

Emergency Thoracocentesis in a dog with Pleural effusion

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Abstract

A five-year-old Labrador was presented to the clinic with a history of exercise intolerance, respiratory distress, and panting. During clinical examination, the dog showed signs of dyspnoea, salivation, cyanotic discoloration of the tongue, rapid shallow breathing, and muffled cardiac sounds. Laboratory tests indicated neutrophilic leucocytosis, low serum levels of albumin, sodium, potassium, and chloride. An electrocardiogram revealed low-voltage QRS complexes; radiography and echocardiography confirmed pleural effusion. Based on these findings, the diagnosis was pleural effusion, and an emergency thoracocentesis was performed. Approximately 1500 ml of fluid were drained from the thoracic cavity. The dog showed clinical improvement following the therapy.

Keywords: Pleural effusion, Dog, Thoracocentesis, Emergency intervention

Introduction

Pleural effusion can result from various conditions including pyothorax, congestive heart failure, intrathoracic neoplasia (such as lymphoma, thymoma, pulmonary tumors, mesothelioma), chylothorax, heartworm disease, haemothorax, hypoalbuminemia, lung lobe torsion, and diaphragmatic hernia (Sherding and Birchard, 2006). Common clinical signs in dogs with pleural effusion include restrictive breathing, tachypnea, dyspnea, open-mouth breathing, cyanosis, and lethargy (Sabev *et al.*, 2008). This article describes an emergency thoracocentesis performed to save the life of a Labrador dog suffering from pleural effusion

Case History and Observations

A 5-year-old Labrador was referred to the clinic with a history of weakness, exercise intolerance, respiratory distress and panting. During the clinical examination, the dog exhibited dyspnea, salivation, cyanotic discoloration of the tongue, rapid shallow respiration, tachycardia, elevated rectal temperature, and inability to move (Fig. 1). Thoracic auscultation muffled heart sounds. Haematological evaluation showed neutrophilic leukocytosis (Haemoglobin 9.2 g/dL, PCV 28 %, TEC 4.65 million/cumm, TLC 26500 cells/cumm, N 84%, L 12%, M 2%, E 2%). Blood smear examination did not detect any blood parasites. Serum biochemistry indicated low levels of albumin (1.86 g/dL), sodium (126 mmol/L), potassium (4.2 mmol/L), and chloride (103 mmol/L). Radiography confirmed

the presence of pleural effusion (Fig. 2), while an electrocardiogram revealed low-voltage QRS complexes (Fig. 3). Echocardiography confirmed the presence of pleural effusion (Fig. 4). Based on these findings, the case was diagnosed as pleural effusion.



Fig.1. Dog showing the salivation, cyanotic tongue and open mouth breathing



Fig.2. Lateral radiography of thorax – Presence of pleural effusion

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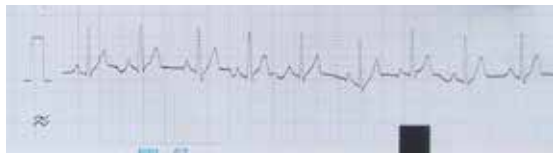


Fig.3. Electrocardiography – Showing the reduced QRS complex voltage



Fig.4. Short axis view of echocardiography showing severe thoracic effusions

Treatment and Discussion

Emergency thoracocentesis was performed with the dog placed in sternal recumbency. A 21-gauge scalp vein set connected to a 20 ml syringe was inserted into the middle of the 7th intercostal space along the cranial border of the rib. Approximately 1500 ml of straw-colored fluid was removed from the thoracic cavity without applying significant pressure to the thorax. Following the procedure, the dog's cyanotic discoloration resolved, and normal respiration was restored. The dog was then treated with injections of amoxicillin-clavulanate at 10 mg/kg body weight intravenously BID, theophylline at 10 mg/kg body weight intramuscularly, furosemide at 2 mg/kg body weight intravenously, and a vitamin B complex supplement at 1 ml/10 kg body weight intramuscularly, followed by oral medications.

Pleural effusion occurs when the factors regulating pleural fluid dynamics are disrupted, resulting in increased fluid production, decreased absorption, or both. Severe hypoalbuminemia can lower systemic colloidal osmotic pressure, leading to increased fluid formation and impaired absorption. Inflammation of the pleura can cause elevated pleural fluid levels due to increased blood flow (hydrostatic pressure), enhanced

capillary permeability, and elevated intrapleural colloidal osmotic pressure from higher protein concentrations. The abnormal accumulation of pleural fluid is usually caused by increased capillary hydrostatic pressure, enhanced capillary permeability, or impaired lymphatic drainage. Clinical signs of pleural space disease include increased respiratory rate and effort, often seen as rapid, shallow breathing, dyspnoea, and sometimes coughing, exercise intolerance, tachypnoea, and cyanosis (Vijayakumar *et al.*, 2018). Thoracic auscultation often reveals a localized or diffuse reduction in heart and lung sounds, a common finding in pleural effusion cases (Sigrist, 2011). Ultrasonography aids in determining the optimal site for thoracocentesis, diagnosing cardiac conditions, and visualizing intrathoracic masses.

In the present study, pleural effusion fluid did not reveal any abnormal cells. Serum albumin levels were reduced and the aetiology for development of plural effusion might be due to hypalbuminaemia or congestive heart failure.

Conclusion

Emergency thoracocentesis done in a Labrador dog with pleural effusion is placed on record.

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