

What Is Your Diagnosis?

In cooperation with



Figure 1—Right lateral and ventrodorsal radiographic views of the thorax of a dog that had been hit by a car 11 days earlier.



History

An 8-year-old castrated male Labrador Retriever was evaluated for severe trauma after being hit by a car. Injuries included subluxation at T12-13, thoracic trauma including a mild pneumothorax and pulmonary contusions, multiple lacerations, and a right brachial plexus avulsion. Additional thoracic radiographic views were obtained 11 days after the initial injury to evaluate placement of an esophageal feeding tube (Figure 1).

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

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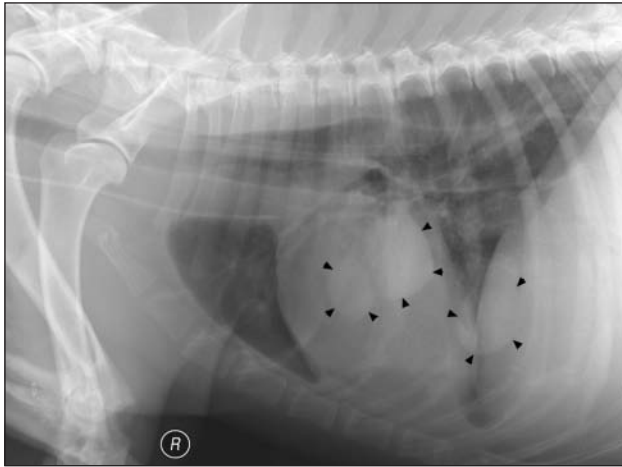


Figure 2—Same radiographic views as in Figure 1. Notice the traumatic pulmonary pseudocysts (arrowheads).

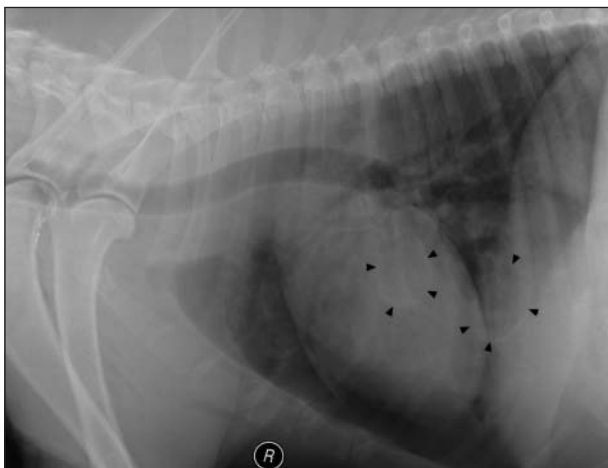


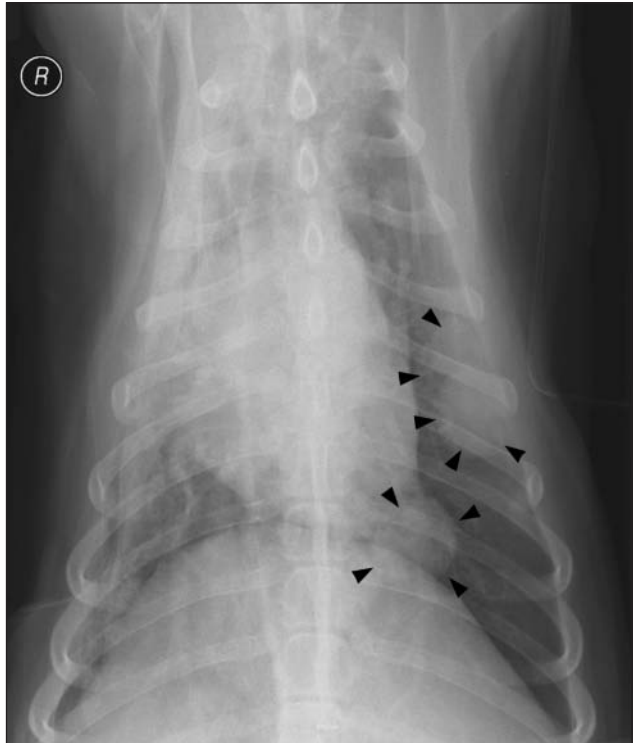
Figure 3—Lateral thoracic radiographic view obtained 12 hours after the dog had been hit by a car. Notice the small volume pneumothorax and the ultimate site of the traumatic pulmonary pseudocysts (arrowheads).

Radiographic Findings and Interpretation

The thoracic portion of the esophagus is filled with gas. Within the pulmonary parenchyma, there are 3 well-margined, ovoid soft tissue opacities overlying and caudal to the cardiac silhouette (Figure 2). These lesions were confirmed to be in the left cranial, caudal, and accessory lung lobes on the ventrodorsal view. The cardiovascular structures are within normal limits. An esophageal feeding tube and central venous catheter are in place. The soft tissue opacities were believed to represent traumatic pulmonary pseudocysts (TPPs).

Comments

Traumatic pulmonary pseudocysts are cavitory lesions without an epithelial lining that develop in pulmonary parenchyma following blunt thoracic trauma.¹ In veterinary radiology, TPPs are commonly referred to as traumatic bullae or traumatic pneumatoceles.² Unlike pulmonary hematomas, pseudocysts are rare complications in humans sustaining trauma and are most frequently reported in the pediatric literature.¹ Traumatic pulmonary pseudocysts occur in less than 3% of humans with chest injuries associated with parenchymal injuries, and their development is associated with parenchymal laceration with intact visceral pleura and little vascular damage.¹ The damaged alveoli fill with air or fluid



and usually form spherical or oval lesions. In a study³ of 143 dogs with pulmonary contusion, 10 had evidence of TPPs.

Development of TPPs is typically delayed, so thoracic radiographic views obtained shortly after an injury may not reflect their presence. Often, TPPs cannot be identified on initial thoracic radiographs in people and require computed tomography to fully evaluate.⁴ Interestingly, the lesions in the dog of this report may be identified on the initial radiographs at the time of admission as thin-walled, circular to ovoid gas lucencies overlying and caudal to the cardiac silhouette (Figure 3). These lesions were recognized during initial review but were more fully appreciated after the subsequent radiographs were obtained. Clinical signs, if any, are usually nonspecific, such as coughing, dyspnea, and signs of pain. The dog of this report had no ongoing pulmonary signs when the TPPs were eventually identified.

Since TPPs typically resolve spontaneously, they must be differentiated from neoplasia, abscesses, and other pathologic processes to avoid unnecessary surgical intervention. The history of recent thoracic trauma should support the diagnosis of TPPs. In the human literature, complications associated with TPPs have been described to include secondary infection, compression of additional parenchyma causing decreased gas exchange, and rupture with secondary pneumothorax or bleeding.¹ The dog of this report was not treated for the TPPs, and follow-up radiography at 7 months revealed complete resolution of the lesions.

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2. Lamb CR. The canine and feline lung. In: Thrall DE, ed. *Textbook of veterinary diagnostic radiology*. 4th ed. Philadelphia: WB Saunders, 2002;431–449.
3. Powell LL, Rozanski EA, Tidwell AS, et al. A retrospective analysis of pulmonary contusion secondary to motor vehicular accidents in 143 dogs: 1994–1997. *J Vet Emerg Crit Care* 1999;9:127–136.
4. Moore FA, Moore EE, Haenel JB, et al. Post-traumatic pulmonary pseudocyst in the adult: pathophysiology, recognition, and selective management. *J Trauma* 1989;29:1380–1385.