Electrodiagnosis & Rehabilitation Update

**Critical Information**

1. History and physical examination.
2. True weakness, or systemic disease
3. Central Nervous system (CNS), or Peripheral Nervous system (PNS) lesion

**Examination**

A thorough evaluation includes:

1. Affect, mood and behavior.
2. Quality of speech.
3. Cranial nerve function.
4. Posture and gait.
7. If spasticity, clonus or ataxia.
8. Presence and location of fasciculations.
9. Location and type of sensory abnormality.
10. Muscle stretch reflexes (hyper vs hypotensive)

**Significance of Findings**

**Cortical Lesion**
- Most often unilateral and spastic
- Skilled functions are most severely impaired (↓ coordination)
- Tone and stretch reflexes are increased on the involved side
- Screen for associated abnormalities: visual field cut, sensory neglect, aphasia/dysphasia

**Spinal Cord Lesion**
- Unilateral or bilateral, but an upper limit of weakness
- Other evidence of cord dysfunction: sensory level, crossed sensory deficits, spine tenderness, local hyperpathia at root level
- Frequently bowel and/or bladder dysfunction

**Motor Neuron Disease**
- Muscle wasting (1° distally)
- Progresses to bilateral and diffuse
- Corticospinal tract/ UMN findings
- Fasciculations
- Spares ocular & sphincter muscles
- Normal mentation and sensation
- Tendon reflexes normal or ↑

**Peripheral Neuropathy**
- Distal predominance (legs > arms)
- Prominent sensory symptoms
- ↓ tendon reflexes (usually)

**Muscle Disease**
- Proximal predominance
- No sensory abnormalities
- Preserved tendon reflexes (usually)

**Pathological Patterns - Numbness, Tingling and Weakness**

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**Generalized Weakness**
- Neuropathies
- Myopathies
- Motor Neuron Disease
- Neuromuscular Junction Disorders

**Diabetic Polyradiculopathy (Diabetic Amyotrophy)**
- Neuritic pain in the lower back, hip, groin or thigh
- Weakness especially effecting the quadriceps & hip flexors
- Paresthesias & sensory loss of the thigh and medial leg
- Tendency to spread & involve the contralateral limb
- Radiculopathy is thought secondary to root ischemia rather than compression
- Neuroimaging studies may be misleading particularly in older diabetics, as degenerative abnormalities which may otherwise be asymptomatic can be encountered

Needle EMG study frequently demonstrates widespread abnormalities in the L234 root distributions of the symptomatic leg, and sometimes less severe abnormalities in the asymptomatic leg as well.

**Needle EMG study**

Electrodiagnostic study is essential in the evaluation and treatment of persistent numbness and tingling thought secondary to a peripheral etiology.