



Degenerative Myelopathy (DM)

Who can be affected?

The disease is most common in older medium to large breed dogs; German Shepherd Dogs and Boxers are the most commonly affected breeds, but it is seen in other breeds as well. Most dogs are at least 8 years old at onset of Degenerative Myelopathy, with the mean age of 9 years old.

Other breeds that may be affected by Degenerative Myelopathy – Siberian Husky, Miniature and standard poodle, Pembroke and cardigan Welsh corgi, Chesapeake Bay retriever, Rhodesian Ridgeback, Bernese mountain dog, Kerry blue terrier, golden retriever, wire-haired fox terrier, American eskimo dog, soft-coated wheaten terrier, and pug.

Cause

Degenerative Myelopathy (DM), also known as degenerative radiculomyelopathy, is a degenerative disease that affects the spinal cord. It is like Lou Gehrig's disease in humans (also called ALS). The degeneration starts in the thoracic spinal cord region and extending to all of the central nerve system. The exact etiology of this disease remains unknown. Recently, a mutation in the superoxide dismutase 1 (SOD 1) gene was found to be associated with development of DM.

Symptoms

Dogs with DM follow a pattern of clinical signs. There are total 4 stages of signs (Please note that disease process can be highly variable)

- **STAGE 1** – UMN paraparesis (first 6-12 months) – Clinical signs start with progressive hind limb weakness, bubbliness, and the signs are often asymmetric. Most owners notice is "my dog is walking funny" or "He/she is slowing down".
- **STAGE 2** – non-ambulatory paraparesis to paraplegia (~6-12 months) – Over time, dogs will gradually lose their muscle mass, motor function, and reflexes in their back legs, show signs of urinary and fecal incontinence, and eventually cannot move their back legs and tail.
- **STAGE 3** – LMN paraplegia to thoracic limb paresis (~14-24 months after disease onset) as the disease progresses, the degeneration of spinal cord will ascend to the front part of the body, which means in addition to the signs above, DM patients will start showing weakness in their front legs.
- **STAGE 4** – LMN tetraplegia and brain stem signs (~ over 36 months) – At the end of the disease, the degeneration can progress to involve neck, brain stem, and brain. Patients will not be able to move all four limbs, have trouble breathing, and have difficulty with swallowing and tongue movement.

Diagnostics

A DNA test based on the SOD1 mutation is available. The test will show if your dog is at risk, a carrier or normal depending on the existence of the mutated copy of SOD1 in his/her DNA. Both cheek swab sample and blood sample can be used for the test. It usually takes 1-4 weeks to get the result.

Please note that the DNA test cannot be used as the only criteria to diagnose DM. Dogs who test positive (at risk) for the mutation may be at higher risk, but they may not actually develop DM. The tentative diagnosis of DM is based on signalment (breed and age), history, clinical signs, and exclusion of other spinal cord disorders with imaging (magnetic resonance imaging of the spine). The only definitive diagnosis for DM is via post-mortem histology of the spinal cord.

Treatment

Unfortunately, there is no cure for DM. Daily controlled physical exercise is recommended to help maintain mobility and muscle strength. This is the only thing shown to improve mean survival time. Additional modalities that may be helpful include laser therapy and acupuncture. While there is a plethora of supplements available, none of them have been shown to be effective and are thus not recommended. The silver lining of this disease is dogs with DM are not painful from this disease. As the disease progresses, special care will be required to keep them comfortable (please refer to bladder management, recumbency care, and physical therapy handouts) because they are immobile for longer periods of time.

Prognosis

Sadly, the prognosis for dogs with DM is poor. Without any intervention, most dogs will become paralyzed in 6-12 months, and the disease will continue to progress. When the front limbs start showing symptoms, end of life care and humane euthanasia are strongly recommended.

To learn more about neurologic diseases, treatments, medications and our practice, please visit www.bvns.net.