

## Neurology – Numbness, Tingling, and Altered Sensation

### Whiteboard Animation Transcript

with Line Jacques, MD

Numbness, tingling and altered sensations are abnormal sensations and often overlap. They can occur anywhere but tend to be felt in the extremities – arms, hands, fingers, legs, or feet.

These sensations can be caused by a wide range of pathologies including:

#### Central

- Spinal cord injury
- TIA/CVA
- Tumours
- Multiple Sclerosis
- Infections
- Migraine

#### Peripheral

- Polyneuropathies
- Peripheral entrapment
- Radiculopathies
- Immune mediated

#### Other

- Dermatological
- Toxins
- Psychogenic

#### History

It is helpful to characterize the abnormal sensation in the following manner

- What is the patient experiencing? Are there negative symptoms (i.e. numbness/loss of sensation), positive symptoms (tingling/ abnormal sensation) or both?
- Are the symptoms from the brain, spinal cord, nerve root, or peripheral nerve and branches.
- Where is the sensation occurring? What is its distribution?

- Was the onset fast or gradual and how has it progressed?
- What precipitates the sensation?
- What symptoms are associated with the sensation?
- What is the clinical context?

## **Evaluation**

Examination of abnormal sensation begins by identifying areas of diminished or altered sensation and demarcating their borders. Assessing deep tendon reflexes is important because an intact reflex requires both sensory and motor function. It is also important to differentiate between spinothalamic and dorsal column deficits.

Central causes such as stroke often produce unilateral symptoms and loss of sensation. Screening for stroke risk factors, imaging of the head, and specific labs such as ESR and ANA may be considered alongside routine blood work.

Diseases of peripheral nerves tend to be focal or bilateral and manifest as tingling or abnormal sensation with or without pain. Investigations include routine labs as well as HbA1c, ESR, ANA, Vitamin B12 and other autoimmune markers as necessary (i.e. ANCA).

Because more than half of afferent neurons may be affected before sensory deficits are detected on examination, nerve conduction test may be indicated to evaluate subclinical pathology or determine the extent of nerve damage. Nerve and muscle biopsies are also useful as indicated.