Myasthenia Gravis may not be as rare as one may think. With warmer weather upon us and animals being more active, it should be on your list of things to check for in cases of exercise intolerance.

Myasthenia Gravis is a neuromuscular disease that causes weakness of skeletal muscle. There are autoantibodies against the acetylcholine receptor resulting in a decrease in receptors. The acquired form can be seen at any age with a bimodal onset peak of 2-3 years old and >9 years of age. The most commonly affected breeds are Akitas, Terriers, Pointers, German Shepherds, Golden Retrievers, and Chihuahuas, although any breed can be affected. Despite the fact that myasthenia gravis is rare in cats, Abyssinians and Somalis are considered to be at increased risk.

Concurrent diseases and case presentations:

Dogs – Hypothyroidism, thymoma, neoplasia, and hypoadrenocorticism are the most commonly recognized associated conditions in the dog.

Cats – Myasthenia is very uncommon in our feline patients. Thymomas are common in cats that have acquired myasthenia gravis and the use of methimazole to treat hyperthyroidism may be a predisposing factor.

There are three types of acquired myasthenia gravis:

- **Focal (36%)**: There can be variable degrees of facial muscle dysfunction, pharyngeal/laryngeal weakness where you will most often see dysphagia, and/or megaesophagus where you will see regurgitation +/- signs of aspiration pneumonia.

- **Generalized (39%)**: These patients have generalized skeletal muscle weakness that is progressive with exercise and often resolves with periods of rest. The weakness is often more profound in the rear limbs. They may have a stiff and short-strided gait or may be unable to walk, and 80–90% have an esophageal component present in this form. If the esophagus is affected, there may also be signs consistent with aspiration pneumonia.

- **Fulminant (25%)**: Acute generalized limb weakness progressing to nonambulatory tetraparesis and severe dyspnea due to weakness and fatigue of the respiratory muscles within 72 hours. The esophagus is often concurrently affected in this form.

Diagnostics:

In addition to the use of the initial database to rule out metabolic disease, thoracic radiographs are recommended to evaluate for megaesophagus and aspiration pneumonia. Endocrine testing to rule out hypothyroidism and hypoadrenocorticism is also recommended if finances allow. An edrophonium (Tensilon) response test may be done in hospital to aid in diagnosing the generalized Myasthenia Gravis patient. This test is done by giving 0.1–0.2 mg/kg edrophonium chloride IV during a period of weakness. If strength and ability to walk improves within seconds to minutes of the injection, this is considered a positive response test result. As with any test, false positives and false negatives are possible. When performing this test, it is of critical importance that atropine and an endotracheal tube are available, since side effects of the medication include acute bronchial constriction and increased bronchial secretions, which can lead to severe dyspnea. It is also helpful to video record the test for future review.

The confirmatory test of choice is a serum acetylcholine receptor antibody test, which detects antibodies that are directed against the acetylcholine receptors. This test is only used for the acquired form and has approximately 15% false negative rate (this rate is more common in the focal form of the disease).

Treatment:

The primary goals of treatment are to improve neuromuscular transmission and suppress the immune system. In hospital, neostigmine (0.04 mg/kg SQ q6h) is given until the animal is able to tolerate oral administration (able to swallow, no vomiting, or regurgitation). Then the patient is transitioned to oral pyridostigmine (Mestinon), starting at 0.5 mg/kg q8–12 hours and slowly titrated up as needed with a maximum dose of 3 mg/kg q8h.

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Acquired Myasthenia Gravis (Continued from page 1)

Side effects of these anticholinesterase drugs include hypersalivation, vomiting, and diarrhea, and can be avoided by using the lowest effective dose needed to control weakness.

If anticholinesterase medication does not result in disease control, then immunosuppression is warranted. Prednisone at a dose of 0.5–2 mg/kg q24hours is the initial drug of choice. After 1–2 weeks, a slow taper can be attempted. Other medications such as cyclosporine or mycophenolate mofetil can be added if needed. If the patient has the fulminant form, then human intravenous immunoglobulin may be helpful.

Depending on the extent of disease, supportive care may also be required, such as oxygen therapy +/- antibiotics if aspiration pneumonia is present, up-right feeding (manually or with a Bailey Chair) or gastric feeding tube if concurrent megaesophagus is present, or nutrition/fluid support and potentially ventilator support if fulminant disease present.

Prognosis:
Antiacetylcholinesterase receptor antibody titer should be rechecked every two months to evaluate for resolution of disease. Spontaneous resolution occurs in almost all patients with the focal or generalized form (up to 90%) within the first 6–18 months, as long as they do not succumb to aspiration pneumonia. Relapse is possible with stress such as surgery or vaccination, although this rarely occurs. The prognosis for the acute fulminant form is grave due to respiratory failure.

