

Peripheral Neuropathy: The Basics

WHAT IS PERIPHERAL NEUROPATHY?

Peripheral neuropathy is a term that means damage to the peripheral nervous system. These nerves transmit information from the brain and spinal cord (the central nervous system) to every other part of the body. Peripheral nerves also send sensory information back to the brain and spinal cord, such as a message that the feet are cold or a finger is burned. Damage to the peripheral nerves interferes with these connections. Like static on a telephone line, peripheral neuropathy distorts and sometimes interrupts messages between the brain and the rest of the body.

WHAT ARE THE SYMPTOMS?

The symptoms depend on which of the peripheral nerves are damaged. When only one nerve is damaged, people may experience numbness, tingling, and pricking sensations or muscle weakness in one arm or one leg. When multiple nerves are affected, people often experience these symptoms on both sides of the body, usually most prominently in the legs and feet. People with peripheral neuropathies can also experience more extreme symptoms, including burning pain (especially at night), muscle wasting, paralysis, or even organ or gland dysfunction.

WHAT CAUSES IT?

When multiple nerves are damaged, people usually have a problem that affects the nerves diffusely. Causes of generalized peripheral neuropathies include toxins, autoimmune disorders, nutritional deficiencies, alcoholism, inherited conditions, or vascular and metabolic disorders. Diabetes mellitus, characterized by chronically high blood sugar levels, is the leading cause of generalized peripheral neuropathy in the United States. Inherited forms of peripheral neuropathy are caused by mistakes in the genetic code or by new genetic mutations. In many people with generalized peripheral neuropathies, doctors cannot find the cause.

HOW IS IT DIAGNOSED?

Peripheral neuropathy is diagnosed with a thorough neurologic examination and tests to identify which nerves are damaged and the extent of the damage. For example, evaluation of the ability to detect vibration, light touch, body position, temperature, and pain may indicate whether small or large sensory nerve fibers are affected. The pattern of nerve involvement will often suggest a cause. Blood tests can often identify causes such as diabetes, vitamin deficiencies, liver or kidney dysfunction, other metabolic disorders, and signs of abnormal immune system activity.

HOW IS IT TREATED?

Treatment of a peripheral neuropathy depends on the cause. Peripheral nerves have the ability to regenerate, as long as the nerve cell itself has not been killed. Because of this, if possible, it is important to identify and eliminate the cause of the damage to allow the nerves to heal and to prevent new damage. Adopting healthy habits—such as maintaining optimal weight, eating a balanced diet, and limiting or avoiding alcohol consumption—can also help to reduce symptoms. Quitting smoking is particularly important because smoking constricts the blood vessels that supply nutrients to the peripheral nerves.

WHAT RESEARCH IS BEING DONE?

Current research projects funded by the National Institute of Neurological Disorders and Stroke (ninds.nih.gov) involve investigations of genetic factors associated with hereditary neuropathies, studies of biological mechanisms involved in diabetes-associated neuropathies, and investigations exploring how the immune system contributes to peripheral nerve damage.

For more *Neurology Now* articles on peripheral neuropathy, go to bit.ly/NN-PeripheralNeuropathy.

For more resources and support, contact:

- ▶ American Chronic Pain Association: theacpa.org; 800-533-3231
- ▶ American Diabetes Association: diabetes.org; 800-DIABETES (342-2383)
- ▶ Charcot-Marie-Tooth Association: cmtausa.org; 800-606-CMTA (2682)
- ▶ The Foundation for Peripheral Neuropathy: foundationforpn.org; 877-883-9942
- ▶ Neuropathy Action Foundation: neuropathyaction.org; 877-512-7262

SOURCES: NATIONAL LIBRARY OF MEDICINE; NATIONAL INSTITUTE OF NEUROLOGICAL DISORDERS AND STROKE; NEUROLOGY NOW.