Guillain-Barré Syndrome

Introduction

Guillain-Barré syndrome, or GBS, is a rare disorder. It causes your immune system to attack the peripheral nerves, which connect your brain and spinal cord with the rest of your body. Damage to these nerves makes it hard for them to send signals.

The first symptom of GBS is usually weakness or a tingling feeling in your legs. The feeling can spread to your upper body. In severe cases, you become almost paralyzed. This is life threatening.

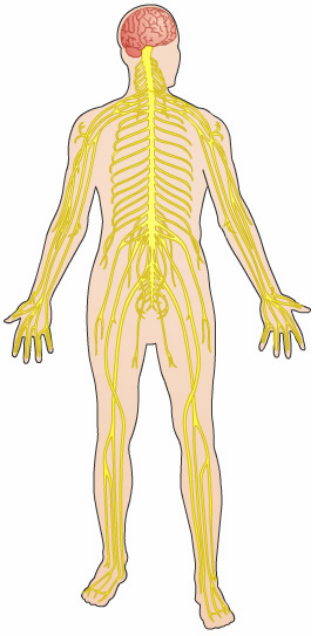
This reference summary explains GBS, including information about its symptoms, causes and treatment.

The Peripheral Nerves

Together, the brain and spinal cord are called the “central nervous system.” The nerves in the rest of the body are called the “peripheral nervous system.”

The brain is the command center of the body. It receives information from different parts of the body and sends orders telling those parts what to do. Orders from the brain travel through the spinal cord. From the spinal cord, orders travel to the rest of the body through the peripheral nerves.

The main cells that make up the nervous system are called neurons. Each neuron has a body and an axon. Axons are long fibers that are similar to electrical wires. Neurons communicate with each other by sending electrical signals through the axons. A special material called myelin covers axons. Myelin improves the conduction of the electrical current and communication between neurons.



Anatomy of the Nervous System

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Some neurons send messages about movement. These neurons are known as motor neurons. For example, if you want to raise your hand, your brain tells your arm and hand to do it. Other neurons also send and receive messages about sensation, or feeling. These neurons are known as sensory neurons. If you burn your hand while cooking, the nerves in the skin send pain signals to your brain.

If nerves become damaged, they cannot send and receive messages properly. This can interfere with movement and sensation. GBS causes the immune system to attack the peripheral nerves, which may cause muscle weakness, paralysis and, in severe cases, death.

Guillain-Barré Syndrome

GBS is a rare disorder that causes your immune system to attack your peripheral nerves. Damage to the peripheral nerves makes it hard for them to transmit signals. As a result, your muscles have trouble responding to your brain. In severe cases, GBS can be life threatening.

Guillain-Barré syndrome gets its name from the French doctors who first described it in 1916. Guillain-Barré is called a syndrome, rather than a disease, because health care providers are not sure what causes it.

Signs and Symptoms

The first symptom of GBS often includes weakness or tingling sensations in the legs. In many cases, the weakness and abnormal feelings spread to the arms and upper body. Symptoms can increase in intensity until certain muscles cannot be used at all. In severe cases, GBS can cause paralysis. Paralysis means the patient cannot move his or her body.

In cases involving paralysis, GBS is life threatening. Paralysis may interfere with breathing, blood pressure or heart rate. It is a medical emergency. When GBS causes paralysis, the patient is often put on a ventilator to help with breathing. Health care staff will watch closely for problems such as an abnormal heart beat, blood clots in the legs and lungs, infections and high or low blood pressure.

Symptoms of GBS usually get worse over a period of weeks and then stabilize.

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Causes

The cause or causes of GBS are not known. The condition is not contagious. It affects some people and not others.

What scientists do know is that GBS is an autoimmune disease. An autoimmune disease is when the body's immune system begins to attack the body itself. Usually, the cells of the immune system attack only diseases and foreign organisms that may harm the body. In GBS, the immune system starts to destroy parts of the peripheral nerves. This interferes with the communication between the brain and the muscles of the body.

GBS also causes the brain to receive fewer sensory signals from the rest of the body. This can affect the ability to feel textures, heat, pain and other sensations. Signals to and from the arms and legs must travel the longest distances. These limbs are often affected the most in cases of GBS.

It is possible that a viral or bacterial infection causes GBS. Some researchers think that these illnesses could change the nature of cells in the nervous system. This causes the immune system to treat them like foreign cells. It is also possible that a virus makes the immune system less able to recognize cells in the body as its own. This may be why some of the immune cells attack myelin.

