WESTERN NEUROPATHY ASSOCIATION
P.O. Box 4740, Auburn, CA 95604 • (888) 556-3356 • info@pnhelp.org • www.pnhelp.org

Differences Between Peripheral Neuropathy and Multiple Sclerosis

Julie Stachowiak, PhD; *VeryWellHealth.com*; October 08, 2023

Peripheral neuropathy (PN) and multiple sclerosis (MS) are neurological disorders that share several symptoms, including pain and paresthesias (abnormal sensations). Either condition can make it difficult to use your arms and hands or to walk. Despite these similarities, PN and MS are completely distinct diseases with different causes and treatments. Both of them can worsen if they are not medically managed, so it is important to seek medical attention if you experience neurological symptoms. While you may be diagnosed with one of these conditions, it's possible to also have the other or an entirely different neurological issue as well. This article will explore the symptoms, causes, diagnostic procedures, and treatments of PN and MS.

SYMPTOMS

The two conditions share some symptoms, but, in general, MS produces a wider range of symptoms than PN does. Both MS and PN can cause tingling, pain, or decreased sensation of the hands, arms, feet, or legs, but patterns and timing differ.

The tingling and other sensory problems of MS tend to affect one side of the body, while both sides generally are affected in PN in what is described as a "stocking-glove" pattern. MS is more likely than PN to cause muscle weakness, but some types of PN can make you weak as well. MS is also much more likely than PN to cause bowel and bladder control problems; sexual difficulties; visual problems; slurred speech and trouble swallowing. Cognitive (thinking and problem solving) difficulties are only seen in MS patients.

Timing and Pattern

Most patients with MS develop weakness and numbness as a part of a flare-up, so symptoms usually develop over a couple of days and persist for a few weeks. They tend to improve afterward, especially if you seek medical help and start treatment right away. On the contrary, most neuropathies are chronic, meaning symptoms develop slowly over time and last a long time. Symptoms tend to initially affect the feet, followed by lower legs and subsequently the hands.

CAUSES

Peripheral neuropathy and multiple sclerosis affect different areas of the nervous system.

- Multiple sclerosis affects the brain, spinal cord, and optic nerves, which are areas of the **central nervous system**.
- Peripheral neuropathy affects the **peripheral nervous system**, which includes sensory and motor peripheral nerves located throughout the body in areas such as the arms and legs.

MS is believed to occur when the body's own immune system attacks the myelin (a fatty protective layer that coats nerves) in the central nervous system. This interferes with the nerves' ability to function properly, resulting in the

symptoms of MS. Genetics and environmental factors are believed to contribute to this inflammatory autoimmune demyelination.

A number of conditions can damage the peripheral nerves and lead to PN. Common causes include type 1 or type 2 diabetes (conditions affecting how your body turns food into energy); chronic kidney disease; hypothyroidism (underactive thyroid); some autoimmune diseases, including systemic lupus erythematosus or rheumatoid arthritis (conditions that occur when your immune system mistakenly attacks healthy cells); HIV (human immunodeficiency virus) infection; herpes simplex virus (HSV) infection; toxins, such as lead, mercury, and heavy alcohol intake; injury-related nerve damage; alcohol overuse and certain medications (including some HIV medications and chemotherapy).

Some peripheral neuropathies, called mononeuropathies, affect only one nerve, whereas others (polyneuropathies) affect multiple nerves. Furthermore, different neuropathies either result from damage to the axons (nerve fibers) or the myelin.

DIAGNOSIS

While MS is primarily thought of as affecting the CNS, there is evidence of effect in the PNS as well so it's not cut and dry. Your physical examination is likely to be very different when it comes to PN and MS. For example, reflexes are decreased or absent in PN, whereas they are brisk with MS. And MS can cause spasticity, or stiffness of the muscles, while PN does not. Also, with PN your sensory deficit is almost always worse distally (farther away from your body) than proximally (closer to your body), while this pattern is not present in MS.

Despite those differences, diagnostic tests are often performed to confirm what is causing your symptoms as well as the extent and severity of your illness.

Diagnostic Tests

Blood work can be helpful in identifying many of the causes of PN, but blood tests are usually normal in MS. However, blood tests can identify illnesses that may mimic MS, such as another autoimmune condition or an infection.

Nerve tests like electromyography (EMG) and/or nerve conduction velocity(NCV) studies are expected to show signs of PN, but they are not associated with any abnormalities in MS. In some cases of PN, nerve biopsy can also serve diagnostic purposes.

Magnetic resonance imaging (MRI) typically shows signs of MS but usually doesn't show significant changes in people with PN.

A lumbar puncture, also known as a spinal tap, is considered the gold standard for diagnosing MS as it can detect compounds called oligoclonal bands (OCBs) found in the cerebrospinal fluid of 95% of people with MS. A lumbar puncture can also provide evidence of PN by detecting certain proteins that increase during demyelination.

TREATMENT

Treatment of the underlying disease process differs for MS and PN, but symptomatic treatment is often the same. For example, treatment of painful paresthesia in MS and PN can include:

- Nonsteroidal anti-inflammatories (NSAIDs, such as Advil, a type of ibuprofen, or Aleve, a type of naproxen)
- Certain antidepressants like Elavil (amitriptyline) or Cymbalta (duloxetine)

- Certain anticonvulsants like Lyrica (pregabalin) or Neurontin (gabapentin)
- Topical medications like topical lidocaine or capsaicin

Besides medication, other pain-alleviating therapies used in both illnesses include:

- Transcutaneous electrical nerve stimulation (TENS)
- Complementary therapies like acupuncture or massage

There are no effective treatments for sensory loss. Occupational therapy and physical therapy may be of some benefit in terms of adjusting to the loss of sensation in both MS and PN.

Treatment of the diseases themselves differs. A number of MS disease-modifying treatments (DMTs) are used to prevent progression and MS exacerbations (flare-ups). Exacerbations are typically treated with intravenous (IV) steroids.

Peripheral neuropathy is treated based on the underlying cause. For example, if diabetes is the culprit, then getting your blood sugar under control is a primary goal. If a medication or toxin is causing the side effect, removing or stopping the offending agent is important. In general, management of PN focuses on preventing additional nerve damage, as there's no medication for repairing nerves. If the neuropathy is caused by compression of a single nerve, like in carpal tunnel syndrome, surgery can be effective.

For severe cases of MS or some forms of PN, intravenous immune globulin (IVIG) therapy may be used. With IVIG therapy, you'll receive high levels of proteins that work as antibodies (immunoglobulins) to replace your body's own stores. This procedure helps suppress immune system activity and works to prevent your body from destroying its own cells. Similar to IVIG, plasmapheresis, which is plasma exchange, can be an option for severe cases of MS and PN. With this procedure, blood is removed from the body and filtered through a machine so that harmful substances can be removed before the blood is returned to the body. It is less commonly employed than IVIG.

It's helpful to keep a log of your symptoms so you can describe them in detail to your doctor/health care team. Include any patterns in their occurrence and aggravating or provoking factors.