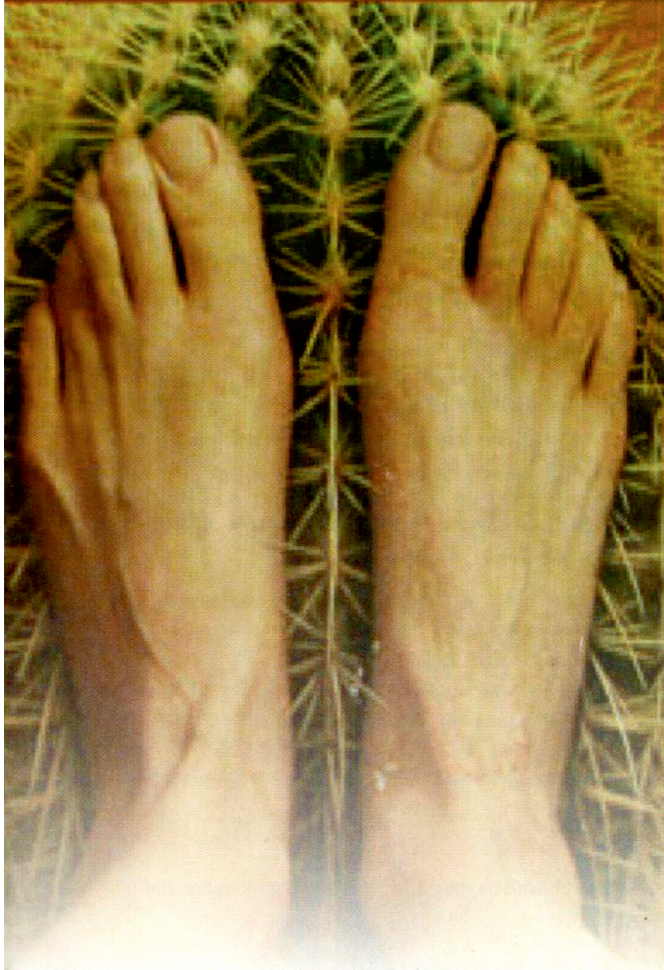


PERIPHERAL NEUROPATHY



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Peripheral nerves carry and send information from your brain and spinal cord (central nervous system) to muscles, skin and all other organs and also the reverse way. Nerves can be classified into: sensory (carrying sensations like touch, pain, temperature), motor (signals to move muscles) and autonomic (that control blood pressure, digestion and urination).

Peripheral neuropathy is a generalized term to describe damage to your nerves, often resulting in weakness, numbness and/or pain, usually in your limbs.

It can affect only one nerve (mononeuropathy), two or more nerves in different areas (multiple mononeuropathy) or distal nerves symmetrically (polyneuropathy).

Symptoms

The disease course also varies depending on the cause. Most neuropathies are very slowly progressive and involve motor and sensory nerves simultaneously.

Symptoms of neuropathy depend on the type of nerves affected. Nerves are classified into:

- Numbness or tingling in feet or hands, which may spread upward
- Pain – which may be sharp or burning
- Imbalance: Lack of coordination and falling
- Muscle weakness : usually it starts with feet and then may involve thighs.
- If autonomic nerves are affected, patient may have altered sweating pattern or bowel, bladder or digestive problems. Some may develop blood pressure changes , leading to dizziness or lightheadedness.

Causes

Various disorders may affect our peripheral nerve and may cause dysfunction:

- Diabetes. It is one of the most common causes. It may be the first presenting symptom. More than 50% of the diabetic patients develop some type of neuropathy, during the course.
- Toxins /vitamin deficiency/medications: B complex vitamins, vitamin E and niacin are essential for nerves. Poor nutrition in people with alcoholism can lead to neuropathy. Exposure to toxic substances, like heavy metals or chemicals may also affect nerves. Certain medications, especially those used to treat cancer (chemotherapy), can damage your nerves.

- Autoimmune diseases: Guillain-Barre syndrome (GBS) and chronic inflammatory demyelinating polyneuropathy (CIDP) are the commonest immune mediated neuropathy.

