

Generalized Peripheral Neuropathy

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Overview: Peripheral neuropathy is the result of damage to nerves located outside of the brain and spinal cord. There are multiple types of neuropathy but this article is going to discuss the most common type - generalized peripheral neuropathy - that starts in the feet.

Symptoms: Starting in the toes and then progressing up the calves, neuropathy symptoms include pain, tingling, burning, numbness, heat and cold sensations, sensitivity to touch, weakness in the toes and loss of balance. It is fairly equal in both feet. As it progresses in men, they may develop erectile dysfunction. Eventually it can spread to the fingers.

Causes: Diabetes accounts for over 50% of cases. Idiopathic (which means we do not know the cause) is second most common at about 25%. I believe that the majority of "idiopathic" neuropathy is actually caused by insulin resistance, which is present in over 50% of the general population, and over 90% of people who have abdominal fat (waist circumference over 40" for men and 35" for women). Unfortunately, most physicians rarely check a fasting insulin level to diagnose this. Cancer, chemotherapy, autoimmune disorders, nutritional deficiencies, alcoholism, chronic kidney disease, heavy metal toxicity are also common causes of neuropathy.

Physical examination: Common findings include mild weakness in the toes, significant loss of vibration sense in the feet, absent ankle reflexes and slight decreased balance with difficulty standing on one leg at a time or walking heel-to-toe with the eyes closed. Neuropathy patients frequently report that they have difficulty walking on uneven terrain or walking without nightlights (they need their vision to compensate for lack of feedback through their feet).

Diagnostic testing:

1. **EMG/NCS:** An EMG is performed by inserting a fine needle into several muscles and analyzing the response. An NCS is performed by stimulating the nerves and recording the response. The exact type and severity of nerve damage and prognosis for recovery can then be determined. EMG/NCS can also differentiate neuropathy from other common causes of pain, weakness and numbness such as carpal tunnel syndrome and pinched nerves in the neck and back.
2. **Blood test:** Fasting blood glucose and insulin levels, toxins, vitamin deficiencies, etc. can be determined.
3. **Imaging test:** CT and MRI scans looking for herniated disc and tumors.
4. **Skin biopsy:** Three small skin biopsies can be obtained to look for small fiber neuropathy.

Prognosis: The prognosis for neuropathy depends on the underlying cause and its severity. Unfortunately, most forms of generalized peripheral neuropathy are usually permanent, but almost all forms can improve with treatment.

Prevention: The vast majority of neuropathies are caused by insulin resistance and diabetes. Therefore, the best way to prevent this type of neuropathy is to diagnose and treat insulin resistance early before the person develops diabetes. A low carbohydrate diet and regular exercise are the best preventative strategies.

Treatment options:

1. **Lifestyle choices:** Good foot care, a healthy low carbohydrate diet, regular exercise, limiting alcohol, discontinuing tobacco use and good medical care can be very helpful.
2. **Non pharmacologic treatments:** Physical therapy, chiropractic, acupuncture, TENS unit, electric stim unit devices, MLS lasers, hyperbaric oxygen therapy, alpha lipoic acid, herbs and carnitine have been shown to be beneficial in treating neuropathies.
3. **Topical medications:** If you have a significant cold feeling to the feet, consider applying Zostrix (capsaicin) cream to the feet twice daily. This will provide increased warmth. Otherwise, I typically recommend a compounding cream consisting of gabapentin, diclofenac and lidocaine applied to the feet twice daily. This will usually decrease symptoms by about 25% without side effects.
4. **Oral vitamins that may improve nerve function:** The B vitamins including B1, B6, B12 and Folate (B9) can help with nerve regeneration. I frequently recommend purchasing over-the-counter B100 complex that contains all of these vitamins that may help with nerve regeneration. Metanx is a fairly expensive prescription medication that can also help with nerve regeneration.
5. **Oral nerve pain medications:** It is important to note that these medications are designed to treat nerve pain. They will not improve your strength, sensation or balance. However, they can usually decrease nerve pain in the feet by at least 50% with minimal side effects. Lyrica twice daily works great for both muscle and nerve pain. Gabapentin is less expensive but needs to be taken 3 times daily and may cause lethargy during the day. Cymbalta once daily is excellent at treating muscle and nerve pain as well. Tricyclic antidepressants such as Pamelor and Elavil work great for night time nerve pain. Over-the-counter medication such as Tylenol, Aleve and Ibuprofen may help. Tramadol, a low-dose narcotic, has been found to be helpful with minimal side effects.
6. **Testosterone:** It is very common for men with neuropathy to also have erectile dysfunction. Neuropathy typically starts in the feet and then spreads to the penis, and if not properly managed, can eventually cause numbness in the fingers. For men with insulin resistance, neuropathy and ED, I recommend checking their testosterone levels. Testosterone replacement in men with low testosterone levels can significantly improve their ED. Additionally, normalizing testosterone levels decreases visceral fat that in turn will improve insulin resistance, diabetes and neuropathy.
7. **Treat insulin resistance/diabetes if present:** See my Insulin Resistance handout. Consider Metformin, Berberine, Inositol, Semaglutide, Tirzepatide, hormones.