



# DIABETIC NEUROPATHY REQUIRES CAUTIOUS CARE

by Alison DeLory

Diabetic neuropathies are a family of nerve disorders caused by diabetes. According to the Canadian Diabetes Association, which estimates two million Canadians have type 1 or type 2 diabetes, detectable sensorimotor polyneuropathy will develop within 10 years of diabetes onset in 40 to 50% of patients with diabetes. Sensorimotor polyneuropathy (also called peripheral neuropathy) is caused by damage to the peripheral nerves that branch out from the brain and spinal cord to the rest of the body. The neuropathic pain associated with symptomatic disease ranges from bothersome to debilitating. Those affected have described their pain using the McGill Pain Questionnaire as “punishing–cruel” and “tiring–exhausting.”

Unlike other pain, which warns us of imminent or actual tissue damage and elicits coordinated reflex and biological responses to keep damage to a minimum, neuropathic pain offers no biological advantages and can be dangerous, distressing and insufferable.

“It is useful to treat the pain early to prevent it from becoming more intense,” says Dr. Dwight Moulin, Earl Russell Chair in Pain Research at the University of Western Ontario. He co-authored a study published in the August 2006 Canadian Medical Association Journal called *Neuropathic pain: a practical guide for the clinician*.

“For nerve injury pain of any type, there is reasonable evidence that if the pain is allowed to progress and get worse, that can make the pain last longer and have a snowball effect,” Moulin says.

Symptoms can include pain, tingling, or numbness in the hands, arms, feet, and legs. Numbness can be concerning, Moulin explains, because “a lack of sensation leads to skin damage because patients lack the protective effect of pain. Chafing, rubbing of skin and ulceration can result. Any extremity without normal sensation is at risk, but most especially the feet because they carry all the weight.” The nerves to the feet are the longest in the body and the ones most often affected by neuropathy.

Rock Coulombe, a pharmacist and certified diabetes educator, co-owns a Pharmasave store in Brockville, Ont., that specializes in caring for patients with diabetes. About 25% of the 7,600 patients registered at the pharmacy have diabetes. “Usually the [diabetic neuropathy] patients we see most often have stabbing pain or a burning sensation in their feet,” Coulombe says. “With reduced sensation to the feet, people may have an injury they’re not even aware of.”

Nerve problems can also occur in organ systems including the digestive tract, heart and sex organs. Symptoms are often minor at first and, because most nerve damage occurs over several years, may go unnoticed for a long time. Symptoms can involve the sensory, motor, and autonomic—or involuntary—nervous systems. In some people, mainly those with focal neuropathy, the onset of pain may be sudden and severe.

Diabetic neuropathy can be classified as peripheral, autonomic, proximal or focal:

- Peripheral neuropathy, the most common type of diabetic neuropathy, causes pain or loss of feeling in the toes, feet, legs, hands and arms.

- Autonomic neuropathy causes changes in digestion, bowel and bladder function, sexual response and perspiration. It can also affect the nerves that serve the heart and control blood pressure, as well as nerves in the lungs and eyes. Autonomic neuropathy can cause hypoglycemia unawareness, a condition in which people no longer experience the warning symptoms of low blood glucose levels.

- Proximal neuropathy causes pain in the thighs, hips or buttocks and leads to weakness in the legs.

- Focal neuropathy results in the sudden weakness of one nerve or a group of nerves, causing muscle weakness or pain. Any nerve in the body can be affected.

## Pain affects mood

A comprehensive Canadian study in 2007 showed many chronic pain sufferers also experience psychological symptoms such as anxiety, depression and difficulty sleeping. “I have seen patients become anxious and depressed, absolutely. Sometimes they know they’re depressed, sometimes they say ‘No I’m not, I’m just going through something.’” says Coulombe. Denial is a problem because “they sometimes avoid getting diagnosed and they avoid getting treatment.” Other evidence indicates that neuropathic pain impairs patients’ moods, quality of life, activities of daily living and performance at work. People with the condition have been found to generate three-fold higher health-care costs compared with matched controls.

People with diabetes can develop nerve problems at any time, but the risk rises with age and with the duration of diabetes. Diagnosis is based primarily on history (e.g., underlying disorder and distinct pain qualities) and physical examination (e.g., a pattern of sensory disturbance). Clinicians may screen for diabetic neuropathy using a tuning fork or microfilament, and further examination could include an abbreviated neurological examination of pinprick sensation, distal muscle strength and reflexes. The Canadian Diabetes Association recommends annual screening for peripheral neuropathy, beginning at the time of diagnosis, for people with type 2 diabetes and five years after the onset of type 1 diabetes in postpubertal patients. The likelihood of neuropathy rises with the number of risk factors diabetes have, such as: diabetes for more than 25 years, uncontrolled blood glucose levels, high blood lipid levels and high blood pressure, extra weight.