- Pressure/trauma: Carpal tunnel syndrome is the most common form of pressure related mono-neuropathy(median nerve).

- Other uncommon causes are: infections, hereditary disorders, bone marrow disorder or tumors. Sometimes, liver, kidney or thyroid diseases are also responsible for neuropathy.

- A good number of patient may fall in "Idiopathic" category (no cause identified), even after an extensive search.

Diagnosis

- You should consult your doctor if you feel unusual tingling, weakness or pain in your hands or feet. Early diagnosis and treatment helps to control your symptoms and prevent further damage to nerves.

- To confirm involvement of the nerves, your doctor will take medical history, which may include your symptoms, exposure to toxins, past medical diseases and also family history.

- Your doctor will ask you to undergo certain tests; i.e., blood tests for sugar, vitamins, renal function, liver function and/or thyroid function.

- A nerve conduction study (NCS) is a diagnostic test, used for evaluation of the nerves' function of the body. It is often called NCV, as the most common measurement during this study is Nerve Conduction Velocity (NCV).

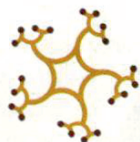
NCS is often accompanied by EMG (ElectroMyoGraphy) examination; which is measurement of muscle function with a needle. It is also called NEE (Needle EMG Examination).

- Other tests: Sometimes biopsy of a small part of a sensory nerve may be required to identify the exact process affecting the nerves.

Risks of neuropathy

Peripheral neuropathy may make a person vulnerable to develop:

- Infection and ulceration: the parts with neuropathy are often without sensation, so are more prone to injury or burns without your knowledge.



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- Falls: Weakness and/or imbalance make a patient more likely to fall.

- Autonomic disturbances due to neuropathy may cause fluctuations in blood pressure. It may also difficulty in controlling urinary process or defecation voluntarily.

Treatment

Treatment depends on the underlying cause. If your neuropathy is due to diabetes, tight blood sugar control is essential to treatment.

Sometimes, symptomatic and targeted approach is necessary.

Symptomatic medications

- Pain and Parasthesiae are often the most disabling symptoms. Various formulations, like simple pain relievers(NSAIDs or opioids) are helpful for short term, mild to moderate pain.

- Drugs; such as gabapentin and pregabalin may relieve neuropathic pain, of moderate to severe intensity, for considerable period of time..

- Certain "antidepressants", such as amitriptyline, duloxetine, desvenlafaxine and nortriptyline have also been found to relieve neuropathic pain by interfering with chemical processes in your brain and spinal cord, that cause you to feel pain.

- Capsaicin cream, may cause modest improvements in peripheral neuropathy symptoms. You might have skin burning and irritation where you apply the cream, but this usually lessens over time.

Targeted therapies

- Plasma exchange and intravenous immune globulin: These procedures, modulate immune system activity and may benefit people with certain inflammatory or autoimmune neuropathies.

In "Plasma exchange", your blood is removed, and then filtered to eliminate antibodies and other proteins from the blood and then the blood is returned to your body. In immune globulin therapy, you receive high levels of proteins that boosts the immune process.

- Steroids: For certain neuropathies, of immune origin or inflammatory conditions, steroids may help reduce swelling around the nerves and may improve the function. The dose and

formulation is individualized, as per the cause and severity. If your doctor ask you to take steroid for longer period of time, do discuss about possible side effects and preventive strategies.

- Vitamin/nutritional supplements: When indicated, vitamin B complex is given in injectable form along with proper diet advice.

- Removal of toxins and correction of the underlying systemic disease: often identifying and treating the underlying metabolic problems resolve the neuropathy.

Physiotherapy:

- All patients with peripheral neuropathy may be benefited with physical therapy, under proper guidance. This therapy is directed as per individual requirement, depending on the deficit.

- Some external support like braces, cane, walker or wheel chair is also necessary in severe neuropathic weakness

Proper foot care:

Surgery

- If your neuropathy is caused by pressure/injury/tumor on nerves, surgery may be the curative treatment, e.g.; carpal tunnel syndrome.



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