

Diagnostic Imaging of Discospondylitis

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KEYWORDS

• Dog • Cat • Spine • MRI • CT • Radiography • Discospondylitis

KEY POINTS

- Radiography remains an important screening tool for diagnosis of discospondylitis; however, radiographic signs often lag behind clinical signs.
- Computed tomography (CT) is excellent for evaluating bone and may be useful both in diagnosis and follow-up imaging.
- MRI can identify sites of discospondylitis that are not yet radiographically visible and can reveal additional disease extension, such as spinal empyema.
- Fluoroscopic or CT-guided aspirates may be helpful in obtaining samples for culture, particularly as an alternative to open surgical biopsy.

Discospondylitis is a bacterial, or less commonly fungal or algal, spinal infection that is usually hematogenous in origin and begins as an infection of the cartilaginous end plates of the vertebral bodies with secondary involvement of the intervertebral disk.^{1–3} Mixed bacterial infections are not uncommon, and combination bacterial and fungal infections have been reported.⁴ Risk factors can include large breed, intact male status, recent corticosteroid treatment, or recent surgery (spinal surgery or surgery at a site remote to the spine).^{5–9} In rare cases, a migrating foreign body (eg, grass awn) or epidural injection can cause discospondylitis.^{10,11} In most cases, bacteria enter the vertebral bodies via the bloodstream from an infection at a distant site (eg, prostate infection). Bacteria colonize the highly vascular and slow-flowing metaphyseal and epiphyseal capillary beds with rapid extension into the disk as

Disclosure Statement: The authors have nothing to disclose.

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Vet Clin Small Anim ■ (2017) ■–■
<http://dx.doi.org/10.1016/j.cvs.2017.08.007>

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well as the rest of the vertebral body. Although more common in dogs, discospondylitis has been reported in cats.^{12,13} Although *Staphylococcus* spp are the most commonly reported etiologic agents, *Streptococcus*, *Brucella canis*, *Escherichia coli*, and *Enterobacter* are also common.^{1,14–16} Clinicians should also keep in mind that less common etiologic agents, such as *Salmonella*, methicillin-resistant *Staphylococcus aureus*, *Erysipelothrix*, *Nocardia*, and many others, including a variety of fungi, may be diagnosed.^{9,17–23} Some etiologic agents are sturdy and easy to grow in the laboratory, whereas others are fastidious and may be seen in tissue aspirates or histopathology but not grown in the microbiology laboratory.

Discospondylitis is notoriously difficult to diagnose: signs may include vague pain (usually localizing to the spine on direct palpation), lameness, fever, anorexia, weight loss, abdominal pain, and neurologic deficits ranging from mild ataxia to plegia, which can occur after pathologic spinal fracture or concurrent empyema.^{14,24,25} Spinal pain is not always present and, therefore, may not be a reliable marker for disease resolution.¹⁵ Although presentation can be peracute, clinical signs often wax and wane over a period of months to years. Imaging is critical to making the diagnosis yet can be challenging in individual patients. Clinicians may face the dilemma of when to stop antibiotics in patients with discospondylitis, because relapse is common with premature cessation of therapy.¹⁶ In 1 large study, the duration of antimicrobial treatment in dogs followed until radiographic resolution of signs was 40 weeks to 80 weeks.¹⁴ The role of imaging in confirming resolution of infection has yet to be determined.

A variety of imaging modalities have been used to identify sites of discospondylitis and include radiography, computed tomography (CT), MRI, myelography, epidurography, ultrasonography, and nuclear scintigraphy. In addition, fluoroscopy and CT can be used to aid in percutaneous image-guided aspirates of the affected disks.

RADIOGRAPHY

Radiography is a frequently used screening method for discospondylitis because it is readily available in most veterinary practices and is inexpensive and noninvasive. Common radiographic findings associated with discospondylitis include osteolysis of vertebral end plates and adjacent vertebral bodies with collapse of the intervertebral disk space (Fig. 1). There is also a variable amount of sclerosis adjacent to the osteolytic regions and osseous proliferation adjacent to the intervertebral disk spaces.^{26–30} Because there is often a delay in development of radiographic signs, normal radiographs of the vertebral column do not rule out a diagnosis of discospondylitis, and additional imaging (MRI, CT, or repeat radiographs in several days to weeks) is often necessary to make a diagnosis.^{1,31–33}

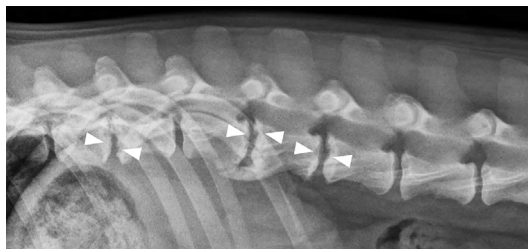


Fig. 1. Lateral radiograph of an adult pit bull with discospondylitis at T12-13, L1-2, and L2-3. There is osteolysis of the vertebral end plates (arrowheads), sclerosis of the adjacent bone, and narrowing of the intervertebral disk spaces at these sites.

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