

IMAGING DIAGNOSIS—DISCOSPONDYLITIS AND SEPTIC ARTHRITIS IN A DOG

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A 6-year-old German Shepherd dog was evaluated for hind limb lameness. When a diagnosis could not be achieved using radiography and ultrasonography, bone scintigraphy was performed to look for occult lameness or the presence of multistotic disease. Bone scintigraphy was useful in identification of increased radiopharmaceutical uptake in the thoracic spine and right coxofemoral joint, which directed further testing leading to the diagnosis of discospondylitis, septic arthritis of the coxofemoral joint, and a urinary tract infection. *Veterinary Radiology & Ultrasound*, Vol. 48, No. 4, 2007, pp 335–337.

Key words: bone scan, discospondylitis, scintigraphy, septic arthritis.

Signalment

SIX-YEAR-OLD (44 kg) neutered female German Shepherd dog.

History

The dog was examined by the surgery service at Tufts Cummings School of Veterinary Medicine for evaluation of a right hind limb lameness of 4 months duration. The dog was reported to be intermittently anorexic. Previous treatment with carprofen, tramadol, and then acetaminophen with codeine failed to improve the lameness.

Physical Examination

Severe right hind limb lameness (grade 4/5 lame, non-weight bearing when walking, toe touching intermittently when standing) with hip pain and muscle atrophy of the affected limb were seen. The dog was overweight (body condition score 8/9). The physical examination was otherwise within normal limits.

Radiographic Findings

Mild periarticular new bone formation along the femoral head and acetabulum, a distinct row of osteophytes along the femoral neck, and mild irregularity of the right femoral head were seen (Fig. 1). The mild degree of

degenerative change was not consistent with the extent of lameness.

Ultrasonographic Findings

Mild coxofemoral joint effusion was observed.

Bone Scintigraphy

Bone scintigraphy was performed with 0.481 GBq of ^{99m}Tc -HDP, and static images were collected during the bone phase of radiopharmaceutical distribution, 2 h after



FIG. 1. Ventrordorsal radiograph of the pelvis obtained at initial presentation. Mild periarticular new bone is noted associated with the acetabulum and femoral head.

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Received September 23, 2006; accepted for publication January 8, 2007.

doi: 10.1111/j.1740-8261.2007.00253.x

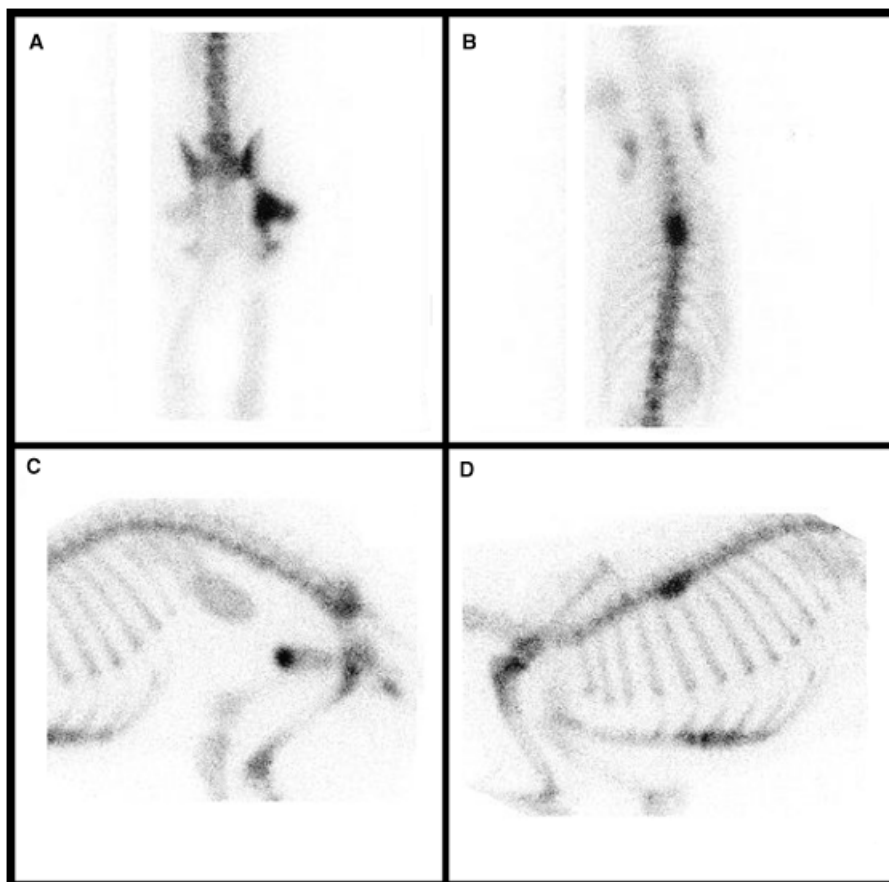


FIG. 2. Dorsal (A, B) and lateral (C, D) images of the pelvic and thoracic regions obtained during the bone phase of radiopharmaceutical distribution. Moderate to marked radiopharmaceutical uptake is noted associated with the right coxofemoral region and the region of the sixth to eighth thoracic vertebrae.

