

What Is Your Diagnosis?

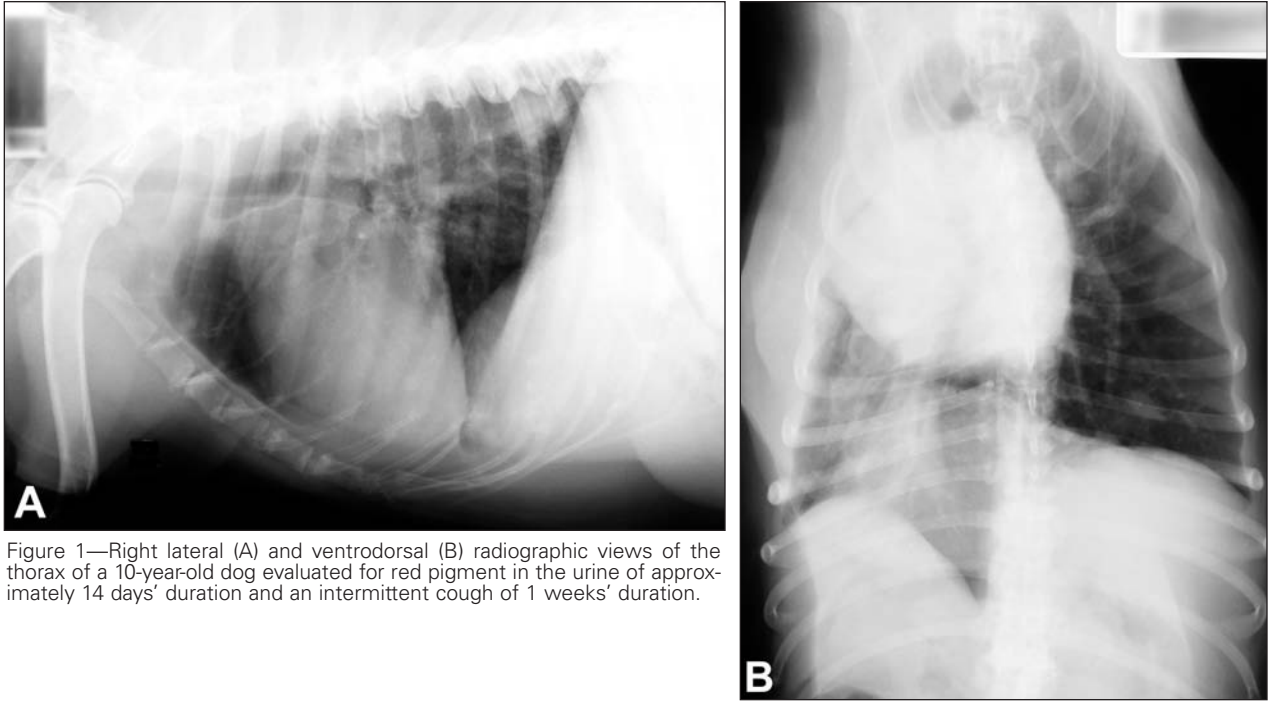


Figure 1—Right lateral (A) and ventrodorsal (B) radiographic views of the thorax of a 10-year-old dog evaluated for red pigment in the urine of approximately 14 days' duration and an intermittent cough of 1 weeks' duration.

History

A 10-year-old 36-kg (79.2-lb) spayed female mixed-breed dog was evaluated for red pigment in the urine of approximately 14 days' duration and an intermittent cough of 1 week's duration. Five months earlier, the dog had been evaluated for a soft tissue mass that measured 10 cm in diameter and was attached to the right side of the thorax. The mass was diagnosed as a malignant fibrous histiocytoma. The dog had been treated with radiation therapy and adjunctive chemotherapy with mitoxantrone and cyclophosphamide with the intention of removing the mass via en bloc excision after treatment. On physical examination, the dog was bright and alert. The heart was difficult to auscultate, and the thoracic mass appeared to have increased in size to approximately 11.4 × 10.0 cm from its previous measurement of 8.0 × 7.0 cm after treatment. Lateral and ventrodorsal radiographs of the thorax were obtained (Figure 1).

