



DIABETIC PERIPHERAL NEUROPATHY

Neuropathies are characterized by a progressive loss of nerve fiber function. Neuropathies are the most common complication of diabetes mellitus (DM), affecting up to 50% of patients with type 1 and type 2 DM. In type 1 diabetes mellitus, neuropathy typically becomes symptomatic after many years of chronic prolonged hyperglycemia. Conversely, patients with type 2 diabetes mellitus may present with neuropathy after only a few years of known poor glycemic control; sometimes, these patients already have neuropathy at the time of diagnosis, which is due to the late presentation in type II DM

Peripheral nerves have been classified as
1. Sensory – responsible for the sensory inputs from the environment, 2.

Motor – This takes care of the muscle activities, 3. Autonomic – mediates the temperature control and skin function. Neuropathies severely decrease patient's quality of life (QOL). Furthermore, while the primary foot symptoms of neuropathy can be highly unpleasant, the secondary complications (example falls, **foot ulcers**) are even more serious and can lead to fractures, amputations in patients with DM. Hence treating physician should be well aware in picking the symptoms at the early stage to avoid the possible complications.

Many hypotheses have been proposed to be the cause of diabetic neuropathy and hence it is a multi-

factorial process, leading to neuropathy. Development of symptoms depends on many factors, such as total duration of increased blood sugar exposure and other risk factors such as elevated lipids, blood pressure, smoking and high exposure to other potentially neurotoxic agents such as ethanol. Genetic factors may also play a role.

The symptoms of peripheral neuropathy at presentation can vary from minimal diminution in sensation, numbness to total loss of sensation, burning, pricking pain, intermittent shock-like sensation in the feet. It usually seems to affect below-knee and below-elbow regions of the limbs. Numbness and total loss of sensation are more dangerous, since the patient will not be aware of the injury, wound in the feet and finally present to the hospital with infection and its devastating complications. The burning, pricking pain which is felt more prominent in the night time may vary from an unpleasant sensation in the feet to the level of sleep disturbance. Hence during every hospital visit the patient should be checked for the above symptoms, evaluated with appropriate tests and treatment should be instituted. Controlling diet and nutrition are paramount to improving the secondary complications of diabetes, including neuropathy. Patients with diabetic neuropathy should work with nutritionists to develop a realistic diet for lowering blood glucose and minimizing large fluctuations in blood glucose level. Patients with diabetic neuropathy should be encouraged to remain as active as possible, with the consultation with their physicians regarding the exercise programs they can undertake.

Prevention of diabetic neuropathy is potentially best achieved by having near-euglycemic control from

the onset of DM. Even in patients with symptoms of diabetic neuropathy, controlling blood glucose to



euglycemic levels reduces pain significantly. When a person has poor control and becomes euglycemic quickly, pain may be exacerbated (possibly due to an insulin effect), but this pain disappears in a few days. Many medications are available for the treatment of diabetic neuropathy. The patient response to the medications vary significantly, hence the patient may need to undergo few changes

until the appropriate neuropathic medication suited for that particular patient could be selected. A novel therapy known as '**ANODYNE**' therapy is available for patients with severe neuropathic pain. It works by using infra-red rays, which will reduce the neuropathic pain rapidly and provides a good symptomatic relief to the patient. It also reduces the number of medications needed to control the neuropathic pain in the long-term.



ANODYNE THERAPY

The importance of protection and care of insensitive feet should be emphasized. Patients should be instructed to trim their toenails with great care and to be fastidious about foot hygiene. Any fungal or bacterial infection mandates prompt medical attention. The need for well-fitting shoes should be stressed.

The following steps may help to prevent or slow the worsening of diabetic neuropathy

- Control diabetes; try to keep blood sugar at a normal level.
- Maintain normal blood pressure.
- Exercise regularly, according to the healthcare provider's recommendation.
- Stop smoking.
- Limit the amount of alcohol intake because excessive alcohol also can cause neuropathy or make it worse.
- Good foot care.
- Attend follow-up appointments with the healthcare provider regularly.

Once a person has neuropathy, the symptoms will persist indefinitely, but most people with diabetic neuropathy are able to lead active, fulfilling lives. Keeping blood sugar under good control may even stop neuropathy from worsening.



Dr. N. Kaushik
Consultant Podiatry Surgeon
Dept. of Podiatry

