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New Approaches to Nosology and Diagnosis of Neuropathic Pain: the Perspective of the Neurologist

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Nosology of Neuropathic Pain

What are we talking about?

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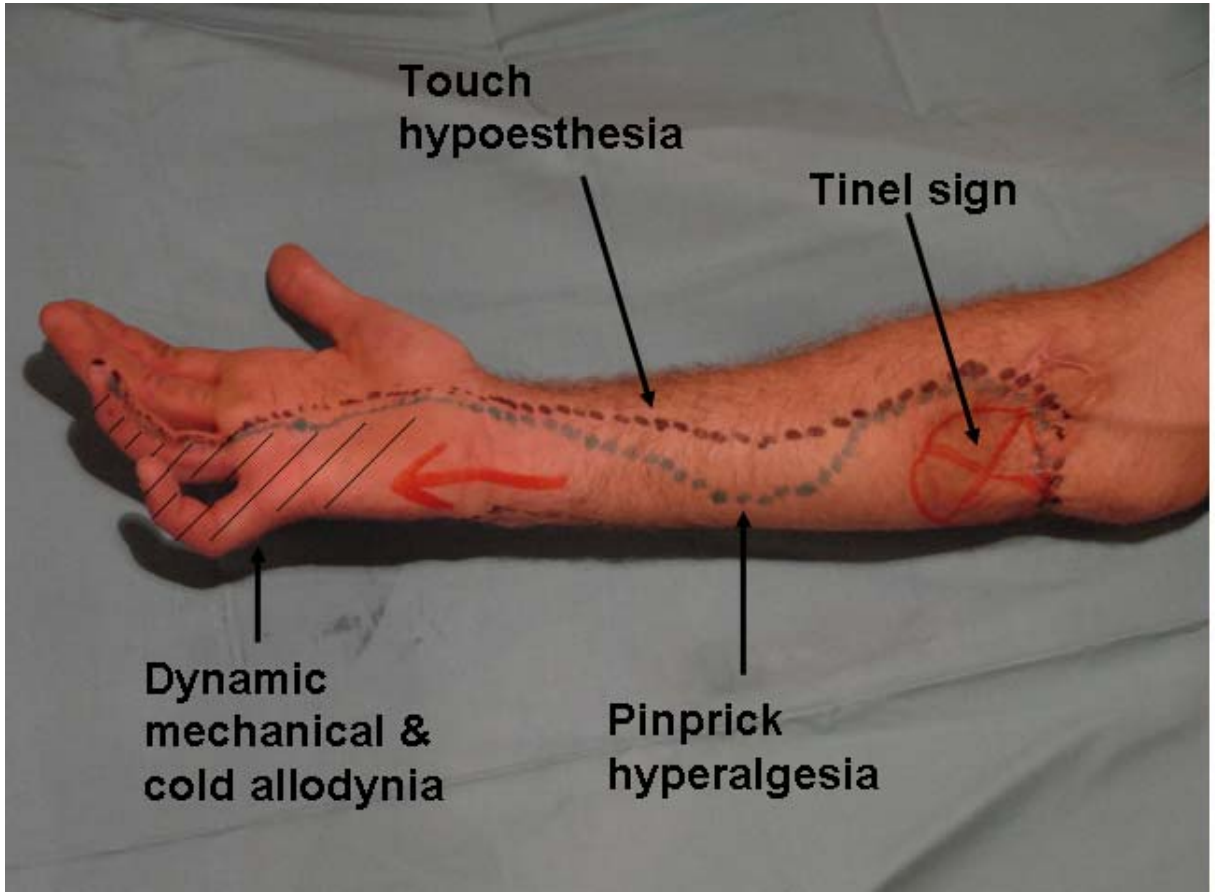
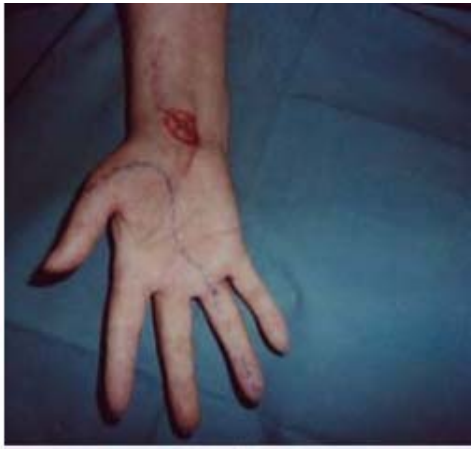
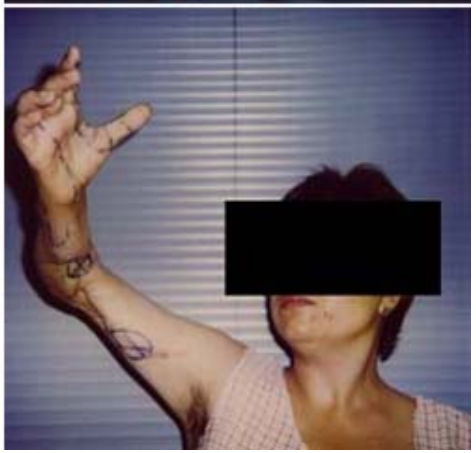
Group of positive sensory phenomena







