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What Is Your Diagnosis?

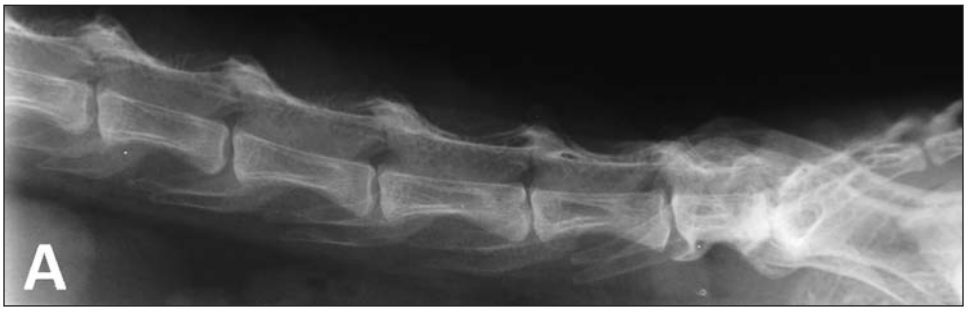


Figure 1—Lateral (A) and ventrodorsal (B) radiographic views of the lumbar vertebral column and pelvis of a 6.5-year-old neutered male Siamese cat with signs of pain in the lumbar area and an abnormal pelvic limb gait.

History

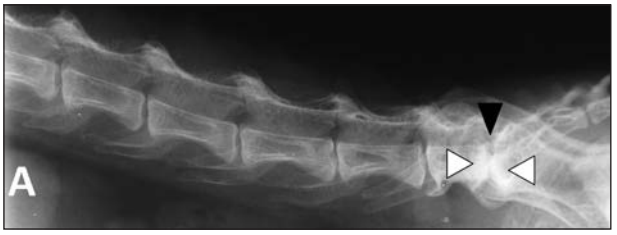
A 6.5-year-old neutered male 5.3-kg (11.7-lb) Siamese cat was referred for investigation of inability to jump in the house for 3 weeks. The cat had a 6-month history of signs of pain in the lumbar area and an abnormal pelvic limb gait.

Clinical examination at the time of referral revealed a gallop rhythm on cardiac auscultation, but findings were otherwise unremarkable. Neurologic examination revealed pelvic limb ataxia and bilaterally reduced extension of the tarsus. The cat also had an arched back, marked signs of pain in the lumbar area on palpation, and reduced tail movements. The patellar, pelvic limb withdrawal, panniculus, and perianal reflexes were intact. The neuroanatomic localization of a lesion was the lumbosacral region. No abnormalities were detected on hematologic evaluation, serum biochemical analyses, echocardiography, and ECG. Radiographs of the lumbar vertebral column taken by the referring veterinarian 1 month earlier were reviewed (**Figure 1**).

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

This report was submitted by Myfanwy F. Hill, BVSc; Chris Warren-Smith, BVetMed, MVetMed; and Nicolas Granger, DVM, PhD; from the School of Veterinary Sciences, University of Bristol, Bristol, BS40 5DU, England (Hill, Granger); and Langford Veterinary Services, Langford House, Langford, Bristol, BS40 5DU, England (Warren-Smith). Dr. Hill's present address is Stem Cell Institute, University of Cambridge, Cambridge, CB2 0AH, England.

Address correspondence to Dr. Granger (nicolas.granger@bristol.ac.uk).



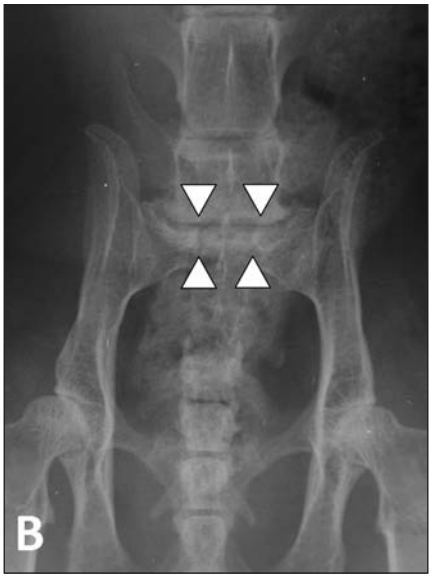


Figure 2—Same radiographic images as in Figure 1. A—Note the subluxation of the L7-S1 junction (black arrowhead) and sclerosis of the L7 and S1 end plates (white arrowheads) with collapse of the L7-S1 intervertebral disk space. B—Note the sclerosis of the L7 and S1 end plates (white arrowheads).

