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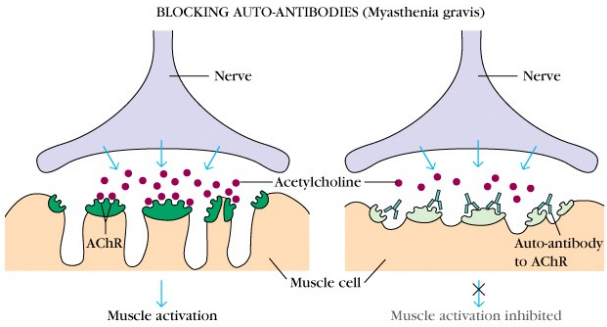
MYASTHENIA GRAVIS

Acquired Myasthenia Gravis (MG) is an *auto-immune disorder in which the body develops autoantibodies against the neuromuscular junction acetylcholine receptors*. Acetylcholine (ACh) is the neurotransmitter that binds to receptors at the junction of a nerve and muscle to generate the electrical impulse necessary for muscle contraction. In patients with myasthenia gravis, these antibodies either quickly destroy acetylcholine (ACh) or block the receptor entirely.

With a decrease in available ACh, patients will not have the strength to contract their muscles appropriately and appear weak and fatigued, especially after exercise. In its most severe form, the patient could appear "floppy" and unable to support his or her weight or be unable to hold their head up.



Other symptoms can include:

- Decrease in the ability to blink the eyelids
- Difficulty swallowing
- A short-strided or stiff gait
- Muscle tremors
- Voice changes
- Dropped jaw
- Excessive drooling
- A moist cough or labored breathing
- Regurgitation ("spitting up" of liquid or food after eating)

Diagnostics performed usually include a complete blood count (CBC), biochemistry panel, urinalysis, and radiographs (x-rays). The blood tests are done to rule-out any other underlying disease processes that could contribute to the disease. Radiographs are used to look for tumors (ie: thymoma), dilation of the esophagus (megaesophagus) and aspiration pneumonia.

After baseline diagnostics, usually a Tensilon response test is performed. This test uses a drug called *Edrophonim Chloride* which is a short acting (5 to 10 minutes at most) agent that blocks the breakdown of ACh, allowing improved muscle contraction. By blocking the breakdown of ACh, this allows the neurotransmitter more time to interact with its receptors, temporarily improving muscle strength. A positive test only supports a presumptive diagnosis for **Myasthenia Gravis**. A definitive diagnosis is made by quantifying the amount of circulating antibodies against ACh receptors. This is

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accomplished via a blood test called *Acetylcholine Receptor Antibody* titer. These samples are sent to a specialized lab (the Comparative Neuromuscular Lab) in San Diego, CA.

Treatment of **MG** can vary depending on the severity of the disorder and whether or not the patient has any secondary issues, such as aspiration pneumonia. The main treatment is a longer acting oral version of *Edrophonium* from the Tensilon test. This drug is called *Mestinon or Pyridostigmine*. While effective, Mestinon can cause some nuisance side effects like nausea, cramping, and possibly diarrhea. It is best to give on a full stomach or with meals. Other side effects have been reported including excess tearing and drooling.

Corticosteriods, such as Prednisone, or even stronger immune suppressive drugs such as Azathioprine or Cyclosporine are sometimes used to aid in the suppression of the immune system which suppresses the production of antibodies against ACh. Typically, unless Mestinon therapy does not yield acceptable results, these medications can be avoided. Antibiotics may also be prescribed if there is evidence of aspiration pneumonia on x-rays.

Nutritional support can sometimes be difficult for patients that have trouble swallowing and/or keeping food down. Elevated feeding may be necessary for the prevention of regurgitation and aspiration or food and water. For dogs, there are specifically designed "Bailey Chairs" to help keep them up-right during and even after eating (www.baileychairs4dogs.com/). Ideally, animals with **MG** should stay upright for 10-15 minutes after eating to allow food to move down the esophagus and pass into the stomach. Drugs to modify or improve gastrointestinal function and esophageal motility may be prescribed such as Metoclopramide (Reglan) or Cisapride.

Unfortunately, **Myasthenia Gravis** and other neuromuscular diseases can be very serious, especially in patients who develop recurrent pneumonia and/or severe dysphagia (difficulty swallowing). One study suggested that as many as 50% of patients succumb to repeated aspiration pneumonia within 1 year of diagnosis. However, with an early diagnosis and a high level of care, pets can have a fair prognosis or potentially even go into remission. On a positive note, another study suggested if patients can get into durable remission and stay in remission for 6 months or longer, 90% of these dogs can recover spontaneously.