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Signs & symptoms in humans (probably a partial list)

- Spontaneous burning pain
- Spontaneous dysesthetic pain
- Spontaneous pain other qualities
- Mechanical allodynia dynamic
- Mechanical allodynia static
- Mechanical hyperalgesia
- Heat allodynia
- Heat hyperalgesia
- Cold allodynia
- Cold hyperalgesia
- Touch-evoked dysesthesias
- Touch-evoked paresthesias
- Tinel sign evoking tingling
- Tinel sign evoking burning
- Referred pain
- Distorted quality of sensation
- Mislocalization of sensations
- Abnormal temporal summation

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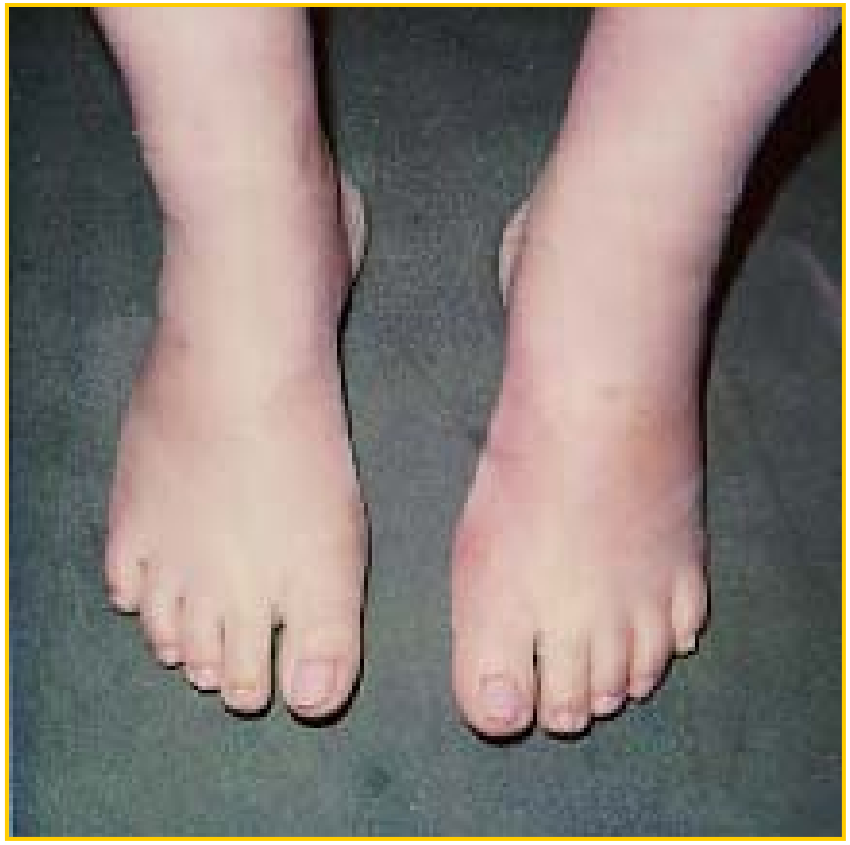
Case # 1