radiopharmaceutical injection. Images were collected with a LEHR (low energy, high resolution) collimator. For images of the axial skeleton 400,000 counts were acquired and the extremities had 150,000 counts. The urinary bladder was catheterized and emptied to prevent interference with imaging. There was moderate to marked radiopharmaceutical uptake associated with the right coxofemoral joint, with uptake extending into the right proximal femur (Fig. 2). Moderate radiopharmaceutical uptake from the sixth to eighth thoracic vertebrae (Fig. 2) was also present. There was mild radiopharmaceutical uptake in the right sacroiliac region, which might be associated with residual bladder activity. There is also mild uptake in the right ischiatic tuberosity, which may be due to patient positioning. These were deemed clinically insignificant findings (Fig. 2).

Follow-Up Radiography

Radiographs were made of the spine (Fig. 3). There was moderate to marked irregularity, and moderate new bone

formation of the caudal and cranial vertebral endplates of the sixth and seventh thoracic vertebrae, respectively.

Diagnosis/Outcome

Bone scintigraphy and spinal radiography were consistent with discospondylitis. Because discospondylitis is often seen with other areas of infection, and the pattern of uptake was atypical for chronic degenerative joint disease, septic arthritis of the coxofemoral joint was suspected. Ultrasound guided arthrocentesis of the right coxofemoral joint was performed. Cytologic examination of this fluid was interpreted as suppurative inflammation. Aerobic culture of synovial fluid yielded coagulase positive *Staphylococcus* sp. Urine, collected by cystocentesis, was analyzed and cultured. The dog had pyuria and bacteruria; aerobic culture yielded coagulase positive *Staphylococcus* sp. and *E. coli*. The sensitivity profiles of the *Staphylococcus* sp. were similar, suggesting they were the same organism.

The final diagnosis was discospondylitis, septic arthritis, and urinary tract infection. The dog was treated with



FIG. 3. Lateral radiograph of the thoracic spine obtained following scintigraphy. Irregularity of the endplates, with new bone formation, is noted associated with the cranial and caudal end plates of T6 and T7, respectively.

appropriate antibiotics based on bacterial culture and sensitivity testing. One month after the diagnosis the dog remained severely lame on the right hind leg. In follow-up radiographs of the pelvis there was progressive osteolysis and subluxation of the right coxofemoral joint (Fig. 4). The dog was discharged with antibiotics and instructions to return if lameness did not improve. Ten days later, a femoral head and neck excision was performed as palliative treatment. The joint fluid was cultured at surgery. There was no growth from a culture of the fluid and no microorganisms were seen on cytologic examination. The dog was discharged with antibiotics and physical therapy instructions. She improved at home for 8 weeks and then became acutely lame in the right hip. Increased new bone formation, and irregular echogenicity of the tissues consistent with cellulitis, were noted on radiographic, and ultrasonographic examination of the affected area, respectively. The joint was not re-aspirated at this time as no focus of fluid could be identified. Antibiotic therapy was reinstated and the dog responded favorably, suggesting a latent infection.

Discussion

The severity of the clinical signs at the initial physical examination in this dog seemed inconsistent with the mild radiographic findings of the right coxofemoral joint. Septic arthritis became the primary consideration. Bone scintigraphy was performed as a means of assessing for the presence of multioscotic disease.¹ In this report, bone scintigraphy was helpful for identification of a distant focus of increased osseous activity. Discospondylitis is thought to result from either autogenous or iatrogenic spread of



FIG. 4. Ventrodorsal radiograph of the pelvis obtained 1 month after initial presentation. Note the marked remodeling and osteolysis of the right acetabulum and femoral head, as well as luxation of the coxofemoral joint.

organisms.^{2,3} While impossible to determine the exact sequence of events, the urinary tract infection may have led to hematogenous spread of bacteria causing an infection in the right coxofemoral joint and vertebral column. Furthermore, urinary tract infections are common, making it the most likely primary infection.^{4,5}

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