, observed depression, decreased appetite, superficial accelerated breathing in the male vulture. They attributed these signs to the behaviour of the female bird and the hot weather. In the next few days, the respiratory signs being more severe and the bird refused to eat. No treatment was performed and the vulture died on August 21, 2007. By the time of the death, the bird weighed 3.560 kg.

The necropsy was made in the veterinary clinic Phoenix, and the radiography – in the radiology clinic Photon – Stara Zagora.

Radiological finding:

Pathological shadows in the area of the normally transparent pulmonary zones and air sacs, located near to the rib walls, were observed. The shadows were multiple, with irregular, cotton wool-like shape, irregular margins, poorly structures, with millet to bean seeds size. The shadow's intensity was indicative of an infiltration process (Fig. 1.)



Fig. 1. Ventrodorsal radiograph

Gross pathological findings

Macroscopically, on the serous coats of air sacs, grey-whitish deposits with a various shape and size were present. Their thickness was 4-5 mm. In the lungs, small spherical nodules with a dense elastic consistency and grey-whitish to grey-yellowish colour were observed. The size of nodules was similar to that of millet to a lentils seed. Such nodules were also detected on the air sacs' walls (Fig. 2).



Fig. 2. Fibrinous deposits on the walls of the air sacs and yellowish nodules in the lung

Histologically, within the nodules there were fugal hyphae, surrounded with eosinophil leukocytes. A marked cellular reaction was observed (Fig. 3). The deposits on the air sacs consisted of intertwisted fibrin fibres, desquamated epithelial cells and fungal hyphae.



Fig. 3. Fungal hyphae are seen and around them, a clear cellular reaction. Haematoxylin/eosin staining (magnification \times 20).

Mycological findings:

On native microscopic preparations, hyphae, conidia and spores specific for the representatives of the *Aspergillus* genus were found out.

Cultural investigation:

On the third day post incubation, greywhitish, mossy colonies with diameter of 3–4 mm, whose periphery by the 5th day became darker, were observed (Fig. 4). The microscopic examination of preparation made from these colonies revealed smooth conidiophores with sphere-shaped or semispherical conidia.



Fig. 4. Five-day-old A. fumigatus culture.

DISCUSSION

Aspergilluses are ubiquitary microorganisms, soil saprophytes that occur in the respiratory tract with inspired air. Aspergillosis is an opportunistic infection, influenced by various predisposing factors – malnutrition, hypovitaminosis (especially vitamin A deficiency), continuous use of antibiotics. The disease is characterized with age-related susceptibility in young birds (1).

In wild birds, the stress related to capturing, changes in the rearing mode, the transportation, traumas, rearing in premises contaminated with organic matter etc. are frequently triggering factors of the infection. Avian aspergillosis occurs in both acute and chronic form (1). In wild birds, the acute development is more common. The clinical signs are not specific: depression, anorexia, dyspnea and death. The pathoanatomical findings are whitish nodules in lungs.

In the clinical case described by us in a bearded vulture, the aspergillosis was acute and the characteristic macroscopic alterations were observed in both the lungs and the air sacs. The isolation of *A. fumigatus* from these sites confirmed the gross pathological findings.

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