CONDITION

Sensorimotor polyneuropathy

Sensorimotor polyneuropathy is damage to multiple peripheral nerves that affects feeling and movement, usually beginning in the feet.

WHAT IT IS
Widespread damage to nerves controlling sensation and movement

BODY SYSTEM
Nervous system

MAIN SYMPTOMS
Numbness, tingling, burning pain, muscle weakness

WHAT CAUSES IT
Diabetes, toxins, immune disorders, inherited changes, or unknown

HOW IT IS DIAGNOSED
Neurological examination, nerve conduction studies, and electromyography

MAIN TREATMENT
Treating the cause, symptom relief, and rehabilitation

CAN IT BE CURED?
Sometimes - when the underlying cause is treatable

IS IT AN EMERGENCY?
Sometimes - rapidly worsening weakness or breathing trouble

LONG-TERM OUTLOOK
Often manageable, but recovery reflects the cause and nerve damage

Overview

Sensorimotor polyneuropathy means that many peripheral nerves are damaged or not working properly. Peripheral nerves carry messages between your brain and spinal cord and the rest of your body.

"Sensory" refers to feeling, including touch, pain, temperature, and awareness of body position. "Motor" refers to muscle movement. When both types of nerve are affected, you may have numbness or pain as well as weakness.

Symptoms often begin in the toes and feet because the longest nerves are commonly affected first. They may gradually spread upward and later involve the hands. Clinicians sometimes call this a "stocking-and-glove" pattern.

Sensorimotor polyneuropathy is a condition rather than one specific disease. It can result from diabetes, alcohol exposure, vitamin deficiency, certain medicines, immune disorders, inherited conditions, and many other causes. Sometimes no cause is found.

Finding the cause matters because some forms improve when the underlying problem is treated. Even when nerve damage cannot be reversed, treatment can reduce pain, support mobility, and help prevent falls and foot injuries.

Symptoms

Symptoms may develop slowly over months or years, but some forms progress over days or weeks. They are usually present on both sides of the body, although one side may initially feel worse.

Sensory symptoms can include:

Motor nerve damage can cause weakness, muscle cramps, or muscle wasting. You may find it harder to lift the front of your foot, stand on your toes, climb stairs, open containers, or manage buttons. A weak foot may slap the ground or catch while walking.

Some polyneuropathies also affect autonomic nerves, which control automatic body functions. Possible symptoms include dizziness when standing, unusual sweating, digestive problems, changes in bladder function, or sexual difficulties. These symptoms have several possible causes and do not confirm neuropathy by themselves.

- Numbness, reduced feeling, or a "dead" sensation
- Tingling, pins and needles, burning, or electric-shock pain
- Pain from light touch that would not normally hurt
- Reduced awareness of heat, cold, injury, or foot position
- Poor balance, especially in darkness or on uneven ground

Causes and risk factors

Diabetes is one of the most common identifiable causes of polyneuropathy. Long-term high blood glucose can damage nerves and the small blood vessels that supply them. Risk generally rises with longer exposure to diabetes and with other factors such as kidney disease.

Other possible causes include:

A medicine associated with neuropathy should not be stopped without medical advice. The

benefit of continuing it must be weighed against the possibility of nerve injury, and another explanation for the symptoms may need to be excluded.

The speed and pattern of symptoms can suggest a cause. A slow, symmetrical pattern beginning in the feet is different from neuropathy that develops rapidly, affects one side more than the other, or causes early severe weakness.

Even after an appropriate assessment, some cases remain unexplained. This is called idiopathic polyneuropathy. It is more common in older adults and often progresses slowly.

- Heavy or prolonged alcohol use, sometimes combined with poor nutrition
- Low vitamin B12 or other nutritional deficiencies
- Chronic kidney or liver disease
- An underactive thyroid
- Certain infections
- Immune conditions that attack peripheral nerves
- Abnormal proteins in the blood
- Some cancers or blood disorders
- Inherited changes affecting nerve structure or function
- Exposure to certain medicines, chemotherapy drugs, or toxins

Diagnosis

Diagnosis begins with a careful history and neurological examination. You may be asked when symptoms started, how quickly they changed, and whether you have diabetes, nutritional problems, relevant infections, alcohol exposure, or a family history of similar symptoms.

