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Clinical diagnosis and management of pleural effusion in dogs

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Abstract

Pleural effusion is a life-threatening condition in dogs that can lead to acute respiratory distress if not promptly diagnosed and treated. These case series describe three dogs were presented with sudden onset of severe respiratory distress signs. A three-year-old male Great Dane, five-year-old male German shepherd and a six-year-old female indie dog were presented with rapid open mouth breathing, cyanosis of the tongue and marked respiratory distress. Immediate clinical examination suggested thoracic involvement, and later chest radiograph was taken to assess the thoracic cavity, lungs and heart. Radiographic findings revealed increases soft tissue opacity in thoracic cavity, border effacement of the cardiac silhouette and rounding of lung lobes leading to diagnosis of the pleural effusion. Emergency thoracocentesis performed in all cases resulting in rapid clinical improvement and stabilization of animals. These case reports highlight the importance of rapid recognition of clinical signs, the diagnostic value of the thoracic radiography, and the life-saving role of the thoracocentesis in the management of pleural effusion in dogs.

Keywords: Respiratory distress, pleural effusion, thoracocentesis, dogs

Introduction

Pleural effusion is a serious and potentially life-threatening condition in dogs, characterized by the abnormal fluid accumulation within the pleural cavity. The presence of pleural fluid restricts normal lung expansion, leading to impaired ventilation and compromised gas exchange. If not promptly recognized and treated, pleural effusion can rapidly progress to severe respiratory distress and death. The aetiology of pleural effusion. The present case series describes the clinical presentation, radiographic findings and successful emergency management of pleural effusion in three dogs. These case reports aim to highlight the importance of rapid clinical assessment, prompt radiographic diagnosis and lifesaving role of thoracocentesis in the management of pleural effusion in dogs.

Materials and Methods**Animals**

The current case series included three client owned dogs presented to veterinary private clinic with acute onset of respiratory distress. The animals consisted of a three-year-old male Great Dane, a five-year-old male German shepherd and a six-year-old female non-descript (indie) dog. All dogs were presented as emergency cases with severe respiratory compromise.

Clinical examination

All animals were exhibiting common clinical signs like open-mouth breathing, cyanosis of tongue and reduced thoracic sounds.

Diagnostic imaging

Right and left lateral thoracic radiograph was obtained. Radiographic finding in the Great Dane case was border effacement of cardiac silhouette and rounding of caudo-dorsal lung lobes (Fig.0 1). In case of German shepherd and non-descript (indie) dog diffuse increase in soft-tissue opacity within the thoracic cavity and retraction of lung lobes from thoracic wall. Obliteration of cardiac silhouette, interlobar fissure lines and dorsal displacement of trachea

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duet to space-occupying fluid in pleural cavity (Fig.02). These findings are highly suggestive of pleural effusion.

Treatment and Discussion

Patient stabilization

All dogs were provided supplemental oxygen before and during thoracocentesis to alleviate respiratory distress. To minimize the stress and facilitate the procedure, a mild short acting sedative butorphanol was given @ 0.2 mg/kg BW. Cannulation of cephalic vein was performed to administer antibiotics, diuretics and supportive therapy. Thoracocentesis was carried out aseptically on both left and right side of the thorax at 7th intercostal space, with needle inserted into the ventral third of thoracic cavity (Fig.03). In case of Great Dane for about 1.5ltres of sero-sanguinous fluid removed from thoracic cavity and in other two cases around 600 to 800ml fluid was removed. Post thoracocentesis thoracic radiography was obtained to confirm the successful evacuation of pleural fluid and re-expansion of lungs (Fig.04).



Fig 1: Border effacement of cardiac silhouette and rounding of caudo-dorsal lung lobes



Fig 2: Diffuse increase in soft –tissue opacity within the thoracic cavity and retraction of lung lobes from thoracic wall



Fig 3: Thoracocentesis

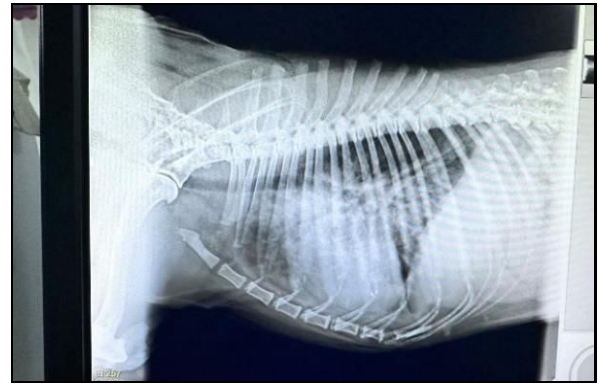


Fig 4: The successful evacuation of pleural fluid and re-expansion of lungs

Discussion

Pleural effusion usually suspected based on clinical signs and physical examination findings and is subsequently confirmed by thoracocentesis or thoracic radiography. In the present cases clinical signs and thoracic radiography proved to be a rapid and reliable diagnostic tool, revealing classical features of pleural effusion. similar diagnostic approaches have been reported for the early identification of pleural effusion in dogs (Mahendran *et al.* 2021) [6]. Dogs and cats with pleural effusion present with various clinical signs dyspnoea, restlessness and cyanosis in severe cases (Murphy, K. and Papasouliotis, K., 2011) [8] which were consistent with our present clinical cases. Thoracocentesis serve as both a diagnostic and therapeutic approach in the management of pleural effusion. The procedure carries minimal risk when performed aseptically (Kladakis *et al.* 2000) [4]. In the present cases, thoracocentesis resulted in rapid clinical improvement and providing valuable time for further diagnostic evaluation and definitive management.

Conclusion

Pleural effusion cases require prompt diagnosis and intervention, thoracic radiography proved to be rapid and effective diagnostic tool, while thoracocentesis served as a safe and efficient procedure providing immediate therapeutic relief. Early stabilization and timely management resulted in marked clinical improvement and favourable outcome in present cases.

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