Crystal Doyle, DVM, DACVIM (SAIM)

To get more information, please email us at: contact@carecentervets.com

I took Chief, my 9 year-old Akita Mix, to the Care Center after she was attacked by another dog. She had placed her muzzle through a fence to bark at the neighbor’s dog that then aggressively attacked her. Chief suffered major injuries to her lower lip and chin, her teeth were knocked out, and her lower jaw was broken.

She was taken care of by Michele Muldoon, DVM, DACVS, who performed emergency surgery. Her chin and lower lip were reconstructed and her jaw was stabilized with implants. She came home two days later with no difficulties eating and in great spirits. We went back two weeks later for a recheck and she was doing great, although she is a bit uneasy around the fence!

I am so grateful that Care Center and Dr. Muldoon were here for us during this very scary and stressful emergency. They were great. I am so happy to have my buddy back by my side again!

Sincerely,
David Wethington

YOUR PRACTICE, YOUR INFORMATION, YOUR SET OF 500 FREE MAGNETS FROM CARE CENTER

As a referring partner, each practice has the opportunity to receive 500 free co-branded magnets. These are great for your clients and new pet owners to ensure that they have your clinic’s contact information readily available. It also includes our information for after-hour emergency care or questions, 24 hours a day, 7 days a week.

This 3” x 5” magnet will be produced with your logo, address, phone, and web address along the top, and our emergency information along the bottom.

If you are interested, simply call us and we will produce and ship them to you at absolutely no charge. We just need your logo and practice contact information.

To place your order or for additional information, please contact Stephanie Serraino, Care Center PR and Marketing Director, at 513.530.0911 or sserraino@carecentervets.com.
Monitoring equipment is very important. We recommend having the following items on hand: SpO2, ECG, blood pressure monitor, and an esophageal stethoscope.

Using anesthesia, even for the shortest procedures, can drop a patient’s body temperature dramatically (especially in puppies and kittens). Utilizing a heating pad or Bair Hugger can help maintain their body temperature. For safety, always have a technician monitor the patient regularly when using any type of heating device.

Using the correct bag and tubing for anesthetic machines help oxygenate efficiently and creates the minimum amount of dead space. If using a Bain System, the patient should always be 20 lbs. or less, use a 0.5L bag, and set oxygen at 2L.

Breathing Tubes
- 0-20 lbs. use small breathing tubes (5/8” x 30”)
- 21 lbs. and up use large breathing tubes (7/8” x 40”)

Bag
- 0 – 20 lbs. – 0.5L
- 21 – 60 lbs. – 1L
- 61 – 100 lbs. – 2L
- 101 – 140 lbs. – 3L
- 141 – 180 lbs. – 4L
- 180 – 220 lbs. – 5L

Be aware if using hydromorphone, it can cause hyperthermia in cats. When using this drug the patient’s body temperature should be monitored closely.

Since owners are often concerned about their pet’s bowel functions, make them aware that anesthesia and opioids can slow GI motility. It can take 5–7 days before the first bowel movement is seen post-op.

Make sure the patient is always given a thorough exam before administering any anesthesia and double check the amount of drugs utilized before administering them to the patient.

We would like to welcome the following employees to our Care Center family!

- **Alison Shepard**
  DVM, Emergency
- **Maggie Young**
  DVM, Emergency
- **Kalana Ousley**
  Technician, Emergency
- **Marie Pinney**
  Technician, Emergency
- **Marly Hrosch**
  Assistant, Emergency
  (Currently working towards RVT license)
- **Amy Miller**
  Assistant, Emergency
  (Currently working towards RVT license)
- **Keli Schram**
  Assistant, Emergency
  (Currently working towards DVM license)

TECH TO TECH TALK

**USING ANESTHESIA**
by Amie Marmer, RVT, Surgery

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Thank you to our veterinary community for the support of our 3rd Annual Care Center Animal Blood Bank Event. With the help of Hoxworth and Hill’s Pet Food, we screened 26 canines, 12 of which were accepted to be universal donors. What made this event especially successful was the help of pet owners like Daniel Hickman (photo on the left) donating blood while his dog Rudi was screened and accepted as a universal donor into our program – both saving lives in their local community.

Care Center Animal Blood Bank is a non-profit, volunteer-based organization which provides canine blood components (packed red cells and plasma) to the Tri-State area veterinary community. If your practice is in need of blood products, please call us at 513.530.0911.

Ann Peruski, DVM, DACVECC
Care Center Animal Blood Bank Medical Director