



PERIPHERAL NEUROPATHY

WHAT IS PERIPHERAL NEUROPATHY?

Peripheral neuropathy (PN) is a disease of the peripheral nerves. These are all the nerves except for those in the brain and spinal cord.

About 30% of people with HIV develop PN. Some PN is a breakdown of the nerve endings (axons) that send sensations to the brain. Sometimes, PN is damage to the coating of nerve fibers (myelin). This affects the transmission of pain signals to the brain.

PN can be a minor nuisance or a disabling weakness. It is usually a feeling of pins and needles, burning, stiffness, or numbness in the feet and toes. It can also be tickling sensations, unexplained pain, or sensations that seem more intense than normal. PN symptoms can come and go. Serious PN can cause difficulty walking or standing.

WHAT CAUSES PN?

PN can be caused by HIV infection of nerve cells, by drugs used to treat HIV or other health problems, or other factors. Risk factors for PN include higher HIV viral load, diabetes, age greater than 50, and heavy alcohol use. Other risk factors are the use of cocaine or amphetamines, cancer treatments, thyroid disease, or deficiency of vitamin B12 or vitamin E.

Several HIV drugs can cause PN. The most important are the "d" drugs; **ddl** (Videx) and **d4T** (Zerit). **Hydroxyurea**, which is sometimes combined with antiretroviral drugs, increases the risk of PN.

Other drugs that can cause PN include:

- **dapsone** (for pneumocystis pneumonia, PCP)
- **isoniazid** (INH, for tuberculosis)
- **metronidazole** (Flagyl, for amoebic dysentery and microsporidiosis), and
- **vincristine** (Oncovin, for Kaposi's sarcoma – KS – and non-Hodgkin's lymphoma).

AZT, abacavir, non-nucleoside reverse transcriptase inhibitors (NNRTIs), and protease inhibitors do not appear to cause PN.

HOW IS PN DIAGNOSED?

No laboratory testing is needed to diagnose PN. The signs and symptoms are enough. Special tests may be needed to find the cause of PN. These tests measure tiny electrical currents in nerves and muscles. The amount or speed of these electric signals drops with different types of PN. However, many patients with PN are not diagnosed correctly.

HOW IS IT TREATED?

Talk to your health care provider about discontinuing any drugs that might be causing PN. Drug-induced PN normally goes away totally if the drugs are stopped when PN first appears. However, this can take as long as eight weeks. If you continue to take the drugs, the nerve damage might become permanent.

NON-DRUG TREATMENTS: Some simple things can reduce the pain of PN:

- wear looser shoes
- don't walk too far
- don't stand for too long a time
- soak your feet in ice water

A recent study showed the benefit of smoking marijuana (see fact sheet 731) to relieve PN pain.

DRUG TREATMENTS: No drug has been approved to repair nerve damage, but several drugs are being studied:

- Lamotrigine, an anti-seizure drug, has shown good results in early tests.
- Recombinant human nerve growth factor (rhNGF) was tested for PN but is not being developed.
- Topiramate appears to help repair damaged nerve fibers.
- L-acetyl-carnitine (also called acetyl-L-carnitine or acetyl carnitine) has shown initial good results.
- Prosaptide and NGX4010 are also being studied.

Some drugs can reduce the pain of PN:

- **Mild symptoms:** Ibuprofen can be used.
- **Moderate symptoms:** Amitriptyline or nortriptyline can be used. These antidepressants increase the brain's transmission of nerve signals. Other treatments include Neurontin, an anticonvulsant drug; and a gel containing the anesthetic lidocaine.
- **Severe symptoms:** Narcotic pain relievers such as codeine or methadone can be used. The anti-seizure medication

pregabalin (Lyrica®) is also used to reduce PN pain.

Other drugs being studied for PN include patches for local treatment. The patches contain the anesthetic lidocaine, or capsaicin, the chemical that gives hot chili peppers their heat.

NUTRIENT THERAPIES: Nutrient therapies have been studied for PN caused by diabetes:

- **B vitamins.** Several B vitamins are useful in treating diabetic neuropathy. These include biotin, choline, inositol, and thiamine. They appear to improve nerve function.
- **Alpha-lipoic acid** may help protect nerves from inflammation.
- **Gamma linolenic acid**, found in evening primrose oil, has reversed nerve damage in some diabetics.

Magnets: A recent study found that socks containing magnets relieved diabetic neuropathy in most cases. However, they were less effective for foot pain due to other causes.

OTHER RESOURCES

More information on PN is available from The Neuropathy Association at <http://www.neuropathy.org> and in the book *Numb Toes and Aching Soles: Coping with Peripheral Neuropathy*, by John A. Senneff.

THE BOTTOM LINE

Peripheral neuropathy is a disease of the nervous system. It causes strange sensations, especially in the feet, legs, and fingers, and can cause pain. The pain might be mild, or so severe that it prevents someone from walking.

Tell your health care provider immediately if you have any signs of PN. You will probably stop taking any drugs that can cause PN. If that doesn't take care of the problem, you may be tested to see what's causing the PN. There are different treatments for different causes of PN.

Drugs can be used to control the pain of PN, and several nutrient therapies might help repair nerve damage.

