

Adult Neurology

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Neuropathy

Peripheral neuropathy is a general term referring to disorders of peripheral nerves. The peripheral nervous system is made up of the nerves that branch out from the spinal cord to all parts of the body. Peripheral nerve cells have three main parts: cell body, axons and dendrites (nerve/muscle junctions). Any part of the nerve can be affected, but damage to axons is most common. The axon transmits signals from nerve cell to nerve cell or muscle. Most axons are surrounded by a substance called myelin, which facilitates signal transmission. Some types of neuropathy can affect the myelin coating of nerves.

Peripheral neuropathy can be associated with poor nutrition, a number of different medical conditions (including diabetes), Lyme disease, and pressure or trauma. In approximately 50% of people who suffer from this disorder, no specific cause is ever identified. In those people for whom a cause is identified, diabetes is the most common cause. Nearly 60% of all people with diabetes suffer from diabetic polyneuropathy. Peripheral neuropathy affects at least 20 million people in the United States.

Diagnosis of Neuropathy:

It is important to determine the cause of the neuropathy as quickly as possible to reduce the risk for permanent nerve damage. Definitive diagnosis of a neuropathy involves getting a detailed history, doing a physical and neurological examination, and doing an **EMG test**. This is an electrical nerve and muscle test which gives additional information about the nature and severity of the neuropathy. The test consists of two parts: nerve conduction velocity studies (NCV), and electromyography (EMG).

Nerve conduction velocity studies record the speed at which impulses travel through nerves and measure electrical responses. **EMG** records electrical activity in muscle tissue and is used to distinguish neuropathy from muscle disorders (myopathy). These tests often are used in combination and are referred to as **EMG/NCV studies**. When EMG/NCV studies are inconclusive, nerve, skin, or muscle biopsy may be performed to confirm the neuropathy diagnosis. Biopsy involves removing nerve, skin, and/or muscle tissue for microscopic evaluation and chemical analysis. Sometimes other tests are necessary to determine the underlying cause of the neuropathy and to rule out other conditions.