Radiographic findings

There are multifocal well circumscribed round soft tissue pulmonary nodules measuring from 0.62 to 1.0 cm. In the ventrodorsal view, there is increase alveolar opacity involving the left lung lobes with leftward mediastinal shift of the heart. Also in this view, a nodule is seen involving the periphery of the right middle lung lobe and superimposed on the caudal vena cava. The right T13 rib is hypoplastic. In a limited view of the abdomen, there are ill-defined circular soft tissue opacities measuring from 1.8 to 2.25 cm ventral to the caudal lumbar vertebrae. The eighth thoracic vertebra is shorter when compared to the two adjacent vertebrae. In the lateral view, there is also increase radiolucency of the T8 vertebra. There is no evidence of bony proliferation. There is a 0.60 cm soft tissue nodule also superimposed on the ventral margin of this vertebra. There is permeative osteolysis involving the proximal left humeral metaphysic and diaphysis. There is irregularity of the cranial and caudal cortices at this location. There is slight smooth periosteal new bone production involving the caudal cortex. There is indistinct transition between normal and abnormal bone.

Radiographic Impressions

1. Changes associated with the left humerus, 8th thoracic vertebrae, and pulmonary soft tissue nodules are consistent with neoplasia; rule outs for the left humerus include primary bone neoplasia or metastasis.
2. Reactive or neoplastic sublumbar lymphadenopathy
3. Left lung atelectasis secondary to anesthesia

Follow up

The owner was notified of the radiographic findings and elected euthanasia.

Pathophysiology

The above conditions were most likely caused by a primary bone tumor that metastasized to different boney areas and also to the lungs. A solitary metaphyseal bone lesion should be considered to be a primary bone tumor until proven otherwise. The most common primary bone tumor in dogs is osteosarcoma, 80% of all canine primary bone tumors. Common sites include the proximal humerus, distal radius, distal femur, and proximal and distal tibia. Osteosarcoma most commonly appear mixed in appearance, with both lytic and productive features present. Osteosarcoma can produce a variety of periosteal reactions including spiculated to smooth. Most commonly found are aggressive and amorphous types of periosteal reactions. Primary bone tumors of the appendicular skeleton other than osteoscarcoma are uncommon.

The two primary goals of treatment for osteosarcoma are pain relief and slowing of metastatsis. Treatments should be tailored to each individual animal considering neurological status, site of lesions, degree of lameness, and other medical conditions. Current treatments include amputation, chemotherapy, and radiation.

Another differential to consider would be a primary neoplasia of the lung with subsequent metastasis. This is a lesser consideration because most commonly primary lung tumors are solitary nodules. Primary pulmonary tumors can appear as a localized mass lesions or the consolidation of an entire lung lobe. Most primary pulmonary tumors are malignant with carcinomas as the predominate type.

The treatment of choice for primary lung tumors is surgical resection which involved removing the entire lung lobe to obtain clear margins. Chemotherapy can be attempted after removal of the lung lobe to try to clear any remaining metastasis.