METROPOLITAN VETERINARY ASSOCIATES
NEWSLETTER
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Canine Degenerative Myelopathy

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Canine degenerative myelopathy (DM) is a late onset, slowly progressive degenerative disorder of the spinal cord white matter. It primarily affects large breed dogs with a mean age of onset of 9 years; most patients are 8 years or older when signs of disease develop, and there is no sex predilection.

Previously DM was considered idiopathic. However, recent advances demonstrated a genetic basis in certain breeds due to a mutation in the canine SOD1 (superoxide dismutase 1) gene. The SOD1 protein is a free radical scavenger in the central nervous system and mutations lead to myelin and axonal loss. This results in demyelinating disease, a condition that damages the protective, insulating outer layer of nerves (the myelin sheath). In canine DM, unprotected nerve fibers (axons) in the spinal cord no longer transmit signals normally; as conduction of nerve impulses slows along these damaged pathways, neurological deficits appear.

The SOD1 genetic mutation has been documented in breeds most commonly affected by DM, which include the German Shepherd, Pembroke Welsh Corgi, Boxer, Rhodesian Ridgeback, and Chesapeake Bay Retriever. DM has many similarities to human amyotrophic lateral sclerosis (ALS), and mutations in SOD1 have been identified as a cause for some forms of human ALS. Therefore, dogs with DM can serve as a model for this adult-onset, fatal neurodegenerative disease in people.

CLINICAL SIGNS

DM is not a painful condition, and the clinical course is often insidious. Dogs initially present with signs of a T3-L3 myelopathy manifesting as upper motor neuron paresis (weakness) and proprioceptive ataxia (loss of coordination) affecting the pelvic limbs. Therefore, DM should be suspected in an older dog that presents for progressive spastic paraparesis and exhibits lack of paraspinal pain. As DM progresses, nerve fibers are damaged cranially and caudally along the spinal cord. This eventually leads to thoracic limb motor deficits (resulting in tetraparesis) and pelvic limb lower motor neuron signs (resulting in flaccid paralysis and pelvic limb reflex deficits); urinary/fecal incontinence and widespread muscle atrophy occur towards the end stage of disease. Ultimately many pet owners elect humane euthanasia once affected dogs lose the ability to support weight in the pelvic limbs and walk independently.

Dr. Lisa Lipitz

DIAGNOSIS

Definitive diagnosis is made only via spinal cord histopathology on post mortem examination (Figure 1). Clinical, antemortem diagnosis is best made by excluding other diseases that can cause a progressive T3-L3 myelopathy.

The neurodegenerative changes that occur within the spinal cord during the course of DM are too small to be visualized via MRI examination. On cerebrospinal fluid analysis testing, a mild protein elevation is often found in

dogs with DM which is a non-specific, common finding in many types of spinal cord disease. A combination of appropriate signalment, history, and neurologic signs, in conjunction with a normal spinal MRI examination are supportive diagnostic findings for canine DM. However, performance of a spinal MRI examination is essential in order to rule out other conditions which can present similarly to DM, such as Type II (chronic) intervertebral disc disease, chronic discospondylitis, and spinal neoplasia.

Because a familial cause has been identified, the University of Missouri offers a genetic test for the SOD1 mutation; currently, an autosomal recessive inheritance is presumed and homozygosity for this mutation is considered a major risk factor for developing canine DM. Not all dogs homozygous for this mutation go on to develop clinical signs of DM later in life, which must be kept in mind when interpreting test results. It is suspected that other, still unidentified, genetic and environmental factors may also determine whether at risk dogs develop DM. Still, the genetic test is a useful tool both in supporting a clinical antemortem diagnosis of DM and also for breeders working to eradicate the SOD1 mutation from the gene pool of commonly affected breeds.

> “ULTIMATELY, MANY PET OWNERS ELECT HUMANE EUTHANASIA ONCE AFFECTED DOGS LOSE THE ABILITY TO SUPPORT WEIGHT IN THE PELVIC LIMBS AND WALK INDEPENDENTLY.”

TREATMENT AND PROGNOSIS

The clinical course of DM usually varies from 6 months – 1 year, and sadly, treatment options are limited. Studies evaluating the effects of anti-oxidants (vitamin C, vitamin E, and N-acetylcysteine) have found no benefit. Corticosteroids at anti-inflammatory or immunosuppressive dosages have not been shown to alter the course of disease. Anecdotal reports that the antiprotease agent aminocaproic acid improves DM have not been validated in scientific studies. Therefore, to date no medical intervention is available to reverse progression of disease. The search for a cure is an active area of ongoing research at the University of Missouri.