The examination may assess:

Nerve conduction studies measure how quickly and strongly electrical signals travel through peripheral nerves. Electromyography, often called EMG, uses a fine needle to measure electrical activity in selected muscles. Together, these tests can confirm large-fibre nerve damage and show whether the main problem involves the nerve fibre or its insulating covering.

Normal nerve conduction studies do not rule out every neuropathy. Small-fibre neuropathy affects tiny nerves that carry pain and temperature signals and may require other tests, such as a skin biopsy or specialised autonomic testing.

Blood tests are used to look for treatable causes. Depending on your history, these may

include blood glucose, vitamin B12, thyroid, kidney and liver tests, and tests for abnormal blood proteins. More focused testing may be appropriate when an infection, immune disorder, toxin, or inherited condition is suspected.

A spinal tap, nerve biopsy, genetic test, or scan is not routinely needed for every person. These are reserved for patterns or findings that suggest a specific cause.

- Feeling from light touch, vibration, pinprick, or temperature
- Muscle strength and size
- Tendon reflexes
- Balance, coordination, and walking
- Skin condition, foot shape, wounds, and circulation

Treatment and management

Treatment is guided by the cause, the symptoms, and how much the condition affects daily life.

When possible, the underlying cause is treated. This may involve improving diabetes management, correcting a confirmed vitamin deficiency, addressing alcohol exposure, treating an infection or immune condition, or reviewing a medicine linked to nerve damage. Recovery is not immediate because nerves heal slowly, and established damage may not fully reverse.

Neuropathic pain is pain caused by damaged nerves. It often responds poorly to ordinary pain medicines. Several types of prescription medicine can reduce nerve pain, including certain medicines also used for depression or seizures. Topical treatments applied to the skin may help some people. These treatments reduce symptoms rather than repairing the nerve, and side effects need to be considered.

Physical therapy can help maintain strength, flexibility, balance, and safe walking. An ankle brace, walking aid, or suitable footwear may improve stability when weakness or loss of position sense is present. Occupational therapy can suggest ways to make dressing, cooking, work, and other tasks safer or easier.

Reduced sensation makes regular foot care important. Check your feet for blisters, cuts, redness, swelling, and pressure areas. Wear well-fitting shoes and avoid walking barefoot. Test bath water with an unaffected body area or a thermometer rather than a numb foot.

Exercise may support strength, balance, general health, and diabetes management. The safest type and intensity reflect your mobility, foot condition, and other health problems.

Complications

Loss of feeling can allow a blister, burn, or pressure sore to go unnoticed. A wound may then become infected, especially when diabetes or poor circulation is also present.

Weakness and reduced position sense can cause trips and falls. Long-standing weakness may lead to muscle loss, stiff joints, or changes in the shape of the feet.

Persistent nerve pain can interfere with sleep, mood, concentration, and activity. Reducing activity because of pain or fear of falling can cause further loss of strength.

Autonomic nerve involvement can contribute to fainting, digestive difficulties, bladder problems, or sexual dysfunction. These symptoms deserve assessment because they may also come from medicines or a separate condition.

Prevention

Not every sensorimotor polyneuropathy can be prevented. Inherited forms cannot currently be prevented, and some immune or unexplained forms occur without an avoidable trigger.

Risk may be reduced by managing known causes. If you have diabetes, keeping blood glucose within the target agreed with your healthcare team can lower the risk of nerve damage or slow its progression. Limiting alcohol exposure and eating a balanced diet can help prevent alcohol-related or nutritional neuropathy.

Avoid taking high-dose vitamin supplements unless advised to do so. Too little of some vitamins can damage nerves, but excessive amounts of certain vitamins, including vitamin B6, can also cause neuropathy.

Workplace precautions may reduce exposure to known neurotoxic chemicals or metals. If a prescribed treatment can affect nerves, monitoring and early reporting of symptoms may allow the treatment plan to be reviewed. Do not stop prescribed medicine on your own.

