

CERVICAL INTERVERTEBRAL DISK DISEASE IN DOGS

BASICS

OVERVIEW

- The spine is composed of multiple bones (vertebrae) with disks (intervertebral disks) located in between adjacent bones; the disks act as shock absorbers and allow movement of the spine; the vertebrae are named according to their location—cervical vertebrae are located in the neck and are numbered as cervical vertebrae one through seven or C₁-C₇; thoracic vertebrae are located from the area of the shoulders to the end of the ribs and are numbered as thoracic vertebrae one through thirteen or T₁-T₁₃; lumbar vertebrae start at the end of the ribs and continue to the pelvis and are numbered as lumbar vertebrae one through seven or L₁-L₇; the remaining vertebrae are the sacral (located at the pelvis) and coccygeal (tail) vertebrae
- Each disk is composed of a central gel-like area, known as the “nucleus pulposus,” and an outer fibrous ring, known as the “annulus fibrosis”
- Degeneration of cervical intervertebral disks causes protrusion or extrusion of disk material into the spinal canal; the protruded or extruded disk material causes pressure on the spinal-cord itself (known as “spinal-cord compression” or “myelopathy”) and/or nerve-root compression (known as “radiculopathy”)
- Protrusion is defined as the disk bulging into the spinal canal with the fibrous ring of the disk being intact; extrusion is defined as the center or nucleus of the disk being forced out of its normal position into the spinal canal with the fibrous ring of the disk being ruptured
- Two types of protrusion/extrusion (“slipped disk”) have been reported in dogs: sudden (acute) disk herniation is Hansen type I and long-term (chronic) disk herniation is Hansen type II; Hansen type I involves degeneration of the center or nucleus of the disk with rupture of the fibrous ring and resulting movement of the center into the spinal cord (extrusion) while Hansen type II involves degeneration of the disk, followed by bulging of the disk into the spinal cord with the fibrous ring remaining intact (protrusion)

GENETICS

- Chondrodystrophoid breeds are dogs with shortened legs that are bowed to some degree; they include such breeds as the Pekingese and dachshund; the chondrodystrophoid breeds have accelerated disk degeneration as compared to other breeds
- Eighty percent of disk extrusion occurs in dachshunds, beagles, and poodles; incidence in the dachshund population is about 25%

SIGNALMENT/DESCRIPTION of ANIMAL

Species

- Dogs

Breed Predispositions

- Hansen type I (sudden disk herniation)—dachshunds, poodles, beagles, Pekingese, cocker spaniels
- Hansen type II (slower, long-term disk herniation)—Doberman pinschers

Mean Age and Range

- Hansen type I—3 to 6 years of age
- Hansen type II—8 to 10 years of age

SIGNS/OBSERVED CHANGES in the ANIMAL

- Severity of signs is dependent on the rate and volume of disk protrusion or extrusion, and the diameter of the vertebral canal relative to spinal-cord size
- Neck pain
- Stiff, stilted gait, reluctance to move the head and neck
- Lowered head stance and muscle spasms of the head, neck, and shoulder
- 10% of affected patients are weak or partially paralyzed in all four limbs (known as “tetraparesis”)
- Neck pain—elicited upon flexion and extension of the neck, turning the neck from side to side or by deep palpation of the cervical muscles
- Forelimb lameness (such as knuckling, or limb held in partial flexion) as a result of pressure on the nerve roots as they exit the spinal cord helps localize the intervertebral disk lesion to the fourth to seventh cervical vertebrae (C₄-C₇)
- Partial paralysis (paresis) in both forelegs and rear legs may be present; the nervous system deficits/lameness also can be on only one side of the body (right side or left side) and involving the front leg and rear leg on that side
- Rear-leg partial paralysis (paresis) may be more severe than front-leg partial paralysis
- Rear-leg spinal reflexes may be normal to exaggerated
- Front-leg spinal reflexes may be normal to exaggerated when the intervertebral disk lesion is at the first to sixth cervical vertebrae (C₁-C₆) or may be normal to decreased when at the sixth cervical vertebra to second thoracic vertebra (C₆-T₂)
- Bladder function may be normal or may be abnormal, characterized by a distended firm bladder that is difficult to empty manually (known as an “upper motor neuron bladder”)