- Female, 56 years
- DM II for 4 years
- Minimal sensory polyneuropathy
- Deep tendon reflexes present
- Spontaneous burning pain
- Hyperthermia and erythema
- Static mechanical hyperalgesia
- Heat hyperalgesia
- No tactile dysesthesias



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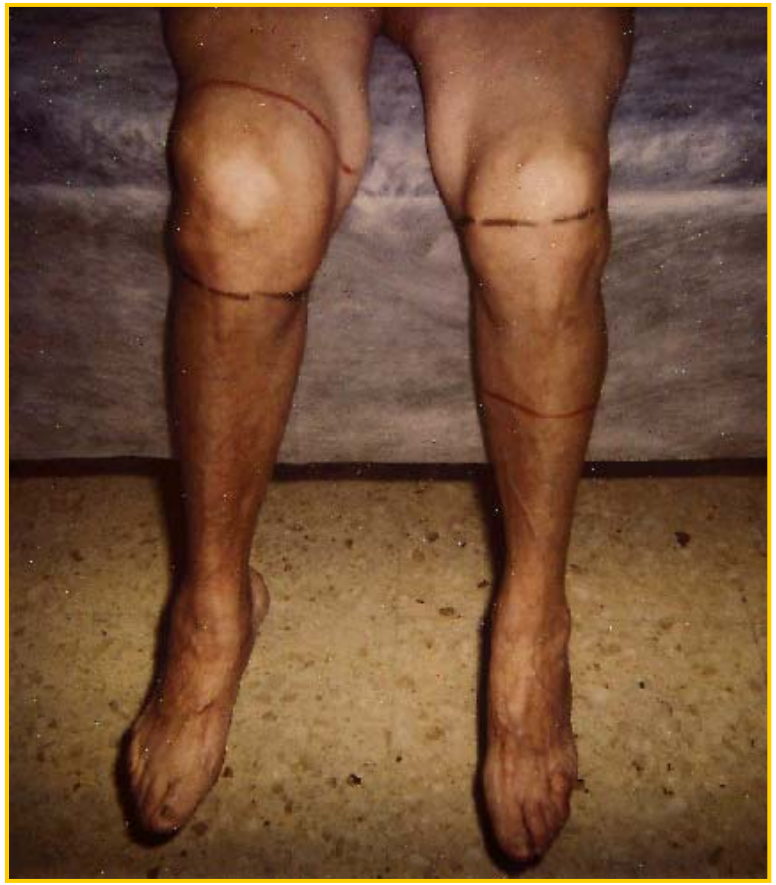
Case # 2

- Male, 76 years
- DM II for 4 years
- Severe axonal polyneuropathy
- Deep tendon reflexes absent
- Spontaneous dysesthetic pain
- Electric-like lancinating pain
- Cold skin
- No evoked symptoms touching the skin



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Observations

- Both patients had same disease in terms of etiology, duration
- Both complained of pain

However,

- Different quality of pain
- Different underlying pathology
- Different neurological and electrophysiological exam
- Probably, different therapeutic strategies

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Diagnosis of Neuropathic Pain

What are we going to use?
Questionnaires
Laboratory tools

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Several screening tools are available to help the identification of neuropathic pain

- Commonly used verbal descriptors may guide clinicians
- Several screening tools have been developed:
  - **Leeds Assessment of Neuropathic Symptoms and Signs (LANSS) scale**
  - **Douleur Neuropathique en 4 questions (DN4)**
  - **Neuropathic Pain Questionnaire (NPQ)**
- Some can be completed by the patient, saving time

