

Chronic Bronchopneumonia in a Great Dane Pup

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Introduction

Bronchopneumonia is the most commonly observed pattern of pneumonia in clinical small animal veterinary medicine. In almost all the cases, bronchopneumonia is thought to arise as a consequence of primary disease process or as a result of injury to the lung, either of which would result in compromise of lung's innate immunity. Bronchopneumonia can be challenging condition to diagnose and treat as patient can exhibit a wide range of clinical presentations ranging from mild coughing, fever, lethargy, rapid progressive weight loss and ultimately fatal clinical syndrome (Carey, 2009). The present communication deals with a case of chronic bronchopneumonia, its clinicopathology, diagnosis, treatment and prognosis in a Great Dane pup.

Case history & Clinical Observations

A 6 month old, female Great Dane pup (Reg no. 9681), color fawn was admitted to Bai Sakarbai Dinshaw Petit hospital, Parel, Mumbai with complaint of difficulty in breathing, discharge from nostrils, inappetance, rise in body temperature. The pup was previously treated with antibiotics such as Ampicillin and Cloxacilin along with supportive therapy for 4-5 days prior to admission to BSPCA hospital, however the case didn't show any response to treatment. Clinical examination of pup revealed anemic oral mucus membrane, moderate dehydration, emaciation, passing of bilateral muco-purulent nasal discharge. The respiration was shallow and deep indicating labored breathing. The heart and pulse rate were found in normal limits. Auscultation of lung revealed presence of crackling sound (moist rales) on the left side of chest area. There was no organomegaly detected on palpation. On the basis of clinical observation, the case was provisionally suspected as broncho-pneumonia.

Diagnosis

For further confirmation, the dog was subjected to thoracic radiograph (lateral and dorsoventral view),

nasal swab for microbiological culture and blood for routine haematobiochemical examination. Lateral thoracic radiograph revealed presence of diffused patchy pulmonary infiltration, cloudy appearance on the both the sides of heart indicating inflammatory changes in lung parenchyma as well as bronchioles. Ventrodorsal view showed pneumonic changes predominantly on left side of lung- parenchyma. Nasal swab which was sent for microbial culture revealed presence of Gram +ve organisms such as Staphylococci Spp, Streptococci Spp and Gram-ve bacilli like E.coli indicating there was infection of mixed origin. Fungal culture on Sabraud's agar showed small colonies of Aspergillus niger & Aspergillus flavus which are not known to cause pneumonia in dogs. A complete blood count revealed decrease in Hb (5.5 gm%), RBC (3.62million/cu mm) Neutrophilia (85%) with shift to left, slight thrombocytopenia(1.91 lac), hypoalbuminaemia (1.5 g/dl). Liver function test revealed slight increase in total bilirubin (0.6mg/dl) and direct bilirubin (0.3mg/dl), other parameters found in normal limits. Kidney function tests revealed normal values.

On the basis of the clinical observations bilateral muco-purulent nasal discharge, crackling sound (moist rales) on auscultation of lung area, thoracic radiography and bacterial culture, the case was diagnosed as bronchopneumonia of bacterial origin.

Therapeutic management

The dog was further treated with specific therapy of Inj. Intacef-Tazo (Ceftriaxone+Tazobactam) 562.5mg intravenously to counteract the bacterial infection along with inj. Dextrose 25% 50 ml i/v as an energy source. Inj. Prednisolone 10mg i/m was administered to improve platelet count as well as anti-inflammatory effect. Considering severity of infection and inflammation in lung, Inj Meloxicam @ 0.5 mg/kg b.wt i/m was also infused. Inj Deriphylline (Etophylline & Theophylline) 1ml i/m was administered as a bronchodilator. Inj. Astymin (Amino-acid supplement) 30ml i/v, inj Imferon (iron-dextran) 1ml deep i/m (every

Conciplex (B-complex supplement) 1ml i/m were given as a supportive treatment. Nebulization was carried out with Asthalin (Theophylline & Etophylline). Orally Tab Chymoral forte (Chymotrypsin enzyme) was given twice daily to enhance penetration of antibiotic and reduce inflammation along with expectorant cough syrup. The treatment regimen was continued for 9 days from the date of admission.

