

# What Is Your Diagnosis?

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Figure 1—Lateral (A) and ventrodorsal (B; obtained with the pelvic limbs held in a flexed, abducted [ie, frog-leg] position) radiographic views of an 8-year-old castrated male Pug evaluated because of a 1.5-month history of acute pelvic limb paresis, decreased mobility, and anorexia.

## History

An 8-year-old castrated male Pug was evaluated because of a 1.5-month history of acute pelvic limb paresis, decreased mobility, and anorexia. Over the past 1.5 to 2 years, the dog had been slightly more fractious when disturbed and intermittently reluctant to jump off furniture. Treatment with prednisone (0.65 mg/kg [0.30 mg/lb], PO, q 12 h) and tramadol (2 mg/kg [0.9 mg/lb], PO, q 8 h) was ineffective aside from a return of appetite. The dog's body weight decreased by approximately 4 kg (8.8 lb) in the 3 months preceding evaluation.

Physical examination revealed mild dehydration, tachycardia, tachypnea, and marked diffuse muscle atrophy, with a body condition score of 1.5 of 5. Serum biochemical analysis and CBC revealed moderate regenerative anemia, moderate neutrophilia with a left shift, and marked thrombocytopenia with negligible electrolyte imbalances. On neurologic examination, the dog had a dull mentation and was ambulatory with tetraparesis; the paresis was more severe in the pelvic limbs. The dog walked with its pelvis tucked under and had a markedly shortened stride and choppy gait in the pelvic limbs. Cranial nerve examination revealed Horner syndrome with anisocoria (left eye smaller) and slight left upper lip drooping. Postural reactions revealed absent to delayed conscious proprioception in the right pelvic limb and decreased conscious proprioception in both thoracic limbs. Patellar reflexes were absent bilaterally with decreased thoracic and pelvic limb flexor reflexes, also bilaterally. The dog had decreased anal tone and signs of diffuse thoracolumbar pain and marked pain on digital rectal palpation. Neurologic examination findings indicated that the dog had myelopathy between C1 and T2 and myeloradiculopathy from L4 caudally, with or without polymyopathy and polyneuropathy. The dog's dull mentation was attributed to poor health. Radiographs of the thoracolumbar portion of the vertebral column, pelvis (Figure 1), and thorax were obtained.

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

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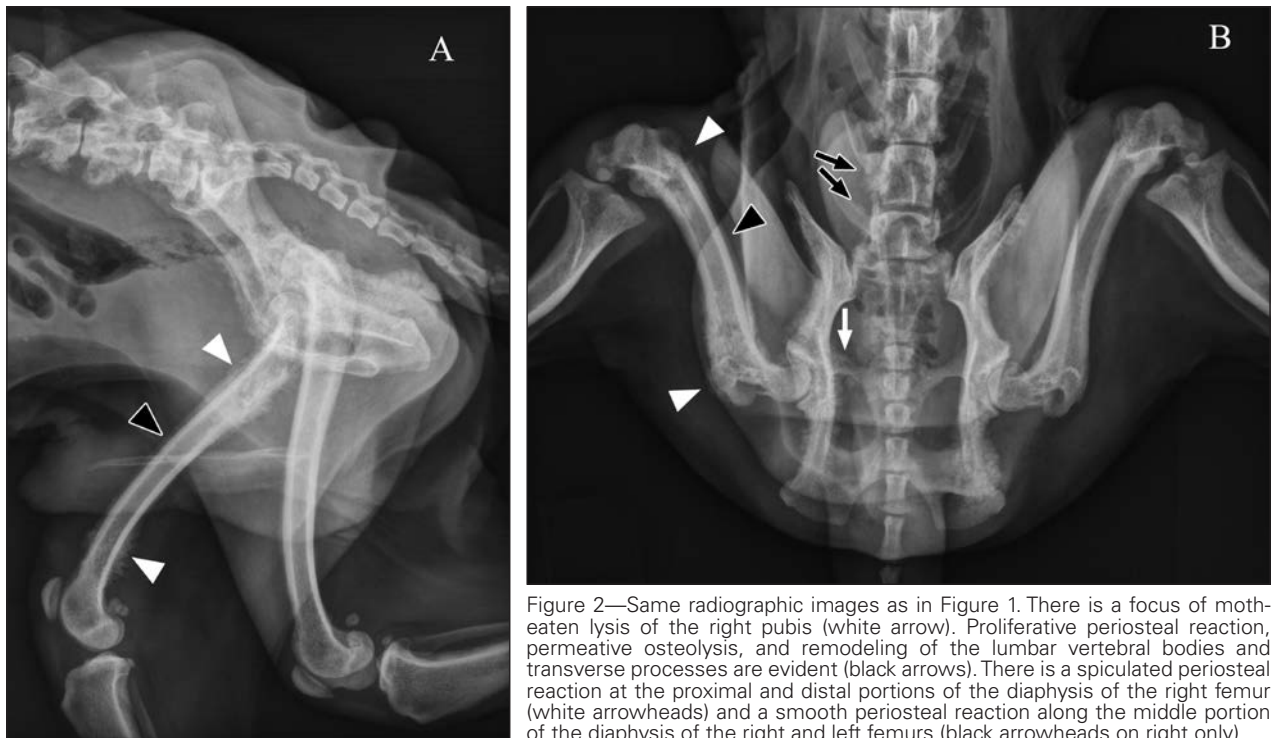


