

Diabetic neuropathy

Written by Danielle Nicholson

Reviewed by Dr. Isaura Tavares & Diogo Raposo, University of Porto



Approximately half of people with diabetes may develop nerve damage, or diabetic neuropathy and half of these will experience pain. Typically, symptoms do not begin until 10 to 20 years after diabetes has been diagnosed. Diabetic nerve pain most commonly occurs when a person with diabetes has prolonged spells of high blood sugar levels. Excess blood glucose and quick oscillations of glucose levels can injure the nerves and the walls of tiny blood vessels that nourish the nerves, especially in the legs. Nerves send messages to and from the brain about pain, temperature and touch. They tell the muscles when and how to move. Nerves also control body systems that digest food, pass urine and even the heart. Finally, high blood pressure, obesity and smoking have a detrimental effect on the nerves.

In people with diabetes, nerve damage usually occurs in the extremities- the feet and legs, hands and arms.

- Neuropathic foot pain is one of a number of conditions affecting the feet which are termed as problems of 'the diabetic foot'.
- People with diabetes are advised to have an annual foot examination.
- A foot exam can help to detect new problems, such as diabetic neuropathy or circulation problems. It can help spot additional complications of the foot, for example wounds, blisters, a joint disorder known as charcot foot, and most importantly foot ulcers.



Did you know?

Neuropathy may also affect:

- Cranial nerves found in the skull
- Nerves from the spinal column and their branches
- Autonomic nerves that help the body manage vital organs, for example the heart, bladder, stomach, and intestines.

Symptoms develop slowly over several years, depend on the nerves that are affected, and may include:

- Numbness, loss of sensation
- Prickling or tingling feelings
- Burning sensations
- Sharp, stabbing or shooting pains in the extremities

These symptoms can range from mild to severe.

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Tingling or burning may be an early sign of nerve damage often starts in the feet and toes and can progress to the legs and even to the hands. Patients with nerve damage may have deep pain. They may also lose the ability to sense pain, hot and cold in the legs and feet. Therefore, these patients may be unaware when they step on something sharp, have a blister or small cut, or touch something too hot or too cold. These wounds can ultimately infect and lead to foot or leg amputation.

Did you know?

It is extremely important to detect diabetes as early as possible and keep blood sugar levels within a healthy range. This may prevent nerve damage or make symptoms less severe.

Signs & tests

A physical exam may show:

- A lack of reflexes in the ankle
- A loss of feeling in the feet. A health care provider will check this with a microfilament, a brush-like instrument
- Changes in the skin and nails
- Drop in blood pressure when standing after sitting or lying down

Tests that may be done include:

- Electromyogram (EMG) that records electrical activity in muscles
- Nerve biopsy
- Nerve conduction velocity tests (NCV) that record the speed at which signals travel along nerves



Wellcome Images

Funded by the European Commission's FP7, REDDSTAR is a three year, 10 partner project that will comprehensively examine if stromal stem cells derived from bone marrow can safely control blood glucose levels while also alleviate damage caused by six diabetic complications.

www.REDDSTAR.eu