Diagnosis

Several disorders have symptoms similar to those found in GBS. To make an accurate diagnosis, your health care provider will perform a physical exam. He or she will ask you about your health history.

For example, your health care provider will check to see if symptoms happen on both sides of your body. This is common in GBS. Your health care provider will also look for muscle weakness. Reflexes such as knee jerks are usually lost.

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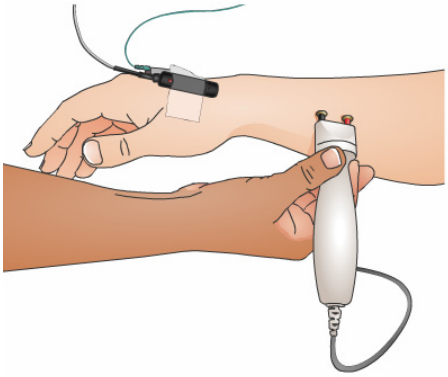
A nerve conduction velocity test, or NCV, may also be performed. During the test, electrodes are placed on the skin over different nerves. The electrodes stimulate the nerve with small electric shocks. Electrical activity is recorded. If nerve signals are slow or weak, it may be a sign of GBS.



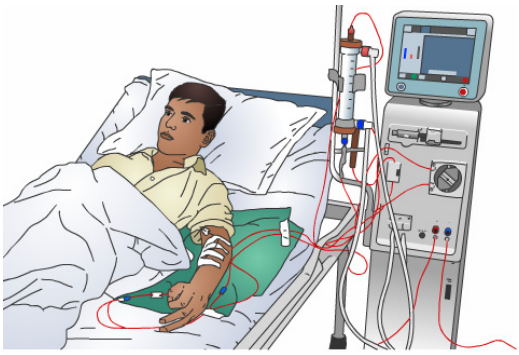
Nerve Conduction Velocity Test, or NCV

A spinal tap may be done to test your cerebrospinal fluid, or CSF. CSF is a special fluid that helps protect the brain. During a spinal tap, a needle is used to remove a small sample of CSF through the lower back for testing. People with GBS have more protein in their CSF than people who do not have the condition.

Treatment

There is no known cure for GBS. Treatment can help improve symptoms. Recovery may take a few weeks to a few years. Some therapies can lessen the severity of the illness and speed up recovery. There are also ways to treat the complications of the disease. Currently, plasma exchange and high-dose immunoglobulin therapy are used to treat GBS. Both of them are equally effective. But immunoglobulin is easier to do.

Plasma is the liquid portion of the blood. In plasma exchange, blood is removed from the body so that red and white blood cells can be separated from the plasma. The blood cells are then returned without the plasma, which the body quickly replaces.



Scientists still don't know exactly why plasma exchange works. But the treatment seems to reduce symptoms. This may be because plasma contains antibodies and other chemicals made by the immune system, which could be causing the nerve damage.

In high-dose immunoglobulin therapy, health care providers give injections of certain proteins. These are proteins that the immune system naturally uses to attack invading organisms. High-dose immunoglobulin therapy can lessen the immune attack on the nervous system. But it is not clear why this works.

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The most important goal of the treatment is to keep the body functioning while the nervous system recovers. The patient may need to be placed on machines that assist and monitor body function. The patient may need a mechanical ventilator, which can help them breathe, or a heart monitor.

The need for special equipment is one reason why GBS patients are usually treated in health care facilities, often in an intensive care ward. In these facilities, health care providers can also look for and treat the many problems that can affect a paralyzed patient, such as pneumonia or bed sores.

Often, even before recovery begins, caregivers may be instructed to manually move the patient's limbs to help keep the muscles flexible and strong. This also prevents life threatening blood clots from forming in the legs. Later, as the patient begins to recover limb control, physical therapy begins.

Most individuals recover from even the most severe cases of GBS. Some may continue to have a certain degree of weakness.

Summary

Guillain-Barré syndrome is a rare disorder that causes your immune system to attack the peripheral nerves. Damage to these nerves makes it hard for them to transmit signals from the rest of the body to the brain. The first symptom of GBS often includes weakness or tingling sensations in the legs. In many cases, the weakness and abnormal sensations spread to the arms and upper body. Symptoms can increase in intensity until certain muscles cannot be used at all. In severe cases, GBS can cause paralysis.

The cause of GBS is unknown. It is not contagious. It affects some people and not others. To diagnose GBS, a health care provider may perform a nerve conduction velocity test, or NCV. A spinal tap may also be done to collect a sample of CSF for testing.

There is no known cure for GBS. But some therapies can lessen the severity of the illness and speed up recovery. There are also a number of ways to treat the complications of the disease.

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