PULMONARY ASPERGILLOSIS IN A GREAT DANE PUP: DIAGNOSIS AND MANAGEMENT

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ABSTRACT

The present investigation screened a case with clinical signs of chronic cough, wheezing, weight loss and respiratory distress. The dog was subjected to physical examination, followed by radiographic and bronchoscopic evaluation. Radiographic examination of the thoracic cavity revealed increase in radiolucency of the entire alveolar soft tissue. Multiple bronchoalveolar lavages were collected; cytology, bacterial and fungal cultures were performed. No bacterial growth was detected upto 48 hours of incubation whereas cell cytology and fungal culture confirmed the diagnosis of Pulmonary Aspergillosis. The dog was treated with iatraconazole with no remission of clinical signs upto six months post treatment.

Key Words: Aspergillosis, Pulmonary, Bronchoalveolar Lavage, Canine, Iatraconazole,

Aspergillus species is environmentally ubiquitous saprophytic fungus that causes opportunistic infections in animals (Garcia et al., 2012). The most common manifestation of aspergillosis in dogs is sinonasal aspergillosis (SNA), caused by Aspergillus fumigatus (Peeters and Clercx, 2007). Systemic aspergillosis is characterized by disseminated infection that most often involves the intervertebral disks, bones, thoracic lymph nodes, lungs, and renal pelvis (Garcia et al., 2012). Aspergillus terreus and Aspergillus flavus were isolated from the majority of dogs with systemic disease. Clinical signs are often nonspecific, and include weight loss, anorexia, lethargy, and weakness (Schultz et al., 2008). Diagnosis and treatment of pulmonary aspergillosis in a Great Dane pup, is described in the present case.

Case Description

A five-month-old male Great Dane pup had a chronic cough, wheezing, respiratory distress and weight loss for approximately six weeks duration. The dog was treated by the referring veterinarian with chloramphenicol and cefotaxime for approximately three weeks, with no improvement. The pup was subjected to physical and clinical examination, followed by radiographic and bronchoscopy evaluation. Complete blood cell count and serum biochemistry profile were also obtained. The rectal temperature was slightly elevated (103.2 0F), and thoracic auscultation didnt revealed any abnormality. Radiographic examination of the thoracic cavity revealed increase in radiolucency of the entire alveolar soft tissue (Fig 1). Complete blood count revealed anemic changes with haemoglobin, packed cell volume and platelets as 8.3 gm/dl, 24.9 %, and 3.46 lakhs/cmm. Total leucocyte count (20,000/cmm) was increased whereas differential leucocytic count revealed neutrophilia (78 %) and mild eosinophilia (5 %). Serum biochemistry was within normal range, with blood urea nitrogen, creatinine, total serum

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protein, serum albumin, glucose, triglyceride, and cholesterol as 10.35 mg/dl, 0.83 mg/dl, 6.3 gm/dl, 2.30 gm/dl, 84.0 mg/dl, 318.0 mg/dl and 211.0 mg/dl, respectively. Serum electrolytes analysed were calcium (16.22 mmol/dl), phosphorus (7.94 mmol/dl), magnesium (4.57 mmol/dl), sodium (143.8 mmol/dl), potasium (4.22 mmol/dl) and chloride (108.3 mmol/dl).

Bronchoscopy examination was carried out in right lateral recumbency. The dog was given atropine sulphate at the rate of 0.04 mg/kg body weight, subcutaneously prior to general anaesthesia, followed by xylazine and ketamine at the rate of 1 mg/kg body weight IM and 5 mg/kg body weight IV in right lateral recumbency. Multiple bronchoalveolar lavage (BAL) with normal saline were collected and cytology, bacterial and fungal cultures were performed. No bacterial growth was detected upto 48 hrs of incubation whereas cell cytology and fungal culture confirmed the diagnosis of Pulmonary aspergillosis based on the characteristic angular dichotomously branching septate hyphae on direct microscopic examination(Cam et al., 2003)(Fig. 2).