Daily, intensive physiotherapy is the only measure thus far which has been shown to prolong survival of affected dogs by helping maintain functionality. This protocol includes daily gait exercise, massage, passage range of motion, and hydrotherapy; affected dogs which receive physiotherapy have longer survival times (255 days on average per one study) and remain ambulatory longer than dogs with DM that do not undergo physiotherapy. Unfortunately, the long-term prognosis for this condition remains guarded as most owners elect humane euthanasia once their dog’s quality of life becomes poor.

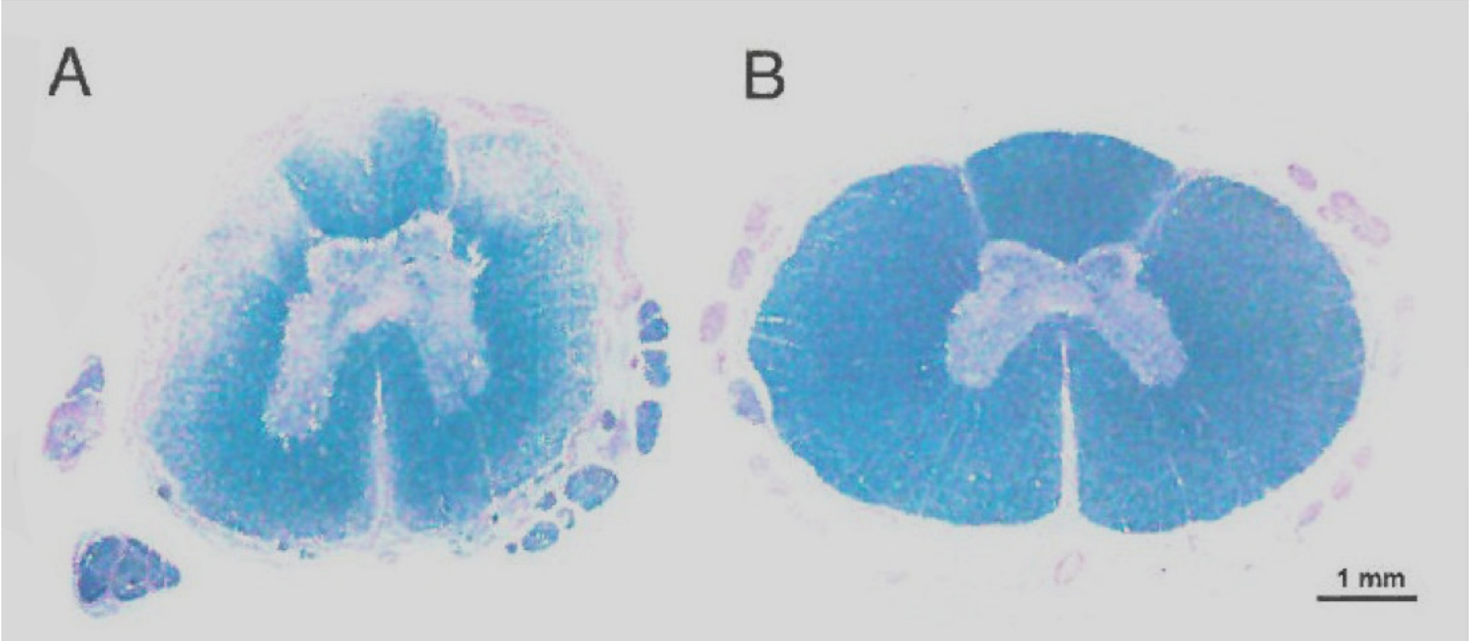

Figure 1. Spinal cord histopathology from a Pembroke Welsh Corgi affected by DM (A) and a similar spinal cord section from a dog unaffected by DM (B).

Figure Reference: Awano et al. (2009) Genome-wise association analysis reveals a SOD1 mutation in canine degenerative myelopathy that resembles amyotrophic lateral sclerosis. Proceedings of the National Academy of Sciences of the United States of Amercia. Feb 24; 106(8):2794-9.

We are SO excited to have these specialists join the MVA team later this Summer and can't wait for you to meet them!

OPHTHALMOLOGY

Chloe Spertus, DVM

NEUROLOGY

Daniella Vansteenkiste, BVetMed

DERMATOLOGY

Katherine Backel, DVM

CARDIOLOGY

Megan Poad, VMD

COMING SOON

The Veterinary Cancer Center at MVA!

We're about to 'break ground' on our new cancer center (at our current location). The entire MVA team, especially our Oncology Team, is so excited for this new, dedicated space to best care for our patients. We're just in time to ensure USP 800 regulations are incorporated into the design, and when completed we'd love to have you tour our facility.

Stay tuned!!

