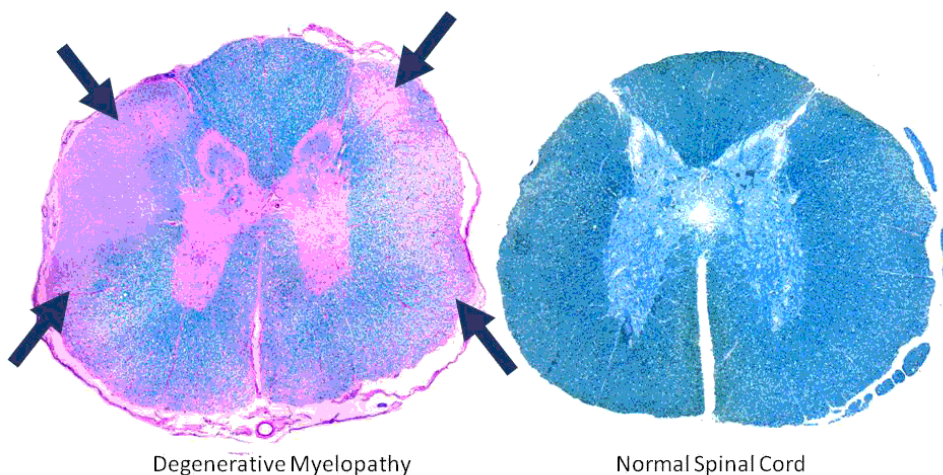


Degenerative Myelopathy (DM)

Degenerative myelopathy (also known as DM) is a slowly progressive disease that affects the spinal cord and a dog's ability to walk. The structures within the spinal cord that are responsible for nerve impulses degenerate. DM results in lost coordination of the hind legs, which progresses to weakness and then to paralysis of the hindquarters.

Typically, degenerative myelopathy isn't seen in dogs under the age of five, it usually affects dogs that are between 8 and 14 years old. The degeneration occurs slowly over a period of several months. Often the first signs noticed are difficulty in the hind quarters when the dog is getting up. This awkwardness is most noticeable when the dog walks on a smooth surface. However, as the disease progresses, the dog becomes uncoordinated and will scuff or drag the rear feet, causing excessive wearing of the toenails.



Degenerative Myelopathy

Cause

The cause is a DNA mutation in a gene called superoxide dismutase 1 (SOD1). This risk factor of having this gene was identified in 2009.

Though most of the dogs in early reports were German Shepherd Dogs (GSD), other breeds that have the mutation and clinical signs include American Water Spaniel, Bernese mountain dog, Bloodhound, Borzoi, Boxer, Canaan Dog, Chesapeake Bay retriever, English Cocker Spaniel, German Shepherd Dog, Great Pyrenees, Kerry blue terrier, Pembroke Welsh Corgi, Pug, Sealyham terrier, and Whippet.

Signs

Early signs, such as difficulty getting up or a noticeable sway in the dog's gait, may be confused with hip dysplasia. As months go by, "scuffing" of the hind limb toe nails or dragging of the hind limb feet usually is noted. The rear limbs may criss-cross when standing or walking. The dog may not be able to stand well and during an examination a veterinarian will detect rear limb weakness. Muscles of the rear limbs will become atrophied or wasted away. As the disease progresses, the front legs may become weak.

Diagnosing

DNA testing can identify the DNA mutation that is associated with the development of DM. The test identifies dogs that are clear and have two normal copies of the gene, carriers who have one normal copy and one mutated copy, and affected who are at much higher risk for developing DM because they have two mutated copies. Dogs who have two of the mutated copies are the only ones that have developed the disease.

Treatment



Picture of Hunter who sadly died after struggling with DM. He was owned by Kev and Mala Frost who have done everything to make life better for him, but DM always wins This picture will make very clear that breeders should test for DM before breeding their dogs!

Unfortunately no treatment has been shown to reverse the signs; DM can be managed but not cured. Supportive treatment can help.

Exercise such as walking and swimming should be encouraged. Physical therapy helps to maintain muscle mass and quality of life. In one study of 50 dogs with DM, those that received intensive physiotherapy had longer survival time (mean of 255 days), compared

with dogs that received moderate (mean of 130 days) or none (mean of 55 days). Affected dogs who received physiotherapy were ambulatory longer than those that did not receive it.

Once the dog reaches the non-ambulatory state, pressure sores, urine leaking, and loss of bowel control are likely to develop, so close attention to daily eliminations and bedding will be needed.

Breeding and Prevention

Because the disease is found in specific breeds, responsible breeding is the only way to prevent degenerative myelopathy. If you plan to get a purebred puppy of an affected breed, ask the breeder about history of DM in the kennel's line. Understand that clinical signs don't develop until long after sexual maturity.

There are 3 test outcomes possible: clear, carrier, affected

Clear = free N/N

Carrier = one copy of the mutation N/M

Affected = two copies of the mutation M/M

For breeders it is extremely important to know whether the parent dogs have this mutation. See diagram below to understand why breeders should not breed a carrier to a carrier, or a carrier to an affected dog:

DM		Result female		
		Clear(N/N)	Carrier(N/M)	Affected(M/M)
Result male	Clear(N/N)	100% (N/N)	50% (N/N) 50% (N/M)	100% (N/M)
	Carrier(N/M)	50% (N/N) 50% (N/M)	25% (N/N) 50% (N/M) 25% (M/M)	50% (N/M) 50% (M/M)
	Affected(M/M)	100% (N/M)	50% (N/M) 50% (M/M)	100% (M/M)

Prognosis

Most affected dogs are euthanized due to disability within 6 to 12 months of onset of signs.