Myasthenia Gravis

What is myasthenia gravis?

Myasthenia gravis (MG) is a chronic autoimmune disorder in which the body attacks its own neuromuscular connections. This causes problems with communication between nerves and muscle. The result is weakness. MG affects the voluntary muscles of the body. The eyes, mouth, throat, and limbs are especially affected.

MG can occur at any age. This includes childhood. But it occurs most often in young adult women under age 40 and men over age 60.

What causes myasthenia gravis?

Myasthenia gravis is not inherited and it's not contagious. It develops when antibodies in the body attack normal receptors on muscle. This blocks a chemical needed to stimulate muscle contraction.

A temporary form of MG may develop in an unborn baby when a woman with MG passes the antibodies to her baby. The symptoms may be a weak cry or suck and generalized weakness at birth. As the antibodies break down, the symptoms slowly go away within a few weeks. The child doesn't carry the risk of developing MG in the future.

What are the symptoms of myasthenia gravis?

These are the most common symptoms of MG:

- Visual problems, including drooping eyelids (ptosis) and double vision (diplopia)
- Muscle weakness and fatigue. It may vary rapidly in intensity over days or even hours. It may get worse as muscles are used (early fatigue) in periods of activity, and improve with periods of rest.
- Facial muscle involvement causing a mask-like appearance. A smile may appear more like a snarl.
- Trouble swallowing or pronouncing words
- Weakness of the neck or limbs
- Shortness of breath

The symptoms of MG may look like other health problems. Always see your healthcare provider for a diagnosis. There are different forms of myasthenia due to different immune antibodies. Symptoms in the less common forms may have different symptoms, such as more neck weakness.

Flare-ups and remissions (easing of symptoms) may occur now and then during the course of MG. Remissions, though, are only rarely permanent or complete.

How is myasthenia gravis diagnosed?

Your healthcare provider can diagnose MG based on your symptoms and certain tests. During the physical exam, your healthcare provider will ask about your medical history and symptoms.

A common way to diagnose MG is to test how you respond to certain medicines. Muscle weakness often dramatically improves for a brief time when you are given an anticholinesterase medicine. If you respond to the medicine, it supports the diagnosis of MG.

Other tests that may be done include:

- **Blood tests.** These tests look for antibodies that may be present in people with MG.
- **Genetic tests.** These tests are done to check for conditions like MG that may run in families.

- **Nerve conduction studies.** A test called repetitive nerve stimulation may be used.
- **Electromyogram (EMG).** This test measures the electrical activity of a muscle. An EMG can find abnormal electrical muscle activity due to diseases and neuromuscular conditions.
- **Single-fiber EMG.** This is a very special EMG. It records the transmission of signals from nerve to muscle.

How is myasthenia gravis treated?

Treatment will depend on your symptoms, age, and general health. It will also depend on how bad the condition is.

There is no cure for MG. But the symptoms can often be controlled. MG is a lifelong health problem. It may go into remission for extended periods. Early detection is the key to managing the condition.

The goal of treatment is to increase muscle function and prevent swallowing and breathing problems. Most people with this condition can improve their muscle strength and lead normal or near normal lives. In more severe cases, help may be needed for breathing and eating.

Treatment may include:

- **Medicine.** Anticholinesterase medicines, steroids, or medicines that suppress the immune system's response (immunosuppressive) medicines may be used.
- **Thymectomy.** This is surgical removal of the thymus gland. The role of the thymus gland in MG is not fully understood. People who have their thymus removed tend to need less medicine. They also tend to have fewer problems, such as needing a hospital stay, within 3 years after the surgery.
- **Plasmapheresis.** This procedure removes abnormal antibodies from the blood and replaces the blood with normal antibodies from donated blood.
- **Immunoglobulin.** This is a blood product that helps decrease the immune system's attack on the nervous system. It's given by IV (intravenously).
- **Infusions of monoclonal antibody.** This includes eculizumab. This treatment is effective for people with the more common form of MG.

What are possible complications of myasthenia gravis?

The most serious complications of myasthenia gravis is myasthenic crisis which is a medical emergency. This is a condition of extreme muscle weakness, particularly of the diaphragm and chest muscles that support breathing. Breathing may become shallow or ineffective. The airway may become blocked because of weakened throat muscles and a buildup of secretions. Myasthenic crisis may be caused by a lack of medicine or by other factors, such as a respiratory infection, emotional stress, surgery, or some other type of stress. In severe crisis, a person may have to be placed on a special machine (ventilator or respirator) to help with breathing until muscle strength returns with treatment.

These precautions may help to prevent or reduce the occurrence of myasthenic crisis:

- Taking anticholinesterase medicines 30 to 45 minutes before meals to reduce the risk of aspiration (food entering the lung passages)
- Taking anticholinesterase medicines exactly as prescribed to help maintain the strength of the breathing muscles
- Staying away from crowds and contact with people with respiratory infections, such as a cold or the flu
- Taking in correct nutrition to maintain your most desirable weight and muscle strength
- Balancing periods of physical activity with periods of rest
- Using stress-reduction methods and preventing emotional extremes
- Wearing a medical alert bracelet to advise others of your condition, in case of an emergency

Tell your healthcare providers about your condition when any medicines are being prescribed. Certain medicines may interfere either with the disease or the action of the medicines you take for MG.

Living with myasthenia gravis

There is no cure for myasthenia gravis. But the symptoms can generally be controlled. MG is a lifelong health condition. Early detection is key to managing this condition.

The goal of treatment is to increase general muscle function and prevent swallowing and breathing problems. Most people with MG can improve their muscle strength and lead normal or near normal lives. In more severe cases, treatment may be needed to help with breathing and eating.

When should I call my healthcare provider?

Call your healthcare provider if any of these occur:

- Drooping eyelid
- Blurred or double vision
- Slurred speech
- Problems chewing and swallowing
- Weakness in the arms and legs
- Chronic fatigue
- Trouble breathing

Key points about myasthenia gravis

- Myasthenia gravis (MG) is a chronic autoimmune disorder in which antibodies destroy neuromuscular connections. This causes problems with communication between nerves and muscle. The result is weakness of the skeletal muscles. It affects the voluntary muscles of the body, especially the eyes, mouth, throat, and limbs.
- There is no cure. But the symptoms can generally be controlled.
- The goal of treatment is to increase general muscle function and prevent swallowing and breathing problems.
- Most people with this condition can improve their muscle strength and lead normal or near normal lives.
- In more severe cases, such as myasthenic crisis, treatment may be needed for breathing and eating.

Next steps

Tips to help you get the most from a visit to your healthcare provider:

- Know the reason for your visit and what you want to happen.
- Before your visit, write down questions you want answered.
- Bring someone with you to help you ask questions and remember what your provider tells you.
- At the visit, write down the name of a new diagnosis, and any new medicines, treatments, or tests. Also write down any new instructions your provider gives you.
- Know why a new medicine or treatment is prescribed, and how it will help you. Also know what the side effects are and when they should be reported.
- Ask if your condition can be treated in other ways.

- Know why a test or procedure is recommended and what the results could mean.
- Know what to expect if you do not take the medicine or have the test or procedure.
- If you have a follow-up appointment, write down the date, time, and purpose for that visit.
- Know how you can contact your healthcare provider if you have questions.