SPECIALIZED SERVICES

BEHAVIOR
Jacqueline Wilhelmy, MS, VMD, DACVB, CCBC-KA

CARDIOLOGY
Marc Kraus, DVM, DACVIM (Cardiology)
Michael Miller, MS, VMD, ABVP
Risa Roland, DVM, DACVIM (Cardiology)

DENTISTRY
Corinne Durand, DVM

DERMATOLOGY
Karen B. Farver, DVM, DACVD

EMERGENCY AND CRITICAL CARE
James Buckman, PhD, VMD
Allison Buysse, VMD
Jason Chamberlin, VMD
Cierra French, DVM
Robert Gaunt, VMD
Jill Kalman, VMD
Daniel Lantz, VMD
Jennifer McGough, VMD
Rachel Morgan, DVM
(Practice limited to Emergency & Critical Care)
Marisa Suvannavejh, VMD
Katrina Tumielewicz, DVM
(Practice limited to Emergency & Critical Care)

INTERNAL MEDICINE
John V. DeBiasio, DVM, DACVIM
James F. Dougherty, MS, VMD
Tabitha A. Hutton, DVM, MTR, DACVIM (SAIM)
Leslie A. Kuczynski, VMD, DACVIM

NEUROLOGY
Lisa Lipitz, VMD, DACVIM (Neurology)

ONCOLOGY
Lillie Davis, DVM, DACVIM (Oncology)
Corinne Durand, DVM
Kendra Hearon, VMD, DACVS-SA
ACVS Fellow, Surgical Oncology
Jacqui Niles, BVETMED, SAS, DACVS
Suzanne Rau, DVM, DACVIM (Oncology)

OPHTHALMOLOGY
Amanda Corr, VMD, DACVO

RADIOLOGY
Robert McLear, VMD, DACVR
Lisa Suslak, VMD, DACVR

SURGERY
Kendra Hearon, VMD, DACVS-SA
A. Jon Nannos, DVM
Jacqui Niles, BVETMED, SAS, DACVS
Catherine Popovitch, DVM, DACVS, DECVS
Timothy M. Schwab, VMD, DACVS-SA
Rebecca Wolf, VMD, DACVS-SA

PET LOSS SUPPORT GROUP

At MVA we understand the depth of loss one experiences when a beloved four-legged family member has passed. For that reason, we provide a Pet Loss Support Group to help grieving owners in need. Our group is designed to provide grieving pet parents with a safe, confidential environment to share their feelings with others who have experienced pet loss.

The group is operated by professionals who have experience with pet loss. A board certified psychiatrist consults with us regarding the implementation of the group, however, our group leaders are not mental health care professionals. Clients experiencing difficulty coping are urged to seek help from a mental healthcare professional. We can provide you with the names of health care professionals if needed.

Our Pet Loss Support Group meets on a varying schedule.

For dates please call the hospital at **610.666.1050** or visit **metro-vet.com/petloss**

UPCOMING EVENTS

The Evolution of Surgical Margins: Can We Get the Same or Even Better Outcome with Less Aggressive Surgery?

PVMA District 7 Dinner Meeting: 1.5 CE credits
Free to PVMA members, $35 for non-members

How our understanding of tumor biology has changed our approach to Surgical Oncology. We'll discuss mammary tumors, mast cell tumors, soft tissue sarcomas and also cat vaccine sarcomas – how the first cut is so important.

Location: Normandy Farm (Silos Ballroom) 1404 Morris Road, Blue Bell, PA 16422

Date: Tuesday, April 23, 2019

Time: Join us for registration, open bar, and appetizers starting at 5:45 pm, dinner provided & lecture start at 7:00 pm

Speakers: Kendra Hearon, VMD, DACVS-SA, ACVS Fellow, Surgical Oncology

TO REGISTER VISIT: METRO-VET.COM/CONTINUING-EDUCATION/

2019 MVA 5K

Join us for the 10th annual MVA 5K Run/Walk on Saturday, May 11, 2019.

Join Metropolitan Veterinary Associates for our annual 5K Run / Walk and be a hero to pet's needs! Your participation helps raise funds for the Paws of Promise Foundation, a non-profit organization that helps needy families fund emergency care for their pets. Leashed dogs encouraged to attend!

Superhero costumes are welcome but not required!

Location: 2626 Van Buren Avenue, Norristown, PA 19403

Early Registration: $25 (by May 5, 2019)

Standard Registration: $35 (after May 5, 2019)

If you have any questions please visit our website **metro-vet.com/mva-5k/** or call or email Sarah Spurgeon at **sspurgeon@metro-vet.com** or **610.666.1050**.

TO REGISTER VISIT: METRO-VET.COM/MVA-5K/

All participants registered by May 5, 2019 are guaranteed a free t-shirt!