



Thoracolumbar Disc Disease

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Thoracolumbar disc disease is the most common consideration when dealing with back pain and/or paresis in the dog. As the disc degenerates, it loses water content and the nucleus becomes brittle. This interferes with the shock absorbing capacity of the disc, both by reducing the resilient properties of the normally fluid filled nucleus and by weakening the fibers of the annulus fibrosis. For example, in the dachshund breed, the majority of discs have undergone marked metamorphosis and mineralization by two years of age. Normal everyday wear and tear often causes severe weakening of the intervertebral discs. The age at which most dogs present for disc problems is between 3-6 years.

Disc extrusions may occur at any level, however, approximately 65% of thoracolumbar discs are identified between the T11 and L2 level. Discs rarely extrude at the T1-2 through T10-11 interspace because of the intercapital ligament which extends dorsal to the annulus.

CLINICAL SIGNS

The clinical signs are that of back pain, referred pain associated lameness, and varying states of paresis. Calcified discs located in the intervertebral space are usually not responsible for pain and/or paresis. Extrusion is necessary for signs to appear. Back pain is associated with root entrapment and subsequent ischemia. A root signature and an associated rear leg lameness indicates that a nerve root innervating the limb has been entrapped by disc material. Paresis and/or plegia is related to extradural spinal cord and meningeal attenuation. In the acute stage, the extruding nucleus pulposus may also cause a considerable impact (concussive) injury to the spinal cord. Further neurologic deficits develop as the duration and degree of spinal cord compression increases. These deficits may range from mild ataxia and paresis to paraplegia which may be accompanied by analgesia caudal to the lesion.

EVALUATION

First, you must always ask yourself if the patient has orthopedic or neurologic problems. The majority of dogs with thoracolumbar disc disease will demonstrate upper motor neuron pelvic reflexes (UMN: T3-L3 lesion). The following grading system for dogs with disc disease is very useful for deciding on the best type of therapy and for predicting the likely prognosis.

I: Proprioceptive deficits: Absent

Present: soft vs hard.

Lateralization: right vs left.

II: Motor function: Identified by the following grading system.

GRADE 5: No neurologic deficits. Hyperesthesia only.

GRADE 4: Mild degree of ambulatory paraparesis.
Slight neurologic deficits.

GRADE 3: Moderate degree of ambulatory paraparesis.
"Drunk, stuporous gait".

GRADE 2: Severe degree of ambulatory paresis.
Able to rise and support weight but falls frequently.

GRADE 1: Nonambulatory paraparesis.
Cannot support weight but can advance pelvic limbs when the pet is supported by the tailbase.

GRADE 0: Paraplegia.
No pelvic motor function.

III: Deep Pain response: Evaluated by placing a hemostat on the periosteum of P2, medially and laterally, of each pelvic limb. Inconsistent response is seen when the nailbed is squeezed.

Positive: Responds to noxious stimuli with some type of head movement (bite, cry, turning head etc.)

Hypalgesia: Dampened response to the degree of noxious stimuli applied.

Absent: No response to noxious stimuli.
Usually the tail is squeezed in a similar manner for further confirmation.

Remember, withdrawal of the limb alone should not be confused with a deep pain response. This is a spinal reflex.

It is most beneficial to the surgeon and patient if the clinical signs can be lateralized during the history and initial physical

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TREATMENT

Conservative Management:

This should be recommended for those patients with pain only (grade 5) or mild degree of paresis (grade 4). Steroids are the class of drugs that have been used as the principle therapy for any spinal cord trauma. Unfortunately, there is still little information that indicates which type of steroidal preparation (dexamethasone vs. prednisone) or the dose which gives the maximum benefit. Current clinical investigation has focused on the use of high dose methylprednisolone (30mg/kg IV) for acute spinal cord insult. Although clinical studies in veterinary medicine are not complete, the results with this drug have not radically altered the outcome over more traditional steroidal therapy. Regardless of the type of steroidal therapy employed, the potential deleterious effects of higher doses warrants mention. The most serious complication is gastrointestinal bleeding. The use of dexamethasone and dexamethasone sodium phosphate has been associated with a higher rate of GI bleeding and particularly colonic ulceration/perforation. This latter complication is associated with a nearly 100% fatality rate, even with prompt and vigorous therapy. Current recommendations are as follows. Methylprednisolone or prednisolone sodium succinate: 30mg/kg IV as bolus. This is followed by 15mg/kg at 2 and 6 hours after the initial dose with maintenance of 2.5mg/kg/hr for 24-48 hours. These drugs are then discontinued. If your preference is dexamethasone, 0.2mg/kg IV BID to TID is recommended. Higher doses are probably not of any benefit and leave the patient at greater risk for complications. The initial dose should be tapered quickly over 48-72 hours. Gastroprotective agents (cimetidine, sucralfate, misoprostol) are strongly recommended.

Strict rest is the principle behind conservative therapy. The animal must have absolute cage rest for 4-6 weeks. Without confinement, recurrence rates and the potential for paralysis are high.

Surgery:

Dogs with moderate to severe paresis (grade 3 to grade 0), deteriorating neurologic signs or recurrent pain should have decompressive surgery (hemilaminectomy or laminectomy) performed without further delay. The common practice of medically treating dogs with moderate to severe paresis or paraplegia for 24 to 48 hours and then performing surgery if no improvement occurs should be discontinued. This recommendation is supported by several clinical and experimental studies that compare the speed and duration of spinal cord compression with the rate of recovery. Patients without deep pain for up to 48 hours should have surgery. However, the rate and quality of recovery are much less predictable.

Supportive care:

Prevention of decubital ulcers, urine scalding and urinary tract infection is imperative. Physical therapy, which will be addressed in a future issue is equally as important.

PROGNOSIS

Prognosis is based on the severity and the duration of clinical signs. In general, patients with retention of deep pain (grade 0 motor), when decompressed without delay should have good voluntary motor activity (80-96% of cases) within 4-5 weeks of surgery. Once deep pain is lost, the prognosis quickly declines. If surgery is performed within the first 12 hours, recovery rates are reported to be approximately 56 percent. Those operated on between 12-36 hours of onset have recovery rates of only 25 percent. Recovery rates for patients without deep pain for greater than 48 hours is estimated to be less than 5 percent.

Hopefully, this information will help your decision process and ultimately benefit your patient and client.



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