Living with it and what to expect

The course depends mainly on the cause, how quickly it is treated, and how much nerve damage has occurred.

A treatable deficiency or toxic exposure may improve after the cause is removed, although recovery can take months and may be incomplete. Neuropathy related to a long-term condition may stabilise with good management but can also progress. Inherited and idiopathic

forms often change slowly over years.

Pain may lessen even if numbness remains. Weakness can sometimes improve through nerve recovery and rehabilitation, while established muscle wasting is harder to reverse. Regular review can track changes in strength, walking, foot health, and symptom control.

Many people continue to work, exercise, drive, and manage daily activities. Some need adjustments such as supportive footwear, hand aids, rest breaks, or mobility equipment. Driving may need review if numbness or weakness affects pedal control.

Arrange routine follow-up if symptoms are gradually worsening, treatment side effects are troublesome, or pain is affecting sleep and daily life. New foot wounds, repeated falls, or increasing difficulty walking should also be assessed promptly rather than left until a routine visit.

When to get medical help

Make a routine medical appointment for persistent numbness, tingling, burning pain, balance problems, or weakness. Early assessment can identify treatable causes and establish whether the symptoms follow a typical polyneuropathy pattern.

Seek urgent medical assessment if weakness progresses over days or a few weeks, especially if it begins in the legs and moves upward. Rapidly developing neuropathy may need hospital testing and treatment.

Get emergency help for:

Sudden one-sided symptoms are not typical of polyneuropathy and may indicate a stroke or another emergency.

A hot, swollen, spreading red foot wound, pus, fever, or darkened tissue needs prompt medical care. This is especially important if reduced sensation has made the injury difficult to feel.

- Trouble breathing, swallowing, or speaking
- Rapidly worsening weakness or inability to stand
- Fainting with severe weakness or an irregular heartbeat
- Sudden facial drooping, one-sided weakness, or difficulty speaking
- New loss of bladder or bowel control with numbness around the groin

Common questions

Can sensorimotor polyneuropathy be cured?

Sometimes. Neuropathy caused by a treatable deficiency, infection, toxin, or immune process may improve when the cause is addressed. Long-standing, inherited, or unexplained nerve damage may not be reversible, but symptoms and safety risks can still be managed.

Will the feeling in my feet come back?

It may, but recovery cannot be predicted from symptoms alone. Peripheral nerves recover slowly, and severe or long-standing damage may leave permanent numbness. Treating the cause early offers the best chance of limiting further injury.

Is sensorimotor polyneuropathy the same as diabetic neuropathy?

No. Diabetic neuropathy is one possible cause of sensorimotor polyneuropathy. Similar patterns can result from alcohol, vitamin deficiency, kidney disease, medicines, immune disorders, inherited conditions, and other causes.

Why are my feet affected before my hands?

The nerves reaching the feet are the longest in the body. Many polyneuropathies damage longer nerve fibres first, so symptoms begin in the toes and move upward. Hand symptoms may appear later.

Can I exercise with polyneuropathy?

Many people can exercise safely and may benefit from strength, balance, and aerobic activity. The plan may need adjustment if you have foot wounds, severe numbness, marked weakness, or a high risk of falling.

Does numbness mean the condition is getting worse?

Not always. Numbness can remain stable even after the cause has been treated. A clear spread of numbness, new weakness, more falls, or loss of hand function should be reviewed.

Sources

- National Institute of Neurological Disorders and Stroke. Peripheral Neuropathy
- Mirian A, Aljohani Z, Grushka D, Florendo-Cumbermack A. Diagnosis and management of patients with polyneuropathy. CMAJ . 2023;195:E227-E233
- Castelli G, Desai KM, Cantone RE. Peripheral Neuropathy: Evaluation and Differential Diagnosis. American Family Physician . 2020;102:732-739
- Merck Manual Consumer Version. Polyneuropathy

- National Health Service. Peripheral neuropathy
- Price R, Smith D, Franklin G, et al. Oral and Topical Treatment of Painful Diabetic Polyneuropathy: Practice Guideline Update Summary. Neurology . 2022;98:31-43