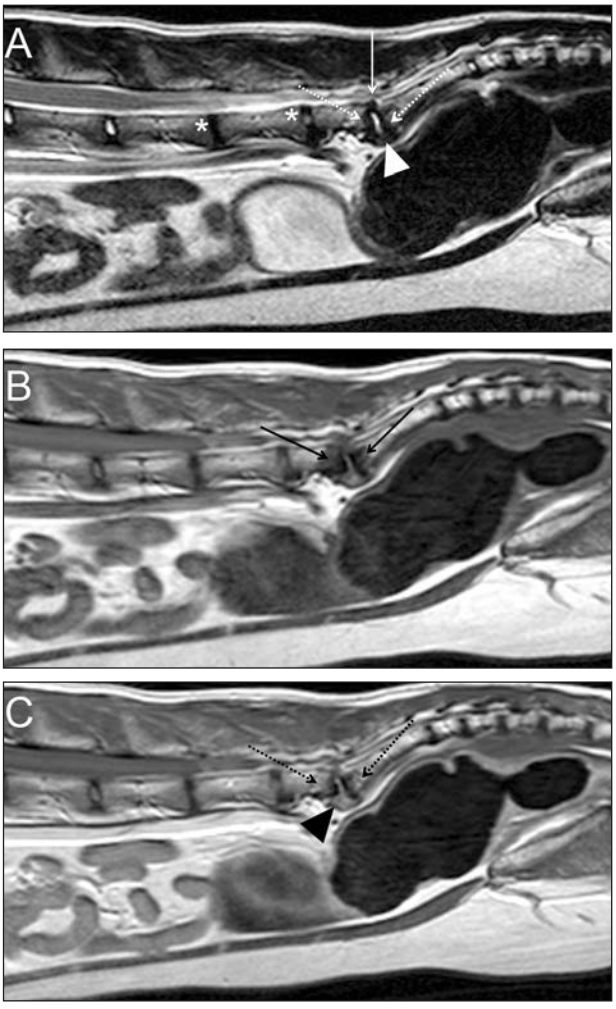


Figure 3—Sagittal T2-weighted MRI image (A), T1-weighted MRI image (B), and T1-weighted MRI image following contrast medium administration (C) of the lumbar vertebral column of the cat in Figure 1. A—Note the hyperintense T2-weighted signal intensity within the intervertebral disk in the L7-S1 space, with dorsal protrusion of the annulus fibrosis into the vertebral canal (arrow). The vertebral end plates appear hypointense (dashed arrows). The L7-S1 disk space is wedge shaped with a narrow dorsal aspect and a wide base ventrally (arrowhead). There is loss of the normal T2-weighted signal from the nucleus pulposus of the intervertebral disks at the L5-6 and L6-7 spaces (asterisks), and these disk spaces appear narrowed. B—Note the hypointensity of the vertebral end plates (arrows). C—Note the marked contrast enhancement (following IV injection of gadolinium) of the end plates of L7 and S1 around the intervertebral disk (dashed arrows) as well as soft tissues, mainly ventrally to the disk (arrowhead).

Diagnostic Imaging Findings and Interpretation

On the radiographs (**Figure 2**), marked sclerosis of the L7 and S1 end plates and subluxation of the L7-S1 junction is seen, evidenced by ventral displacement of the body of the sacrum and cranioventral displacement of the lamina of the sacrum. The disk space appears collapsed. Spondylosis ventral to the L6-7 and L7-S1 disk spaces is also evident. These changes are suggestive of L7-S1 disk disease and secondary L7-S1 junction degeneration.

The cat was anesthetized, and MRI of the lumbar vertebral column was conducted with a 1.5-T scanner.[a] The T1-weighted and T2-weighted pulse sequence images were obtained in sagittal and transverse planes. After contrast medium administration, acquisition of the T1-weighted images was repeated.

On the T2-weighted images, signal intensity within the intervertebral disk at L7-S1 is evident, and the annulus fibrosus is protruding dorsally into the vertebral canal (**Figure 3**). The L7-S1 disk space is narrowed and wedge shaped. The vertebral end plates are hypointense on T2-weighted and T1-weighted images with an irregular outline to the end plate and indentation of the end plates indicating local bony lysis. The end plates of L7 and S1, area around the intervertebral disk, and surrounding soft tissues (mainly ventrally) enhanced markedly following IV administration of contrast medium, indicating the presence of vascularized tissue. Of note, there is also distension of the rectum on sagittal images.

Findings on MRI further establish bony and soft tissue changes found on radiography. Collectively, these findings were most consistent with diskospondylitis at the L7-S1 disk space.

Treatment and Outcome

Following MRI, a fluoroscopically guided fine-needle aspirate of the L7-S1 disk was collected. Cytologic examination revealed a neutrophilic infiltrate with monocytes, Döhle inclusion bodies, and extracellular bacteria. Results of bacteriologic culture of the aspirate

and urine (obtained by cystocentesis) were negative. An epidural injection of morphine (0.1 mg/kg [0.045 mg/lb]) and bupivacaine (1 mg/kg [0.45 mg/lb]) had been given at the time of the anesthesia for MRI.

