

## DEGENERATIVE MYELOPATHY (DM)

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**Definition:** Degenerative myelopathy is a progressive disease of the spinal cord in older dogs, with a typical onset between 8 and 14 years of age.

**Pathology:** It starts with a loss of coordination (ataxia) in the hind limbs, and progresses to the dog wobbling when walking, knuckle over or drag the feet. It may first occur in one hind limb and then affect the other. With disease progression, the limbs become weak and the dog begins to buckle and has difficulty standing, worsening until the dog is unable to walk. The clinical course can range from 6 months to 1 year before dogs become paraplegic. If the condition progresses for a longer period of time, loss of urinary and fecal continence may occur and eventually weakness can develop in the front limbs. DM is that it is not a painful disease.

**Etiology:** Degenerative myelopathy is known to begin in the spinal cord of the thoracic region. With DM, degeneration of the white matter of the spinal cord is observed post-mortem. There is degeneration in the form of demyelination (stripping away the insulation of these fibers) and axonal loss (loss of the actual fibers). This interferes with the communication between the brain and limbs. Recent research has identified a mutation in a gene that confers a greatly increased risk of developing the disease

**Diagnosis:** ***Test for Degenerative Myelopathy gene NOW AVAILABLE!***

A DNA test is now available for use by veterinarians, breeders and pet owners. This test is available through the OFA (Orthopedic Foundation for Animals - [www.OFFA.org](http://www.OFFA.org)). The test clearly identifies dogs that are clear, those who are carriers, and those who are at much higher risk for developing DM (having 2 mutated copies of the gene). However, having two mutated copies of the gene does not necessarily result in disease.

**Breeds Affected:** A high percentage of dogs in several breeds (including Boxers, Pembroke Welsh Corgis, Chesapeake Bay Retrievers and Rhodesian Ridgebacks) have the predisposing mutation. It is important to note that there are a large number of dogs that have tested as genetically affected, but are reported as clinically normal by their owners. It may be that many of these dogs will develop clinical signs as they get older or it is possible that symptoms will never manifest in these dogs. Research is still needed to determine the frequency of the mutation in breeds known to have DM (German Shepherd Dogs, Rhodesian Ridgebacks, Pembroke and Cardigan Welsh Corgis, Boxers, Chesapeake Bay Retrievers, Standard Poodles).

As part of an ongoing collaborative effort by research scientists at the University of Missouri and the Broad Institute, a free DNA test is offered for dogs that have been diagnosed with DM, and for older dogs in selected breeds.

Complete disease and testing information is available in the Degenerative Myelopathy section of [www.CanineGeneticDiseases.net](http://www.CanineGeneticDiseases.net).

***What about the dogs that don't test positive for DM but show clinical signs of DM and in the past would have been diagnosed with DM?***

- DM is a neurodegenerative disorder that presents with progressive hindlimb ataxia, paraparesis, hindlimb muscle atrophy with little or no evidence of spinal hyperpathia. Bowel and bladder function usually remains intact. Signs and symptoms are usually UMNL signs but LMNL signs have been reported as occurring between 10% – 44% of cases. The disease is slowly progressive over 6 – 36 months from diagnosis.
- Etiology is not fully understood.
- Post Mortem findings: varying degrees of axon & myelin degeneration of the spinal cord white matter in all segments but affecting the thoracic region the most. Neuronal changes in the brain have also been found
- Other CT myelography findings in dogs with DM:
  - Spinal stenosis
  - Disc protrusion
  - Focal attenuation of the subarachnoid space
  - Spinal cord deformity,
  - Small spinal cord
  - Paraspinal muscle atrophy
- Some of the CT myelographic characteristics in dogs with DM are consistent with those reported in humans, dogs and horses with stenotic myelopathy.

**TREATMENT for the DM PATIENT**

**Physiotherapy Treatments:** Kathmann et al (2006), J Vet Intern Med:

- Active Exercise: 5 – 10 mins at least 5 x / day
  - Sit to stand, slow walking, frequent versus long exercise, weight shifting in standing, changing of ground, stair climbing or up-hill walking, assistance as needed and correction of paw placement
- Passive Exercise: 3x/day, 10 times each
  - Gentle, slow flexion / extension of each joint of all limbs – maintaining physiological ROM
- Massage: 3 x / day
  - Start and finish with stroking
  - Kneading massage of paravertebral muscles and limbs (distal to proximal)
- Hydrotherapy: 1 or more times / week for 5 – 20 minutes
  - UWT or swimming
  - Assistance and adaptation as needed
  - Weight shift in in water
- Paw protection while walking

This regime yielded a mean survival time more than 4x that of dogs that did not receive any treatment, and twice as long as dogs that received a modified amount of therapy/exercise. (Moderate was described as walking 3 x / day and hydrotherapy or massage once a week)

**OTHER treatments:** University of Florida Gainesville ~ Dr. Roger Clemmons

- No immuno stimulants
- Vitamin B supplement (B complex & B12 specifically)
- Vitamin E supplement (2000IU/day)
- Aminocaproic acid may slow degeneration as much as 50%
- N-acetylcysteine

**Others reports:**

- Corticosteroids reserved for acute exacerbations
- Tylenol for pain 5mg/kg (Not to exceed 20mg/kg/day)
- Nutraceuticals: Coenzyme Q10, Omega 3 Fatty acids, Gammalinoleic acid, Vitamin B complex, Vitamins E & C, gingo leaves, Ginseng (males only), Dong Quai (females only)