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VIEWS & REVIEWS

Neuropathic pain

Redefinition and a grading system for clinical and research purposes

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R. Hughes, MD
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ABSTRACT

Pain usually results from activation of nociceptive afferents by actually or potentially tissue-damaging stimuli. Pain may also arise by activity generated within the nervous system without adequate stimulation of its peripheral sensory endings. For this type of pain, the International Association for the Study of Pain introduced the term neuropathic pain, defined as "pain initiated or caused by a primary lesion or dysfunction in the nervous system." While this definition has been useful in distinguishing some characteristics of neuropathic and nociceptive types of pain, it lacks defined boundaries. Since the sensitivity of the nociceptive system is modulated by its adequate activation (e.g., by central sensitization), it has been difficult to distinguish neuropathic dysfunction from physiologic neuroplasticity. We present a more precise definition developed by a group of experts from the neurologic and pain community: pain arising as a direct consequence of a lesion or disease affecting the somatosensory system. This revised definition fits into the nosology of neurologic disorders. The reference to the somatosensory system was derived from a wide range of neuropathic pain conditions ranging from painful neuropathy to central poststroke pain. Because of the lack of a specific diagnostic tool for neuropathic pain, a grading system of definite, probable, and possible neuropathic pain is proposed. The grade possible can only be regarded as a working hypothesis, which does not exclude but does not diagnose neuropathic pain. The grades probable and definite require confirmatory evidence from a neurologic examination. This grading system is proposed for clinical and research purposes. *Neurology*® ▪▪▪

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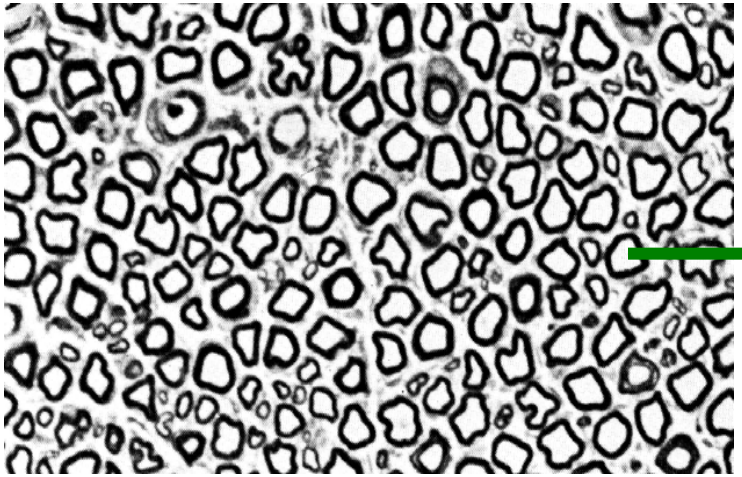
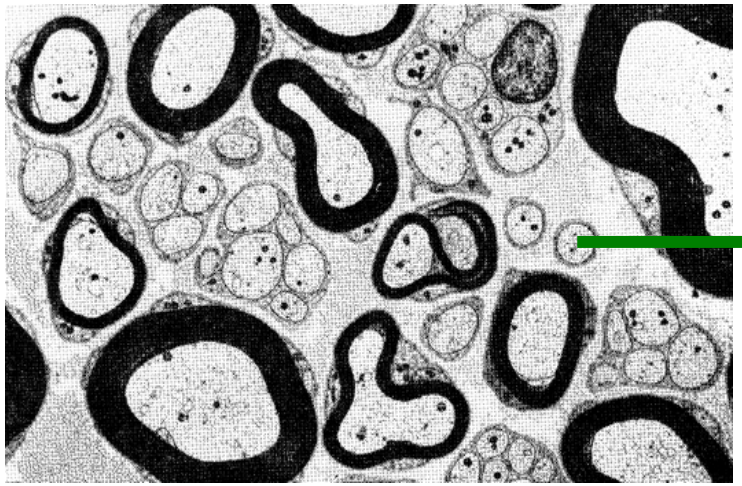
Types of axons