CAUSES

- Hansen type I—early degeneration of the cervical intervertebral disk and subsequent disk mineralization
- Hansen type II—gradual degeneration of the cervical intervertebral disk

RISK FACTORS

- Obesity and breed predisposition

TREATMENT

HEALTH CARE

- Conservative management—indicated with gradual onset of clinical signs or clinical signs that are limited to an exaggerated response to painful stimuli (known as “hyperpathia”) or mild wobbly gait (known as “ataxia”)
- Surgical management—indicated for repeated episodes of neck pain; patients with severe neck pain and nervous system deficits; or patients that have not responded to conservative management
- Handling—minimal manipulation, avoid obtaining blood samples from the jugular vein
- Urination—monitor for complete emptying of the bladder; may need to express bladder manually or catheterize intermittently; some cases, may need indwelling urinary catheter
- Urine bacterial culture and sensitivity are recommended in all dogs undergoing spinal decompression surgery
- Defecation—monitor and adjust diet or give enemas as needed
- Recumbent patients—keep on a well-padded mat and turn every 4 hours, check for pressure or “bed” sores over bony prominences
- Physical therapy—institute hydrotherapy and passive range of motion of all joints as often as possible
- All patients should be fitted with a harness instead of a neck collar

ACTIVITY

- Minimal, no running or jumping.
- Walk using a harness, instead of a collar
- Conservative management patients strictly are confined to cage rest for 3 to 4 weeks
- Following surgery, leash-walk only for 4 to 6 weeks, then slowly re-introduce to full activity

DIET

- For obese patients, a reducing diet should be instituted

SURGERY

- The goal of surgery is to remove disk material from the spinal canal to decompress the spinal cord and/or affected nerve roots; surgery is known as “decompressive surgery” as it removes pressure from the spinal cord
- Surgery usually provides immediate pain relief and eventual return of normal motor function
- A “ventral cervical slot” is the most common surgical approach for the removal of disk material from the spinal canal
- Disk material that has moved into the intervertebral foramen often is removed via a lateral approach to the cervical spine
- Fenestration (surgical procedure in which disk material is removed from disks that are still in their normal location and are not extending into the spinal canal) without decompression is seldom recommended

MEDICATIONS

Medications presented in this section are intended to provide general information about possible treatment. The treatment for a particular condition may evolve as medical advances are made; therefore, the medications should not be considered as all inclusive.

- Low-dose steroid therapy may be beneficial, in order to decrease pain in animals that are being treated conservatively
- Steroids given to animals without simultaneous strict cage confinement could worsen disk extrusion by encouraging exercise
- Nonsteroidal anti-inflammatory drugs (NSAIDs) can be used only if the animal is not currently, or recently, on steroids
- Muscle relaxants generally are unsuccessful when used alone

FOLLOW-UP CARE

PATIENT MONITORING

- Weekly evaluations until resolution of clinical signs

PREVENTIONS AND AVOIDANCE

- Inherent medical disorder in particular breeds; therefore, nothing actually prevents intervertebral disk disease
- Keeping patients at an ideal weight may help

POSSIBLE COMPLICATIONS

- Continued neck pain

- Deteriorating ability to stand and/or walk
- Dislocation of vertebrae after decompressive surgery

EXPECTED COURSE AND PROGNOSIS

- Prognosis depends on nervous system signs at time of presentation
- Generally favorable for most patients
- Many patients treated conservatively have recurrence of clinical signs

KEY POINTS

- For conservative management, emphasize strict cage confinement
- Weight loss, if the animal is obese
- Many patients treated conservatively have recurrence of clinical signs
- The goal of surgery is to remove disk material from the spinal canal to decompress the spinal cord and/or affected nerve roots; surgery is known as “decompressive surgery” as it removes pressure from the spinal cord
- Walk using a harness, instead of a collar

