

## **Intervertebral Disk Disease (Herniations of the Disk)**

Intervertebral disks are located between the vertebrae (bones of the spine). Each disk has two parts, a fibrous outer layer and the jelly-like interior. When disk herniation occurs, the interior either protrudes (bulges) or extrudes (ruptures) into the vertebral canal, where the spinal cord resides. The onset of herniations can be either acute or chronic. When the spinal cord is compressed by this disk material, the dog or cat experiences signs ranging from mild back or neck pain to paralysis of limbs, loss of sensation, and loss of bladder and bowel control. Sometimes a disc herniation can be seen on radiographs (see below) but it may take more specialized studies of the spine (MRI or CT scan or a myelogram) to see the exact site where the disc herniated; this is especially true if surgery is part of the treatment plan because the surgeon must be sure of the exact rupture site.

Intervertebral disk disease sometimes occurs in cats, but it is not as common as it is in dogs, especially in the long, low chondrodystrophic breeds (e.g., dachshund, basset hound, beagle, Cocker spaniel, Shih Tzu, Lhasa apso, Pekingese, and corgi). In these breeds, there is a genetic predisposition for degeneration of the inside of the disk due to the animal's conformation, which predisposes the disk to herniation. These chondrodystrophic dogs tend to get the bulging extrusions. Larger breeds of dogs are more typically affected with protrusions.

Although most disk herniations are caused by degeneration of the disk, they can also be caused by physical trauma (an accident, such as being hit by a car).

Disk herniation can occur anywhere along the spine but is commonly seen in the mid back area, the lower back area, and the neck area. Disk herniation in the mid back to lower back area may cause paralysis of the hind limbs and inability to properly urinate or defecate. Disk herniation in the neck often causes neck pain or limping on one front limb; however, it can also cause paralysis of all four limbs.

### **Age**

In affected dogs of chondrodystrophic (long, low-slung) breeds, disk degeneration occurs within the first few months of life, but the actual herniation doesn't occur until the dog is typically over 3 years of age. The herniation may have a very sudden onset, i.e. suddenly extruding into the spinal canal where the spinal cord runs. In non-chondrodystrophic breeds, the disk degeneration starts later in life and the herniation may occur more slowly over time (slowly protruding or bulging disc).

### **Grading of Clinical Signs and Diagnosis**

A neurological examination allows the severity of clinical signs to be graded as follows:

Grade 5: normal

Grade 4: ambulatory, but mildly paraparetic (weak/wobbly)

Grade 3: markedly paraparetic (weak/wobbly), but is able to get up on his/her own

Grade 2: severely paraparetic (weak/wobbly); good voluntary motion still present in hind limbs, but cannot get up without assistance

Grade 1: slight voluntary limb motion present

Grade 0: paraplegic (no voluntary motion present). This grade is further subdivided as to whether or not the patient can feel any deep pain sensation in the affected limbs.

- Dr. Rowena D'Monte • Dr. William Langhofer • Dr. Makenzie Kurth • Dr. Joseph Lockhart
- Dr. Daniel Fonza • Dr. Irina Vera • Dr. Erin Greenwood • Dr. Heather Riedy
- Dr. Nicole Winterwood • Dr. Emma Kulkarni

A tentative diagnosis is based on age and breed of patient, clinical signs, and spinal radiographs. Remember, though, that disc herniations are not always as visible as the one demonstrated in the above radiograph; some are impossible to see without more specialized imaging. Therefore, a definitive diagnosis usually requires myelography, MRI, or CT scans of the spine. Myelography is a type of imaging involving the injection of a contrast agent (a liquid that x-rays don't go through) into the spinal canal to pinpoint the compressed area of spinal cord. CT or MRI scans are also another way to see more clearly if a disk is the cause of the problems. These tests require general anesthesia, at which time the attending veterinarian may also remove some spinal fluid and have it analyzed for signs of other diseases that can mimic a disk herniation.

### **Treatment and Prognosis**

Mild cases that are not paralyzed are often managed medically. Confinement to a crate with minimal physical activity (no jumping, no running, no going up/down stairs, no playing, etc.) is necessary for several weeks. Pain medication may be prescribed by your veterinarian during the confinement.

Surgical intervention may be recommended if medical management isn't working, if the pain can't be controlled, or if the patient is paralyzed. Surgery is often the quickest way to get function to return. However the success of the surgery depends on the amount of damage that the spinal cord has incurred and how long of a time period the disk has been compressing the spinal cord. The neurological examination will help to determine the degree of damage as well as estimating the prognosis for return of function. In general, more than 90% of the dogs who have the ability to sense pain in their hind limbs will walk again after surgery; this decreases to 60% or less if the patient has lost the ability to sense deep pain sensation in their limbs. Surgery to treat disk herniation requires the expertise of a veterinarian with training in disk surgery, which is usually a surgical specialist, a neurologist, or a neurosurgeon.

With either medical or surgical treatment, the pet owner will need to provide nursing care for the pet during the recovery phase. This may mean keeping the pet confined to a small space while it is recovering, keeping it calm and quiet, carrying it outdoors frequently for eliminations, assisting with urination and defecation, flexing and extending joints to keep them flexible, etc. Consult with your veterinarian as to how you can assist your pet during recovery. More intensive physical therapy may be needed in some cases. Full recovery usually takes several weeks and in some cases even several months.

The prognosis depends on how severe the clinical signs are, how long the problem has been present, which treatment is selected, and how the patient responds to treatment. Most animals respond well if veterinary advice is followed, but some patients end up with permanent paralysis and fecal/urinary incontinence despite proper treatment and management.