The cat was further treated with a course of clavulanate-potentiated amoxicillin[b] (12.5 mg/kg [5.68 mg/lb], PO, q 12 h for 2 months), buprenorphine (0.06 mg/kg [0.027 mg/lb], PO, q 24 h for 6 days), and robenacoxib (1.2 mg/kg [0.55 mg/lb], PO, q 24 h for 3 weeks). Marked amelioration of the signs of pain was observed within 24 hours after initiation of treatment, and the cat remained free of signs of pain during the course of the treatment. Ten weeks later, the cat still had an abnormal pelvic gait but remained free of signs of pain. Eleven months following diagnosis, the owner reported that the cat remained free of signs of pain and had improved ability to jump.

Comments

In the cat of the present report, the radiographic findings were equivocal in identifying the cause of signs of pain in the lumbar area. Magnetic resonance imaging of the spinal cord and vertebral column was required to help establish the cause. To the authors' knowledge, there is a lack of published data on MRI findings in cats with diskospondylitis; however, MRI findings for the cat of the present report were similar to those reported for dogs with diskospondylitis.[1] In particular, the contrast enhancement of the vertebral end plates around the disk space, intervertebral disk, and soft tissue in the surrounding sublumbar area was highly suggestive of diskospondylitis. Contrast enhancement is seen at sites of high vascularity or increased capillary permeability, such as with neoplasia or inflammation. Preservation of the gross architecture of the end plates and intervertebral disk rendered a neoplasm less likely in the case described in the present report. This in combination with the findings on cytologic evaluation of the fine-needle aspirate of the affected site provided confirmation of an inflammatory focus in the region.

Differential diagnoses for signs of pain in the lumbar area in adult cats should include musculoskeletal diseases of the vertebral column (eg, intervertebral disk disease or osteoarthritis of the articular facets), inflammatory and infectious diseases, and neoplasia. The absence of fever and lack of an abnormal hemogram do not rule out the presence of active diskospondylitis, as suggested by findings in the cat of the present report and 2 cats of 2 previous reports.[2,3] In the present report, results of bacteriologic culture of urine and the disk aspirate were negative, in contrast to cats of the 2 previous reports[2,3] that had positive bacteriologic culture results for urine. The distension of the rectum observed on MRI of the cat of the present report might have resulted from difficulties in posturing during defecation because of pain and subsequently incomplete rectum emptying. However, the owner did not specifically report this. Another explanation would be involvement of sacral nerves and the parasympathetic system (pelvic nerve) resulting in reduced rectum motility. In 1 report,[2] a similar finding was visible on radiographs of a cat with diskospondylitis. The literature contains only 3 clinical reports[2–4] of diskospondylitis in cats, with a further 2 presumptive affected cats discussed in a case series report[5] of cats with vertebral column diseases. This may reflect the low incidence of diskospondylitis in the feline population or difficulty in diagnosis of this disease. To the authors' knowledge, MRI findings for diskospondylitis in cats have not been previously reported.

Diskospondylitis is an infectious condition of the intervertebral disk, vertebral end plates, and adjacent vertebral body. Infection is most frequently thought to be by hematogenous spread (with direct inoculation being rare) and results in osteolytic lesions in the vertebral end plate, progressing into the annulus of the intervertebral disk.[6] The subluxation at L7-S1 in the cat of the present report may have been a result of instability of the heavily lysed vertebrae near the intervertebral space.

For the cat of the present report, radiography alone was of limited value because it did not provide visualization of the intervertebral disks. The application of MRI and, in particular, the use of postcontrast sequences enabled a more thorough characterization of the lesion. Contrast enhancement of the disk and end plates on T1-weighted images was key to the suggestion of diskospondylitis as the most likely differential diagnosis.

a. InteraNT 1.5T, Philips Healthcare, Surrey, England.
b. Clavaseptin, Vetoquinol UK Ltd, Buckingham, England.

1. Carrera I, Sullivan M, McConnell F, et al. Magnetic resonance imaging features of discospondylitis in dogs. *Vet Radiol Ultrasound* 2011;52:125–131.
2. Packer RA, Coates JR, Cook CR, et al. Sublumbar abscess and diskospondylitis in a cat. *Vet Radiol Ultrasound* 2005;46:396–399.
3. Watson E, Roberts RE. Discospondylitis in a cat. *Vet Radiol Ultrasound* 1993;34:397–398.
4. Malik R, Latter M, Love DN. Bacterial discospondylitis in a cat. *J Small Anim Pract* 1990;31:404–406.
5. Gonçalves R, Platt SR, Llabrés-Díaz FJ, et al. Clinical and magnetic resonance imaging findings in 92 cats with clinical signs of spinal cord disease. *J Feline Med Surg* 2009;11:53–59.
6. Moore MP. Discospondylitis. *Vet Clin North Am Small Anim Pract* 1992;22:1027–1034.