Treatment and Discussion

Through the anamnesis and the clinical and complementary examinations, the diagnosis of pulmonary aspergillosis was confirmed. The dog was treated with iatraconazole @ 5 mg/kg body weight, orally, once a day, for a period of two month and liquid Liverol @ 10 ml twice a day. After a period of two months, respiratory distress and cough had stopped. There was improvement in appetite and body weight gain. The cell cytology and fungal culture of post treatment bronchoalveolar lavage showed absence of fungus.

Canine aspergillosis is mostly confined to the upper respiratory tract, particularly in the nasal cavity, and the systemic form is rare (Gilbert, 1998). Aspergillus species have emerged as an important cause of life-threatening infections in immunocompromised patients (Walsh et al., 2008). The clinical signs include dullness, anorexia, weight loss, dehydration, sneezing, coughing, dyspnoea, hardness of respiratory sounds and crepitation rales on auscultation of the lungs and mucoidmucopurulent nasal discharge in dogs (Cam et al., 2003). Typical acute bronchopulmonary aspergillosis is characterized by a eosinophilia in haematology and transient radiographic shadows. Definitive diagnosis requires culture of Aspergillus spp. from a normally sterile site, or culture of Aspergillus spp. from a nonsterile site (such as a bronchoalveolar lavage specimen) together with visualization of fungal hyphae in tissues using light microscopy. In the present case, fungal hyphae on cytology as well as fungal growth on culture were observed. Treatment of the infection with thiabendazole, ketoconazole, amphotericin-B and fluconazole has had success rates of 43 to 60% (Helt and Riviere, 1995). In recent years, the administration of itraconazole has resulted in 60 to 70% success rates (Gilbert, 1998) and the dogs treated with itraconazole for disseminated aspergillosis had a long-time survival than those dogs that were not treated with iatraconazole (Kelly et al., 1995). Consistent with the results of others (Willis et al., 1999; Gelatt et al., 1991), the reduction in haemoglobin levels, packed cell volume and red blood cell count may result from severe infection.

In conclusion, our study indicates good improvement in clinical condition of a dog treated with iatraconazole, affected with pulmonary aspergillosis and hence, may prolong their survival.

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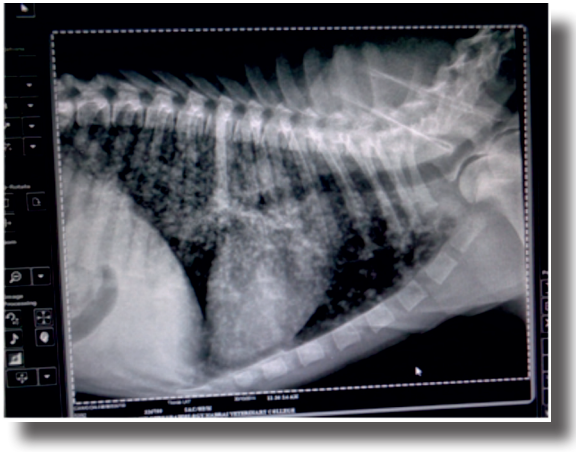

Fig. 1
Increased soft tissue density and alveolar infiltration

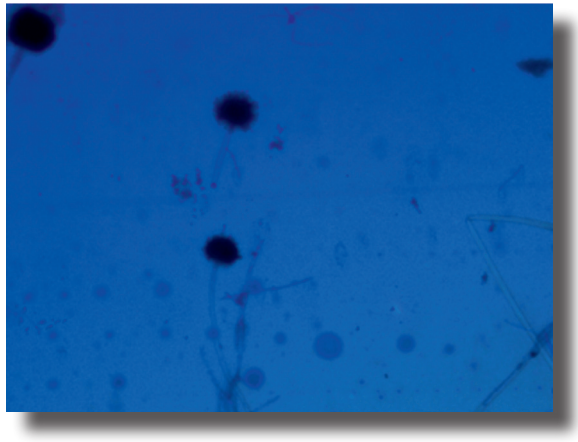

Fig. 2.
***Aspergillous spp* Hyphae on cytology**