

Diabetic Neuropathy and Elements of the Foot Exam

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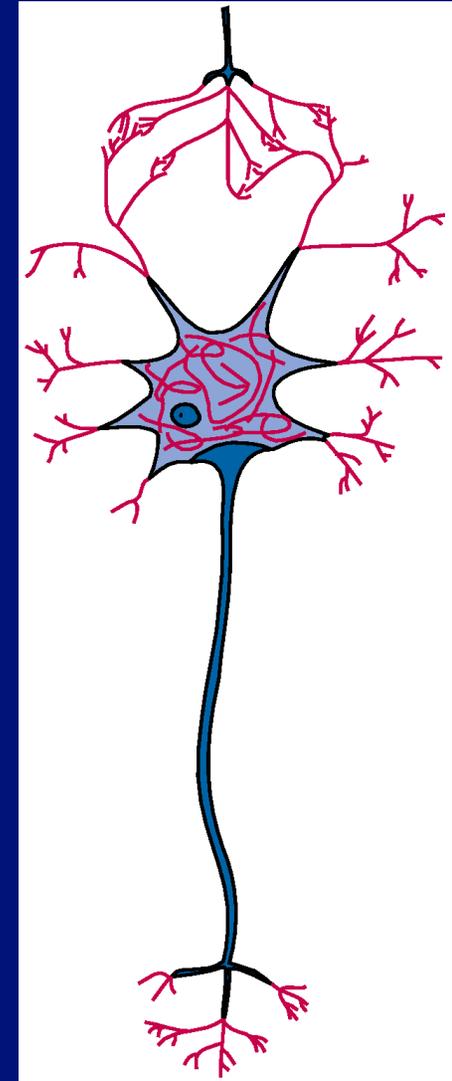
Objectives

At the end of the presentation the participant will be able to:

- **Define the risk factors associated with diabetic neuropathy.**
- **Define the classifications of diabetic neuropathy.**
- **Illustrate the treatment options for the various classifications.**
- **Complete a foot assessment.**

Diabetic Neuropathy

- About 60-70% of people with diabetes have mild to severe forms of nervous system damage, including:
 - Impaired sensation or pain in the feet or hands
 - Slowed digestion of food in the stomach
 - Carpal tunnel syndrome
 - Other nerve problems
- More than 60% of nontraumatic lower-limb amputations in the United States occur among people with diabetes.



Risk Factors

- **Glucose control**
- **Duration of diabetes**
- **Damage to blood vessels**
- **Mechanical injury to nerves**
- **Autoimmune factors**
- **Genetic susceptibility**
- **Lifestyle factors**
 - **Smoking**
 - **Diet**

Classification of Diabetic Neuropathy

- **Symmetric polyneuropathy**
- **Autonomic neuropathy**
- **Polyradiculopathy**
- **Mononeuropathy**

Symmetric Polyneuropathy

- **Most common form of diabetic neuropathy**
- **Affects distal lower extremities and hands (“stocking-glove” sensory loss)**
- **Symptoms/Signs**
 - **Pain**
 - **Paresthesia/dysesthesia**
 - **Loss of vibratory sensation**



Cell metabolism



Neuropathic ulcer on heel

Diagnostic Tests

- **Assess symptoms - muscle weakness, muscle cramps, prickling, numbness or pain**
- **Comprehensive foot exam**
 - **Skin sensation and skin integrity**
 - **Quantitative Sensory Testing (QST)**
 - **X-ray**
- **Nerve conduction studies**
- **Electromyographic examination (EMG)**

Complications of Polyneuropathy

- **Ulcers**
- **Charcot arthropathy**
- **Dislocation and stress fractures**
- **Amputation - Risk factors include:**
 - **Peripheral neuropathy with loss of protective sensation**
 - **Altered biomechanics (with neuropathy)**
 - **Evidence of increased pressure (callus)**
 - **Peripheral vascular disease**
 - **History of ulcers or amputation**
 - **Severe nail pathology**

Treatment of Symmetric Polyneuropathy

- **Glucose control**
- **Pain control**
 - **Tricyclic antidepressants**
 - **Topical creams**
 - **Anticonvulsants**
- **Foot care**

Essentials of Foot Care

- **Examination**
 - Annually for all patients
 - Patients with neuropathy - visual inspection of feet at every visit with a health care professional
- **Advise patients to:**
 - Use lotion to prevent dryness and cracking
 - File calluses with a pumice stone
 - Cut toenails weekly or as needed
 - Always wear socks and well-fitting shoes
 - Notify their health care provider immediately if any foot problems occur

Treatment

- **Antidepressant drugs**
 - amitriptyline 25-150 mg qhs
 - doxepin
 - duloxetine
- **Antiseizure medications**
 - gabapentin
 - pregabalin 50-100 mg tid (decrease in CKD)
 - carbamazepine
 - Valproate

Treatment

- **Capsaicin cream**
- **Lidocaine cream**
- **TENS unit** (Transcutaneous Electrical Nerve Stimulation)
- **Cannabinoids**

Treatment of infections

- **Wound care**
- **Anitbiotics**

Polyradiculopathy

- **Lumbar polyradiculopathy (diabetic amyotrophy)**
 - Thigh pain followed by muscle weakness and atrophy
- **Thoracic polyradiculopathy**
 - Severe pain on one or both sides of the abdomen, possibly in a band-like pattern
- **Diabetic neuropathic cachexia**
 - Polyradiculopathy + peripheral neuropathy
 - Associated with weight loss and depression

Polyradiculopathy, cont.

- **Polyradiculopathies are diagnosed by electromyographic (EMG) studies**
- **Treatment**
 - **Foot care**
 - **Glucose control**
 - **Pain control**

Mononeuropathy

- **Peripheral mononeuropathy**
 - **Single nerve damage due to compression or ischemia**
 - **Occurs in wrist (carpal tunnel syndrome), elbow, or foot (unilateral foot drop)**
 - **Symptoms/Signs**
 - **numbness**
 - **edema**
 - **pain**
 - **prickling**

Mononeuropathy, cont.

- **Cranial mononeuropathy**
 - **Affects the 12 pairs of nerves that are connected with the brain and control sight, eye movement, hearing, and taste**
 - **Symptoms/Signs**
 - **unilateral pain near the affected eye**
 - **paralysis of the eye muscle**
 - **double vision**
- **Mononeuropathy multiplex**

Mononeuropathy, cont.

- **Treatment**
 - **Foot care**
 - **Glucose control**
 - **Pain control**