- EMG / NCS
- SSEP



- LEP
- QTT
- Other QST
- Thermography
- Microneurography

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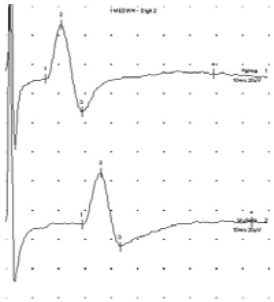
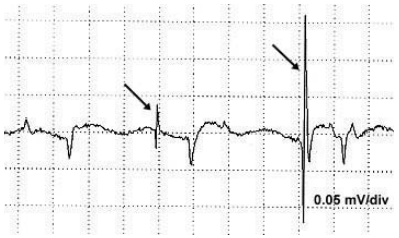
Nerve conduction studies – EMG Somatosensory evoked potentials





They **only** assess:

- Large myelinated fiber function
- Deficits

They **cannot** assess:

- Small myelinated and unmyelinated fiber function
- Positive sensory phenomena

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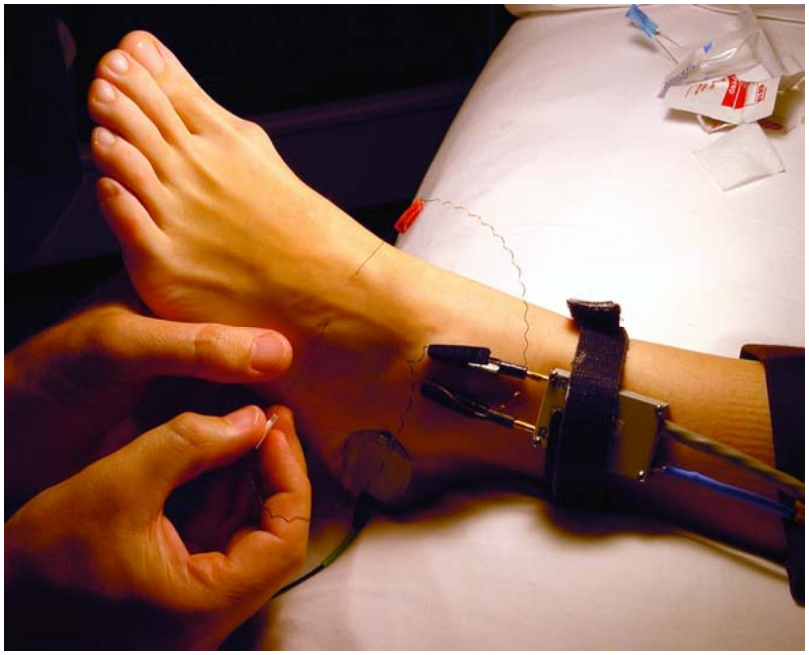
Laser evoked potentials

Microneurography



They **can** assess:

- Small myelinated (A-δ) and unmyelinated (C-fiber) function

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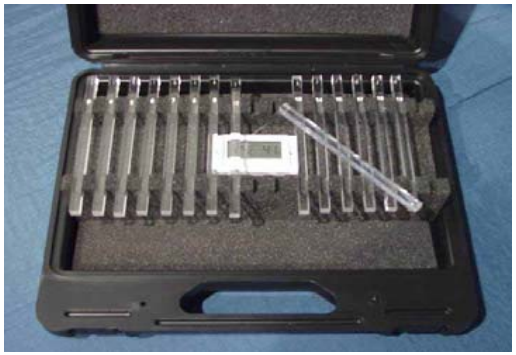
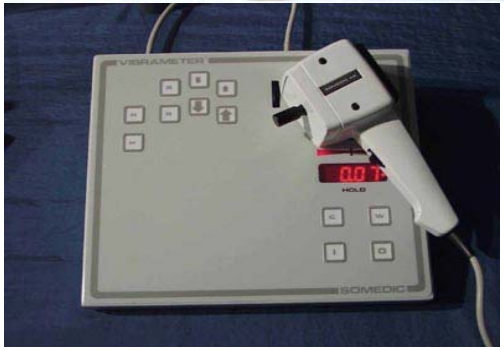
Quantitative thermotest