Figure 2—Same radiographic images as in Figure 1. There is a focus of moth-eaten lysis of the right pubis (white arrow). Proliferative periosteal reaction, permeative osteolysis, and remodeling of the lumbar vertebral bodies and transverse processes are evident (black arrows). There is a spiculated periosteal reaction at the proximal and distal portions of the diaphysis of the right femur (white arrowheads) and a smooth periosteal reaction along the middle portion of the diaphysis of the right and left femurs (black arrowheads on right only).

### Radiographic Findings and Interpretation

Multiple, aggressive osseous lesions are present in the pelvis and lumbar portions of the vertebral column (Figure 2). A spiculated periosteal reaction is present on the lateral aspect of each ilium and the medial and lateral aspects of the body of each ischium. There is a focus of moth-eaten lysis of the right pubis. Proliferative periosteal reaction, permeative osteolysis, and remodeling of the lumbar vertebral bodies and transverse processes are present. There is a spiculated periosteal reaction at the proximal and distal portions of the diaphysis of the right femur and a smooth periosteal reaction along the middle portion of the diaphysis of the right and left femurs. The L5-6 intervertebral disk space is narrowed, and spondylosis deformans was present at L5-6 and L7-S1. Increased soft tissue opacity is evident ventral to L5-7 that causes mild ventral displacement of the distal portion of the colon. Only pelvic radiographs are shown because similar aggressive bony lesions were seen in the thoracic portion of the vertebral column, ribs, and humeri. On thoracic radiographs, the cardiac silhouette and lungs appeared normal.

On the basis of radiographic findings, differential diagnoses included polyostotic, aggressive bone lesions secondary to infection or metastatic neoplasia and reactive or metastatic medial iliac lymphadenopathy. Hypertrophic osteopathy was considered less likely because of the presence of lytic lesions in the pelvis and the lack of pulmonary disease.

### Treatment and Outcome

Because of the poor prognosis associated with this dog's aggressive bony lesions on radiographs and its neurologic status, the owners elected euthanasia. Necropsy and histologic evaluation confirmed prostatic adenocar-

cinoma with widespread metastases affecting multiple bones and the medial iliac lymph nodes. Histologic evaluation of the ribs and selected vertebral bodies was performed, and thus, hypertrophic osteopathy of the appendicular skeleton was not completely ruled out.

### Comments

Differential diagnoses for polyostotic, aggressive bone lesions include infectious and neoplastic etiologies.<sup>1</sup> Bacterial, fungal, or protozoan organisms may cause osteomyelitis. The most common systemic fungal diseases are blastomycosis, histoplasmosis, coccidiomycosis, and cryptococcosis. Fungal diseases are generally spread from the nidus of infection lymphatically or hematogenously. Both the axial and appendicular skeleton may be affected, with particular emphasis on the metaphysis of long bones owing to the ability of the organism to thrive in the nutrient-rich blood network.<sup>1</sup> In bacterial osteomyelitis, inoculation and spread of bacteria is either directly from local extension of surrounding tissue (eg, open fracture, surgery, and bite wound) or less commonly hematogenously.<sup>2</sup> Protozoan bone infections are rare.<sup>3</sup> Of these infectious diseases, systemic bacterial osteomyelitis was considered most likely for the dog of the present report because of the distributions of the lesions without a history of direct inoculation.

Vertebral tumors spread through the systemic circulation or via vertebral veins.<sup>4</sup> A slight increase in intra-abdominal pressure allows blood to preferentially flow into the vertebral veins of the lumbar vertebral column.<sup>4</sup> Because primary bone tumors of the vertebral column tend to affect only 1 vertebra,<sup>4</sup> metastasis to the vertebral column was considered more likely in the dog of the present report.

Prostatic adenocarcinoma is an uncommon, highly invasive malignant neoplasm in dogs, with a prevalence of 0.2% to 0.6% and a median age at diagnosis of 10 years (range, 5 to 17 years).<sup>5</sup> In a study<sup>5</sup> of 31 dogs, the prevalence of metastasis from prostatic adenocarcinoma was approximately 80%. Radiographic findings include prostatic enlargement (82%), prostate mineralization (32%), sublumbar lymphadenopathy (24%), axial skeletal metastasis (16%), pulmonary metastasis (15%), and appendicular skeletal metastasis (8%).<sup>6</sup> In descending order, metastatic sites consist of lungs, regional lymph nodes, liver, urethra, spleen, colon and rectum, urinary bladder, bone, heart, kidneys, distant lymph nodes, and adrenal glands.<sup>6</sup> Skeletal metastases are most commonly located in the lumbar vertebrae and pelvis and less commonly found distal to the elbow and stifle joints.<sup>6</sup>

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