Diskospondylitis (Intervertebral Disk Infection)

Diskospondylitis is a bacterial or fungal infection of the disks between the vertebrae (intervertebral disks). This infection can occur in any area of the spinal column, and it can occur at multiple sites. Diskospondylitis is also known as spondylitis, intervertebral disk infection, and vertebral osteomyelitis.

Diskospondylitis occurs much more often in dogs than in cats. The bacterial/fungal infection can reach the intervertebral disks several ways.

- Through the bloodstream, which is the most common method. (Chronic infections of the skin, urinary tract, prostate, etc. can result in bacteria entering the bloodstream and travelling to the disk area.)
- Via direct contamination from punctures or bite wounds near the spine, or from procedures or surgery near the spine.
- From the migration of foreign bodies through the area near the spine.

Symptoms

Neurological signs have a gradual onset and are progressive. At the beginning, fever, poor appetite, lethargy, reluctance to move, spinal pain, stiffness, unsteady walking, and other nervous system problems may occur. Spinal pain is the most consistent clinical sign. Impaired movement (paresis) is usually mild, unless the infection gets into the spinal canal. However, if the pet doesn't get appropriate treatment, signs can progress to paralysis, often caused by fractures of the vertebrae. The muscles alongside the spine may atrophy (waste away); this is most likely due to local nerve damage or associated myositis (muscle inflammation).

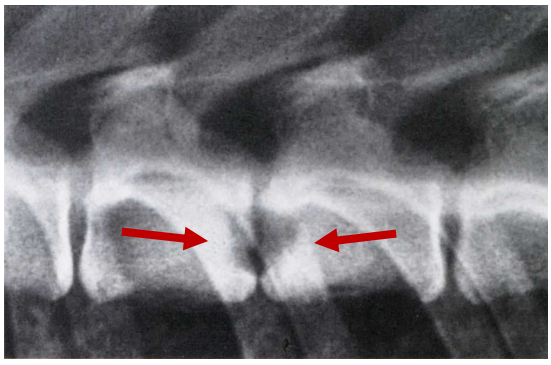
Spinal cord compression can be caused by inflammatory tissue, bony changes, or back bone fractures or dislocations (luxations) due to the infection. The vertebral fractures or dislocations may require surgery to stabilize them. When infection is present, getting surgery to heal can be dicey. Occasionally, the infection can spread from the disks and bones to the may result in meningitis, meningomyelitis, or an abscess in the spinal canal.

Diagnosis

Diagnosis may require x-rays, advanced imaging modalities (CT scan, MRI, bone scintigraphy), urinalysis, bacterial cultures, blood tests for infectious organisms, and cerebrospinal fluid analysis collected by spinal tap.

X-Rays

Radiographs (X-rays) of the spine will typically show damage to the vertebrae on either side of the affected disks, as if someone has taken a bite out of the end plate. In chronic cases, bone changes and deformities of the spine may be seen, and over time, infection may hop from disk to disk. Changes may not show up on the radiographs for 3-6 weeks after clinical signs start, so if the first x-rays are normal but the clinical signs are progressing, your veterinarian will likely repeat the x-rays.



If a typical lesion is detected, radiographs of the entire spine are recommended because some pets have multiple lesions. Infection causes disk degeneration, and destroys the ends of the adjacent vertebrae. These degenerative changes may weaken the vertebral column and make it susceptible to pathologic fractures, which stem from infection rather than trauma. The body may try to bridge the damaged area with bone, which can encroach on the spinal cord and nerve roots, causing more problems.

Advanced Imaging

Nuclear Bone Scans (scintigraphy), computed tomography (CT), and magnetic resonance imaging (MRI) are more sensitive than plain x-rays for discospondylitis, particularly early on in the disease process. These advanced imaging tests are usually done only by specialists. Myelogram is done by injecting dye into the space around the spinal cord and then taking x-rays. Myelogram and/or MRI/CT are helpful for pets that have neurological problems, and these imaging methods are considered important if spinal surgery is going to be done. Spinal surgery is also generally done only be specialists, or veterinarians with advanced training in these procedures.

