What Is Your Diagnosis?

Figure 1—Right lateral (A) and ventrodorsal (B) radiographic views of the thorax of an 8-month-old male Spanish Mastiff evaluated because of a 10-day history of dyspnea, anorexia, and progressive lethargy.

History

An 8-month-old 35-kg (77-lb) male Spanish Mastiff was referred for evaluation because of a 10-day history of dyspnea, anorexia, and progressive lethargy. The dog was treated with amoxicillin–clavulanic acid (12.5 mg/kg [5.7 mg/lb], PO, q 12 h for 8 days) without apparent improvement. On physical examination, the dog had a body condition score of 3 of 9. Auscultation of the thorax revealed moderate tachycardia, tachypnea, and diminished bronchovesicular sounds cranioventrally on the left side. No abnormalities were detected on hematologic and serum biochemical analysis. Radiographs of the thorax were taken (Figure 1).

Determine whether additional imaging studies are required, or make your diagnosis from Figure 1—then turn the page →

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Diagnostic Imaging Findings and Interpretation

On the lateral radiographic view, small gas bubbles are observed ventral to the tracheal bifurcation overlapping with the cardiac silhouette; the trachea is slightly displaced in a dorsal direction. On the ventrodorsal radiographic view, an alveolar pattern is seen involving both the cranial and caudal part of the left cranial lung lobe, and small gas bubbles can be observed within the central portion of the consolidated lung lobe (Figure 2). These radiographic signs are consistent with a lobar vesicular gas pattern. Differential diagnoses for this radiographic pattern include lung lobe torsion, lung abscess, and necrotic lung tumor.

On ultrasonography of the thorax, the left cranial lung lobe had a globular appearance and was hypoechogenic at the periphery and filled with scattered reverberating foci, consistent with gas, in its central portion (Figure 3). Blood flow was not detected via color flow and power Doppler ultrasonography. Ultrasonographic findings were consistent with torsion of the left cranial lung lobe.1,2

Treatment and Outcome

A left-sided, fifth intercostal thoracotomy was immediately performed. Torsion of both parts of the left cranial lung lobe was confirmed, and a lung lobectomy was performed. The dog recovered from surgery and anesthesia without any complications. An extensive area of severe infarction and necrosis with hemorrhage outlined by a thick fibrous layer was present on histologic specimens.

Comments

Lung lobe torsion is a rare condition in dogs characterized by rotation of a lung lobe around its pedicle, leading to airway obstruction and vascular hypertension. It can develop spontaneously or as a complication of trauma, pleural effusion, or lobectomy. Clinical signs and hematologic data are not specific for lung lobe torsion; therefore, imaging is critical to the diagnosis.1 Radiography remains the primary imaging method. Radiographic findings reported with lobar lung torsion include pleural effusion, lobar atelectasis, lobar consolidation, mediastinal shift, pneumothorax, and pneumomediastinum. However, these findings are considered to be nonspecific because they can also be seen in cases of neoplasia and diaphragmatic hernia. Signs of lobar displacement and changes in the position and shape of the lobar bronchi can sometimes be assessed and are quite consistent with this condition.
Nevertheless, the most consistent radiographic abnormalities reported for cases of lung lobe torsion are the presence of a vesicular gas pattern and a proximally narrowed bronchus. In the case described in the present report, a vesicular gas pattern was observed on radiographs, which in conjunction with the ultrasonographic findings was conclusive for the diagnosis of lung lobe torsion. The use of CT has been recommended in cases where the radiographic findings are nonspecific.

Several theories have been proposed to explain the vesicular gas radiographic pattern, including incomplete lobar consolidation following acute torsion associated with the presence of air trapped within the alveoli, formation of emphysematous bullae as the result of bronchial tears or other underlying pulmonary diseases, and rapid increases of alveolar pressure following lung lobe torsion leading to alveolar rupture and interstitial accumulation of trapped air and infection with gas-forming bacteria. In the dog of the present report, histologic evidence of underlying pulmonary disease or suppurative inflammation was not observed. However, there was evidence of severe necrosis, which has been reported in emphysematous lung lobes.


### New Veterinary Biologic Products

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<th>Species and indications for use</th>
<th>Route of administration</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rabies Vaccine, Live Raccoon Poxvirus Vector (Boehringer Ingelheim Vetmedica, Inc, St Joseph, Mo, US Vet Lic No. 124)</td>
<td>Species: feline, 12 weeks of age and older, 0.5 mL administered SC. Revaccinate 1 year later and annually thereafter. Claim (level of efficacy): For vaccination of healthy cats for prevention of rabies. Efficacy was demonstrated in 12-week-old kittens that received 1 dose of the vaccine and were challenged 1-year postvaccination with rabies street virus.</td>
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