Other Quantitative Sensory Tests





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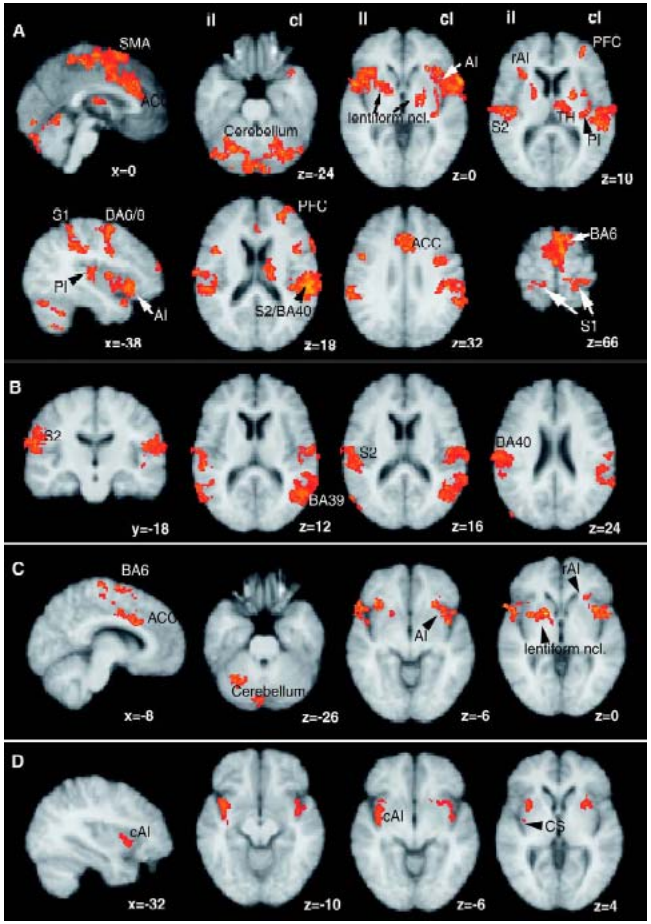
Functional imaging studies



Pro:

"We found that the magnitude of activation in the caudal anterior insula correlates with the perceived intensity of allodynic pain across subjects…"

Contra:

Some doubt of their utility as predictive tools

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European Journal of Neurology 2004, **11:** 153–162

SPECIAL ARTICLE/CME ARTICLE

EFNS guidelines on neuropathic pain assessment

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Keywords:
laser-evoked potentials, neuroimaging, neuropathic pain, nociceptive reflexes, psychometric measures, quality of life, skin biopsy

Received 3 March 2003
Accepted 3 November 2003

In September 2001, a Task Force was set up under the auspices of the European Federation of Neurological Societies with the aim of evaluating the existing evidence about the methods of assessing neuropathic pain and its treatments. This review led to the development of guidelines to be used in the management of patients with neuropathic pain. In the clinical setting a neurological examination that includes an accurate sensory examination is often sufficient to reach a diagnosis. Nerve conduction studies and somatosensory-evoked potentials, which do not assess small fibre function, may demonstrate and localize a peripheral or central nervous lesion. A quantitative assessment of the nociceptive pathways is provided by quantitative sensory testing and laser-evoked potentials. To evaluate treatment efficacy in a patient and in controlled trials, the simplest psychometric scales and quality of life measures are probably the best methods. A laboratory measure of pain that by-passes the subjective report, and thus cognitive influences, is a hopeful aim for the future.

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So…

We still need to agree on:

- **Splitting or lumping**
- **Definitions**
- **Diagnostic tests**

But…

We are making progresses:

- **In definitions**
- **In diagnostic tools**