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

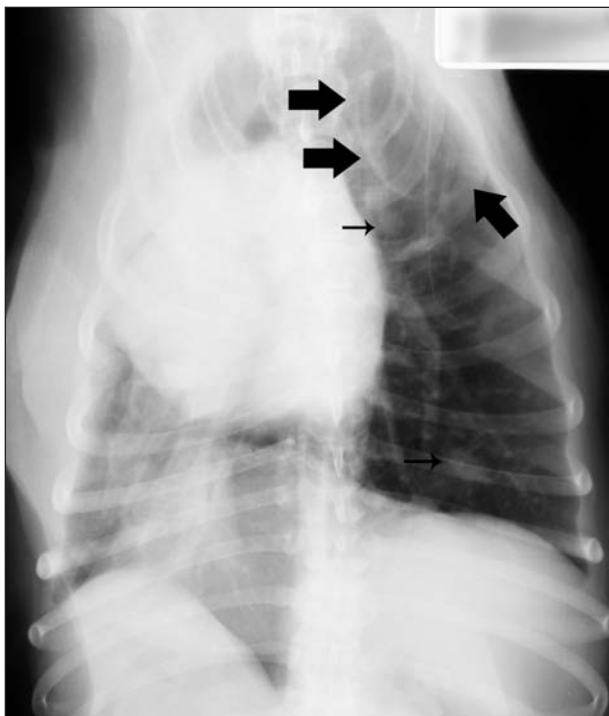


Figure 2—Same ventrodorsal radiographic view as in Figure 1. Notice a large bulla in the left cranial lung lobe (large arrows) and mediastinal shift caused by atelectasis of the right middle lung lobe. The soft tissue mass can be seen along the right lateral wall of the thorax. A diffuse, unstructured interstitial pattern and multiple interstitial nodules (small arrows) of various sizes are seen in the lungs.

Diagnosis

Radiographic diagnosis—A large pulmonary bulla in the left cranial lung lobe, diffuse interstitial lung lobe pattern, and atelectasis involving the right middle lung lobe with multiple metastatic interstitial nodules of various sizes are evident (Figure 2).

Comments

Atelectasis of the right middle lung lobe and bulla formation in the left cranial lung lobe were most likely associated with radiation therapy, which can cause accelerated pulmonary fibrosis. Poor radiographic contrast was seen in the right hemithorax and was caused by atelectasis of the right middle lung lobe, an increase in the size of the mass on the right lateral thoracic wall, and pneumonitis caused by radiation therapy.

Pulmonary bullae are believed to be caused by destruction of alveolar walls and septae, resulting in confluence of numerous air spaces. Bullae formation may be associated with bronchial obstruction and involve part or

all of a lung lobe. A pneumatocele, which is also caused by destruction of the parenchyma, has been used as a synonym for a large pulmonary bulla. More specifically, pneumatocele implies a radiographic hyperlucency located within a pneumonic or traumatized parenchymal area. Bullae are located deep within the parenchyma and are characterized radiographically by a rim that may or may not be visible around a hyperlucent lesion. Emphysema and signs of chronic bronchitis are also seen. The smooth wall surrounding the hyperlucency that may be seen in a bulla is composed of compressed lung parenchyma or connective tissue septae.^{1,2}

Radiation pneumonitis is an uncommon finding and can appear as an unstructured interstitial pattern, focal interstitial consolidation, or both. In humans, the pulmonary parenchyma is more frequently irradiated, compared with veterinary species, and radiation pneumonitis develops 1 to 3 months after completion of radiation therapy. Radiation pneumonitis is attributable to ablation of type II pneumocytes.³

In dogs, malignant fibrous histiocytoma has been detected in splenic parenchyma^{4,5} and cutaneous tissue.⁵ Except for the spleen, malignant fibrous histiocytoma is rarely reported in the visceral organs of dogs.^{4,6}

In the dog of this report, the radiographic findings were consistent with metastatic disease. Unfortunately, the neoplasm was not responsive to radiation therapy and chemotherapy, and the owners chose euthanasia because of poor prognosis for recovery. Necropsy was not performed.

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