Peripheral Neuropathy

Peripheral neuropathy refers to disorders affecting the nerves that leave our spine, which consists of motor or sensory neurons, nerve roots, plexuses and peripheral nerves. Motor nerves control movements of all muscles under conscious control. Sensory inputs (e.g. heat, cold and touch) from skin receptors are conveyed to the brain via the sensory nerves. The clinical presentation will depend on the type of nerve fibers affected. Motor nerve damage causes weakness and sometimes painful cramps and muscle twitching. Sensory nerve damage causes a decrease in the appreciation of pinprick, light touch or vibration sensations on the hands and feet. It may also cause unsteadiness when walking. Pain receptors can become over sensitised resulting in spontaneous burning pain, discomfort to light touch (allodynia) and hypersensitivity to pain (hyperalgesia).

There are many causes of peripheral neuropathy, both inherited and acquired. Inherited neuropathies are due to inborn defects in the genetic code and are collectively known as Charcot-Marie-Tooth (CMT) disease.

Causes of acquired peripheral neuropathy include the following:

- This can be from trauma such as fractures or from acute compression such as "Saturday night" palsy. Peripheral nerves are also prone to compression at certain anatomic sites. This is known as entrapment neuropathy. A common example is Carpal Tunnel Syndrome (CTS). In this condition, the median nerve gets compressed as it passes through a narrow passageway in the wrist (carpal tunnel).

- Diabetes mellitus and renal failure. Vitamin B12 deficiency and chronic alcohol abuse.

- Rheumatoid arthritis. Human Immunodeficiency Virus (HIV) and leprosy.

- Exposure to heavy metals like lead, radiation and chemotherapy drugs like Cisplatin.

Your doctor will perform a thorough clinical evaluation to determine the part of the peripheral nervous system that is affected, the likely cause and then order the appropriate investigations as listed below. Electromyography (EMG). This is an important investigation that will help to localize, characterize the nature and severity of the peripheral neuropathy. The first part of EMG involves stimulating the peripheral nerves and recording its electrical signals. The second part involves inserting a very fine needle into the limb or back muscles and recording their motor activities. To screen for an underlying cause, e.g. diabetes, vitamin deficiencies, abnormal proteins in blood and antibodies. In certain types of hereditary neuropathy, blood samples may be sent for genetic confirmation.

Treatment will depend on underlying cause and the type of the neuropathy. For example, in diabetic neuropathy, treatment will be directed at achieving a normal blood sugar control as this will prevent further nerve damage. Symptomatic relief for neuropathic pain can usually be achieved by medication, such as amitriptyline and gabapentin. Immune-mediated neuropathies (e.g. CIDP), are treated with either
intravenous immune globulin (IVIG), or steroids. IVIG is pooled donor plasma which contains normal antibodies that can temporarily counteract the abnormal ones in the body. Steroids will help to suppress an abnormal immune response that attacks the nerve. Surgical decompression may benefit those with entrapment neuropathy, e.g. carpal tunnel syndrome.

**Living With The Condition**
In most patients, symptoms and functional impairment can be managed and normal life expectancy is expected unless there is a co-existent systemic disease. One should adopt a healthy lifestyle so as to encourage nerve regeneration. Active and passive forms of exercise can improve muscle strength and prevent muscle wasting in paralyzed limbs. Meticulous foot care is also important, especially in diabetic polyneuropathy. Mechanical aids can help to reduce pain and improve function. Hand or foot braces can compensate for muscle weakness or alleviate nerve compression.

**Follow these helpful safety hints:**
1. Examine your feet and skin daily to detect any cuts or bruises.
2. Take care of your feet. Wear loose cotton socks and protective shoes with good support, padding and low heels.
3. Keep heavy bed covers off of your feet to avoid pain.
4. Take extra care when walking on uneven surfaces to prevent falls. Clear obstacles from walkways, and remove throw rugs and extension cords.
5. Have well-lighted spaces to avoid stumbling or falling (leave a light on at night).
6. Adjust the water heater temperature to avoid burns. Test your bathing or washing water with your elbow rather than with your fingers for a more accurate gauge of the temperature.
7. Use protective gloves when you wash dishes. Use potholders or mitts for handling warm or hot dishes when you cook.
8. Avoid sudden movements. Take time when getting up from a lying or seated position.
9. Use railings for support as you go up and down stairs.
10. Consider the use of a cane if you are unsteady on your feet.
11. Avoid leaning on elbows, crossing legs or repetitive activities of the hand and wrists.
12. If you have diabetes, maintain good control of the disease.
13. Avoid excessive alcohol use.
14. Consider a diet high in antioxidants (bright colored fruits and vegetables).

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