After 9th day, the dog showed marked improvement in health. Appetite of the dog improved, there was reduced muco-purulent nasal discharge, absence of crackling sound on auscultation. However suddenly the dog died on 10th day evening after exhibiting clinical signs like open mouth breathing, watery discharge from eyes, anaemic mucus membrane, temperature 103.0f, severe dyspnoea. The postmortem investigations could not be obtained for want of permission from the owner.

Discussion

Bronchopneumonia is characterized by inflammation of the small airway and pulmonary parenchyma as a result of inhalation of pathogenic particulates. The development of bacterial pneumonia in dogs and cats is often viewed as a complication of loss of one or more pulmonary defense mechanism. Bacterial pneumonia may complicate viral respiratory infection followed by injury to respiratory epithelium, disruption of the epithelial barrier, loss of mucociliary function and local or systemic immunosuppression (Ettinger and Feldman, 1983)

Carey (2009) reported clinical signs in dog suffering from bronchopneumonia which include presence of nasal discharge, moist productive cough, fever, tachypnea, physical examination findings such as dyspnoea, muco-purulent nasal discharge, inspiratory crackles and wheezes on thoracic auscultation. In most severe cases systemic illness may be present including fever, lethargy and progressive weight loss. The set of clinical signs exhibited by the dog under discussion are similar to those reported above.

Thayer and Robinson (1984) discussed diagnostic approach to the patient with bronchopneumonia often involves physical examination findings, haematobiochemical assessment, cultural examination and thoracic radiography as a first line test. According to Ettinger and Feldman (1983) abnormalities in complete blood count could be variable and neutrophilia with or without shift to left, thrombocytopenia would be associated with systemic complications. Hypoalbuminaemia reflects increased pulmonary and systemic capillary permeability. Thoracic radiograph are useful in assessment of patient with bacterial pneumonia which most commonly show

alveolar pattern may be focal or diffused. The similar findings were observed in this case like neutrophilia, thrombocytopenia & hypoalbuminaemia. Thoracic radiograph revealed consolidation of lung tissue at various places.

Corcoran (2004) reported the organisms typically located within the respiratory system, and that are then ready to proliferate under the right circumstances, were usually gram negative aerobes and include *Pasturella*, *Klebsiella*, *Proteus* spp., *E. Coli*. and Gram positive like *Staphylococcus* and *Streptococcus* organisms. The role of ageing, immunocompromise and systemic illness in the development of bronchopneumonia is well recognized in humans, but is not fully characterized in the dog and cat. In the present case bacterial culture was also found positive for similar mixed origin of Gram +ve and Gram -ve bacteria. The present case showed presence of fungi *Aspergillus* spp was probably a contamination & these species of fungi are not known to add to the pathogenesis of bronchopneumonia in dogs.

Ettinger and Feldman (1983) discussed treatment of patient of bacterial pneumonia by usage of B-lactum antibiotics like Ampicilin or Amoxicilin, new generation Cephalosporin along with supportive therapy. The patient exhibiting positive clinical response should be treated at least once a week beyond the clinical and radiographic resolution of pneumonia in dogs. The present case was also treated with Ceftriaxone and Tazobactam combination along with supportive treatment for 9 days. The clinical response obtained after 4-5 days of treatment up to 9th day, however the dog died on 10th day due to severe dyspnoea.

In the present case the dog suddenly expired after showing signs of miracle recovery both in clinical signs & improvement in behaviour. However the cause of sudden death could probably be the anemia that was aggravated whose severity could not be ascertained after initial investigation report due to lack of permission from owner, leading to hypoxia, respiratory distress or failure and death.

References

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