Urinalysis and Cultures

Pets with disk infections may also have urinary tract infection, which is most easily diagnosed by seeing pus and/or bacteria in their urine when urinalysis is done. Culturing the urine, blood, spinal fluid, or other infected tissues may help identify the organism(s) that caused the infection. However, culture of the infected disk space will yield the most accurate results. Once the infectious agent is grown, it can be tested against various drugs to see which are most effective. Many times, sampling and culture can be done in general practice. However, sometimes a moving x-ray (fluoroscopy) is needed to guide the needle into the right spot. Fluoroscopy is generally available only to specialists. Sometimes pets with discospondylitis that do not need surgery can be treated without culture. If spinal surgery is necessary, samples of the infected areas must be obtained and cultured for best outcome.

Tests for Infectious Agents (Serology)

Brucellosis serology (checking the blood for current and previous infections) should be performed. Brucellosis is a possible cause of diskospondylitis, and can be transmitted to people.

Cerebrospinal Fluid (CSF) Analysis

CSF analysis on fluid collected by spinal tap is called for in animals with neurologic signs. In addition to culturing the CSF, routine cytology, cell count, and protein determination are done.

Causes

Bacteria, fungi and even rarely blue-green algae can cause diskospondylitis.

Bacteria such as *Staphylococcus, Streptococcus, Escherichia coli, and Brucella spp. are commonly isolated organisms. Pseudomonas, Proteus, Pasteurella, Corynebacterium,* and *Actinomyces* spp. are sometimes found. Reproductive problems may occur with *Brucella* infections. There are reports of pets infected with *Bordetella* spp*., Erysipelothrix rhusiopathiae,* and *Salmonella* spp.

Fungal organisms that can cause diskospondylitis include *Aspergillus, Blastomyces, Histoplasma, Coccidioides* spp., and occasionally *Paceilomyces*. In Europe, infection with *Rasamsonia argillacea* has been reported. A single case of infection with *Westerdykella* spp. has also been reported in a German shepherd dog. Fungal infections can be more difficult to diagnose than bacterial infections, so your veterinarian will also look for enlarged lymph nodes, lung or eye lesions, and fungal organisms in the urine. Serum, spinal fluid and/or urine can be submitted to a laboratory to check for presence of these organisms, even if they are not seen in the tissue or fluid samples.

Protothecosis, a disease caused by a type of blue-green alga, has been associated with diskospondylitis.

Treatment and Management

Treatment involves a long course of antibiotics that are specific for the infective organism found in any particular case. Ideally, the antibiotic selection will be based on culture and sensitivity results from the

infected disk. If disk culture is not possible, then antibiotic selection will be based upon the culture results of urine, blood, or other infected areas.

Antibiotic treatment may be needed for many months. Recurrence of the disease or persistence of signs can be a problem if antibiotic therapy is stopped too soon, if the antibiotic being used is ineffective, if corticosteroids or other immunosuppressive drugs are used, or even in some cases where treatment has been thorough. If clinical signs do not improve while the pet is taking antibiotics, your veterinarian may decide to repeat the disk culture and/or other tests to make sure treatment is on the right path.

As for *Brucella* infections, treatment is only undertaken with the understanding that a cure cannot be expected, long-term antimicrobials will be required, and the return of the infection is common. Infected dogs should be neutered to reduce the risk of transmission to other dogs and people, to remove potential reservoirs of infection, and to resolve other clinical problems (infection of the testicles, for example). For all practical purposes, Brucella diskospondylitis should be considered incurable. Dogs infected with *Brucella* should never be bred.

Antifungal drugs, particularly itraconazole, fluconazole and/or terbinafine, may be effective for treating some cases of fungal diskospondylitis.

Decompression Surgery

Your veterinarian may advise surgical exploration of a lesion that does not respond to treatment or that has persistent draining tracts that suggest foreign body migration is occurring. Decompressive surgery and/or stabilization may be considered if evidence of spinal cord compression is found on myelography or MRI, or if severe, progressive neurologic problems occur. Surgical stabilization of affected sites may be useful in cases in which spinal instability is a significant complication. This type of surgery is generally done by specialists.

Supportive Therapy

If antibiotics are effective, pain medications may be needed for only a few days.

Monitoring and Prognosis

After your pet has had at least six weeks of therapy, your veterinarian may take more x-rays to see if the lesions have improved. Improvement of clinical signs often occurs before improvement can be seen on the x-rays. Prognosis for recovery is guarded and depends, to some degree, on the cause of the diskospondylitis.

References:

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