WHAT IS MYASTHENIA GRAVIS?

Myasthenia gravis is a disease where the body's own antibodies attack the connection between nerves and muscles, making the muscles weak. It can happen to people of all ages and affects a variety of different muscle groups. Symptoms include double vision, droopy eyelids, tired muscles, and trouble breathing or swallowing. Symptoms get worse with activity and better with rest. The muscles that move the eyelids and eyeballs are commonly affected, either alone (ocular myasthenia gravis) or along with other muscles (systemic myasthenia gravis) [See figure 1].

Fig. 1: Droopy left upper eyelid.

Fig. 2: Left upper eyelid elevated during Tensilon test.

WHAT CAUSES MYASTHENIA GRAVIS?

In this condition, antibodies weaken the communication between nerves and muscles. Normally, nerves release a chemical called acetylcholine to make the muscles contract. In myasthenia gravis, antibodies stick to and block the receptors (sensitive stimulation sites) for the acetylcholine in muscles. So, when acetylcholine is released from a nerve to make a muscle contract, it cannot attach to the receptor causing muscle weakness and fatigue.

HOW COMMON IS MYASTHENIA GRAVIS?

Myasthenia gravis is an uncommon disease with about 20 cases per 100,000 people. It does not seem to affect any specific race or gender more than others and it is not directly passed down from parents to children.

WHAT ARE THE SYMPTOMS OF MYASTHENIA GRAVIS?

In myasthenia gravis, about 90% of people have eye issues. For half of people with myasthenia, eye symptoms are the first signs of the disease. The most common eye problems are double vision from eye misalignment (strabismus) and drooping of the eyelids (ptosis) are the most common symptoms. These symptoms often change from day to day and get worse as the day goes on. For example, someone might have double vision or drooping eyelids in the evening but not in the morning. Other less common symptoms include weakness in the face, trouble with chewing and swallowing, difficulty breathing, and fatigue in the arms and legs.

HOW IS MYASTHENIA GRAVIS DIAGNOSED?

Diagnosing myasthenia gravis can be tricky because no single test is always accurate 100%. However, an ophthalmologist (eye doctor) exam can be helpful in the diagnosis. They might place an ice pack on a droopy eyelid to see if the drooping gets better, which could be a sign of myasthenia gravis. Neurologists (doctors who specialize in the brain and nerve system) may use other tests to help make the diagnosis of myasthenia gravis., Giving medications like Tensilon (see figure 2), or doing electromyography (EMG) can help make the diagnosis. Sometimes blood tests that check for acetylcholine receptor antibodies are done, but might not always show signs of myasthenia gravis even in patients with myasthenia gravis.

WHAT OTHER ARE SEEN IN PEOPLE WITH MYASTHENIA GRAVIS?

Myasthenia gravis can happen alongside other autoimmune diseases like thyroid problems, rheumatoid arthritis, and diabetes. Sometimes, a non-cancerous thymus tumor (called a thymoma) in the chest can be seen in people with myasthenia, although this is very rare in children. Doctors might order tests like an X-ray or CT scan to get a better look at the chest in patients with myasthenia gravis.

HOW IS MYASTHENIA GRAVIS TREATED?

Myasthenia is rarely cured, but the symptoms can be managed with different medical or surgical treatments. The main goal of treatment is to increase acetylcholine to help the nerves communicate with the muscles. This can be done by either increasing the amount of the acetylcholine itself or by stopping the antibodies from blocking the acetylcholine receptors.

One common medication, Mestinon or pyridostigmine, stops the body from breaking down acetylcholine. This medication is more for treating the non-eye-related symptoms in myasthenia. Immunosuppressive drugs like prednisone can stop the immune response that causes myasthenia. Plasmapheresis removes harmful antibodies directly from the

blood. This treatment often needs to be repeated as symptoms can return. IVIG, a treatment given in the blood, can help reduce the actions of harmful antibodies.

In some cases, surgery to remove a thymoma or normal thymus in children can help. Severe myasthenia cases that do not respond to common treatments might need immune-based therapy like rituximab to control the immune system.

WHEN SHOULD EYE SURGERY BE CONSIDERED?

Surgery can sometimes help with ptosis (drooping eyelids) and strabismus (eye misalignment) caused by myasthenia gravis. Doctors might recommend surgery if these issues have stayed stable for at least one to two years. However, surgeons are cautious in patients with myasthenia because eye surgery can lead to complications like severe dry eyes, worsened eye misalignment and worsened double vision. It is important to carefully consider the risks and benefits before deciding on surgery.

HOW CAN I FIND OUT MORE INFORMATION ABOUT MYASTHENIA GRAVIS?

- Contact the Myasthenia Gravis Foundation of America, Inc.
- Check out this website: https://eyewiki.org/Myasthenia_Gravis

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