There is no cure for neuropathic pain; therefore, prevention through optimal blood glucose control, healthy eating and exercise are important. Once patients develop neuropathy, the aim of treatment is to help them cope. Tricyclic antidepressants, carbamazepine, mexiletine, gabapentin, opioids, topical lidocaine, pregabalin, mixed serotonin–norepinephrine reuptake inhibitors (e.g., venlafaxine, duloxetine) and tramadol are prescription drugs used to control neuropathic pain. Many patients will be prescribed combinations of these drugs.

OTC remedies include the topical pain reliever NeuraGen RL, a topical blend of botanical oils that is also available as a gel (NeuroGel), and the vitamin/mineral supplement, NeuroHelp. Nonprescription strength lidocaine jelly or ointment, and dibucaine 1% ointment are also used for their anesthetic effect. There are no known interactions between these nonprescription treatments for diabetic neuropathy and prescription treatments.

## Counselling tips

- Acetaminophen and nonsteroidal anti-inflammatory drugs are not proven effective for neuropathic pain, Moulin and Coulombe agree. If patients choose to purchase these products anyway, then pharmacists



## Resources

The Canadian Neuropathy Association lists medical specialists by province [www.canadianneuropathyassociation.org/doctor.htm](http://www.canadianneuropathyassociation.org/doctor.htm)

The National Diabetes Information Clearinghouse (an American organization) <http://diabetes.niddk.nih.gov/dm/pubs/neuropathies/index.htm>

Diabetes Home [www.diabeteshome.ca](http://www.diabeteshome.ca)

Healthy Ontario.com [www.healthyontario.com/newsitemdetails.aspx?newsitem\\_id=1044](http://www.healthyontario.com/newsitemdetails.aspx?newsitem_id=1044)

The Canadian Diabetes Association [www.diabetes.ca](http://www.diabetes.ca), especially the clinical practice guidelines for 1. neuropathy, 2. foot care, and 3. glycaemic control. Phone: 1-800 BANTING (226-8464)

should remind them to stay within the safe dosing range, says Moulin. "If they do not, patients risk ulcers, renal failure and GI bleeds," he cautions.

- Follow-up with patients. "If we identify [diabetic neuropathy], we try to put a note on the file. The next time the patient comes in, we'll follow-up or we'll call to see how they're doing," says Coulombe.
- Manage patients' symptoms and focus on prevention. Nerve damage is due to uncontrolled blood glucose levels. Although there is no cure for diabetic neuropathy, controlling blood glucose will help prevent further damage. Preprandial blood glucose should be between 4–7 mmol/L and two hours after a meal should be less than 10 mmol/L. Counsel patients to eat a healthy diet and exercise regularly.
- Tell patients to clean their feet daily with warm water and soap, and then check every day to make sure they don't have any cuts, blisters, swelling, redness or calluses on their feet. Tell patients to always wear thick, seamless socks or slippers to protect their feet. New shoes should allow room for toes to wiggle and patients should break them in

gradually by wearing them for only an hour at a time. Patients should inspect the insides of their shoes for grit, small stones and other potential irritants before putting them on. Coulombe recommends that patients with diabetic neuropathy should go for a yearly foot exam with a chiropodist where a sensation test using a microfilament is performed.

- Be aware of the potential for anxiety, depression and fatigue among diabetes patients, and that patients may be in denial about these conditions.

## When to refer to a physician

- Patients are suffering sharp, jabbing, shock-like or severe pain. "They may need a doctor's prescription for

an opioid analgesic," Moulin says.

- Patients have nerve damage affecting motor skills, e.g., foot drop (a deficit in turning the ankle and toes upward, known as dorsiflexion) or weakness.
- Patients are unable to control their bowel or bladder.
- Patients have red, blistering patches or open wounds on their feet or an ulcerated area. "If they don't get it treated, bacterial infection can set in and this can result in amputation," Coulombe cautions.
- Patients are highly sensitive to touch, e.g., even bed sheets and clothing are uncomfortable.
- Patients experience loss of balance.

*Alison DeLory is a Halifax-based medical writer.*

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