

Myasthenia gravis

Background

Myasthenia gravis is a condition characterized by weakness and fatigue of various muscles in the body. It is caused by an abnormal process of the body's immune system which results in a breakdown of the chemical connection between nerves and muscles. The affected muscles usually include muscles around the eye and may also include muscles of the face, throat, arms and legs. In addition, individuals with myasthenia gravis may develop a tumor or other abnormality of the thymus gland in the chest, which forms part of the body's immune system. These tumors are usually benign. While there is no cure for the condition, there are a number of treatment strategies which aim to reduce symptoms, prevent progression of the disease and improve the quality of life of those affected.

Causes

The condition is caused by an abnormality of the body's immune system whereby the body develops antibodies which impair the communication between nerves and muscles. Normally, the chemical messenger or neurotransmitter, called acetylcholine, is released from nerves and binds to specific receptors on muscle cells in order to produce a muscle movement. In myasthenia gravis, antibodies target and block these receptors, resulting in muscle weakness and fatigue. It is not known what causes these antibodies to be produced but genetic factors and family history are thought to be important. Myasthenia gravis is known as an autoimmune disease and is associated with other autoimmune diseases where genetic factors are important, such as rheumatoid arthritis and type 1 diabetes.

Signs and symptoms

Individuals with myasthenia gravis suffer from muscle weakness and fatigue, which typically worsens with repeated muscle use and improves with rest. These symptoms usually progress over a number of years. Most people experience eye symptoms such as drooping eyelids or double vision due to weakness of the muscles surrounding the eyes. Other signs and symptoms may include difficulties with walking, arm movements, coordination and balance due to leg and arm muscle weakness. When muscles of the face and throat are affected, individuals may have difficulties speaking, chewing and swallowing as well as limited facial expressions. Factors which may trigger or worsen exacerbations of the disease include bright sunlight, extreme heat, emotional stress, surgery, other illnesses and some medications, such as beta blockers. In rare cases, severe shortness of breath may occur due to weakness of the muscles of breathing, which is an emergency situation requiring mechanical assistance with breathing.

Diagnosis

In order to diagnose myasthenia gravis, a number of tests can be performed. These include blood tests to detect the presence of the antibodies known to cause the condition, repetitive nerve stimulation as well as a test known as electromyography (EMG), which measures the electrical activity of muscle fibers. Imaging techniques such as CT or MRI scans may be performed in order to detect a tumor or other abnormality of the thymus gland.

Management

There are a number of medical and surgical treatments available for individuals with myasthenia gravis, which aim to alleviate symptoms, improve quality of life and slow progression of the disease. Medications include cholinesterase inhibitors, which improve the communication between nerves and their corresponding muscles, as well as corticosteroids and immunosuppressants, which limit the production of antibodies. Other therapies include plasmapheresis, where blood is filtered to remove the antibodies, and intravenous immunoglobulin, which alters the body's immune system response. In addition, surgery may be performed in order to remove the thymus gland when there is a thymus gland tumor. Even in the absence of a tumor, surgery to remove the thymus may improve symptoms. Surgery may be open or minimally invasive through video-assisted or robotic techniques. Minimally invasive surgery may result in less bleeding, pain and mortality as well as shorter stays in hospital compared with open surgery. As always, the risks should be weighed against the benefits and discussed with your surgeon. For more information, please visit the following websites:
<http://www.myasthenia.org.au>
<http://www.mayoclinic.org/diseases-conditions/myasthenia-gravis/basics/treatment/con-20027124>
<http://emedicine.medscape.com/article/1171206-overview>

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Section Writer: Christopher Harris

Illustration Editor: Beth Croce

Section Editor: Christopher Cao

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