European Society of Regional Anaesthesia & Pain Therapy
ESRA ITALIA

ESRA Italian Chapter
XXVIII CONGRESSO NAZIONALE

PRESIDENTE DEL CONGRESSO
Luciano Calderone

Dr.ssa Laura Demartini
ICSMaugeri, Pavia

# Peripheral neuropathic pain
# Differential diagnosis

MZ EVENTS

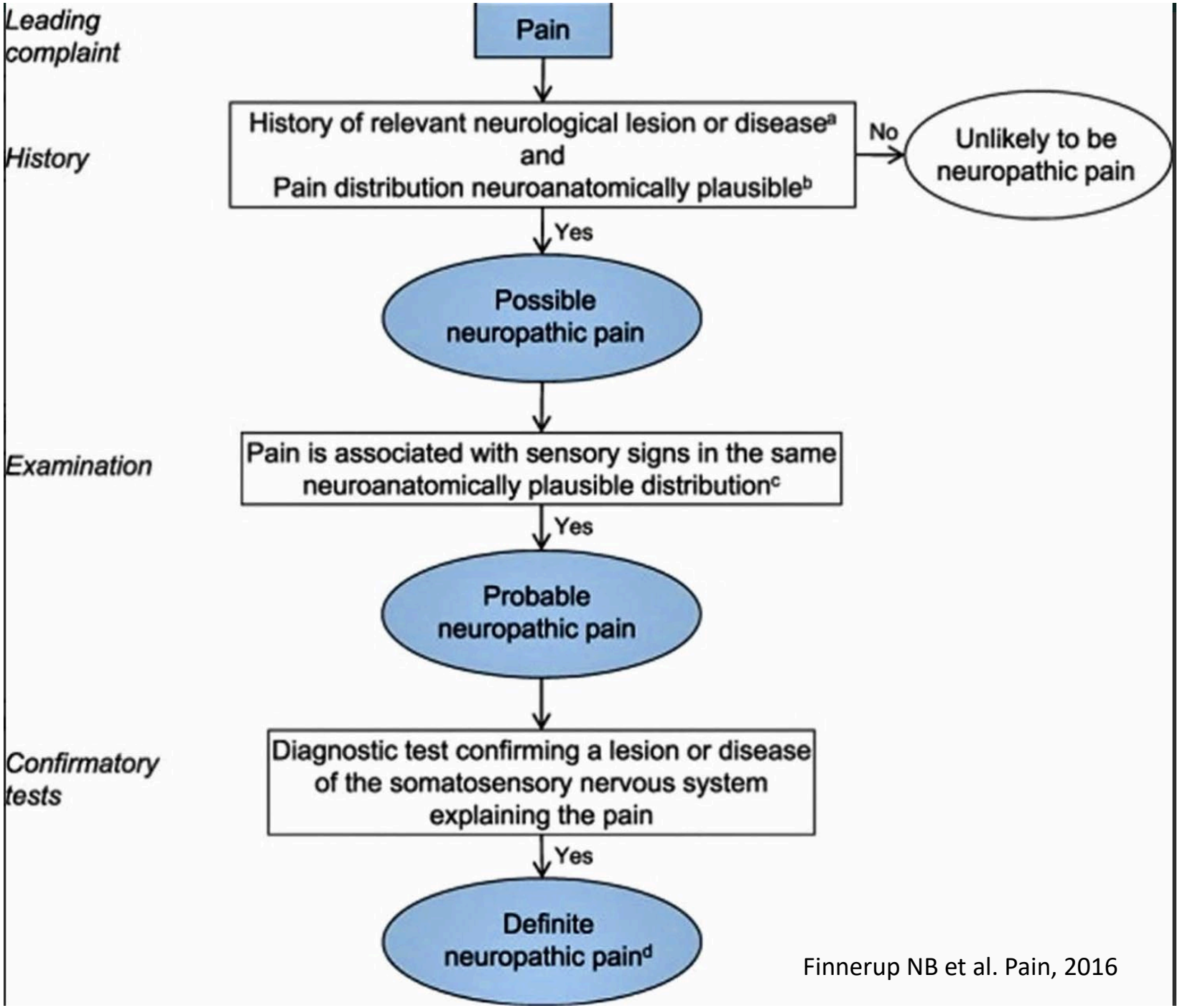


# Disclosures

Consultant for

- Abbott
- Boston Scientific

# Differential diagnosis neuropathic/nociceptive

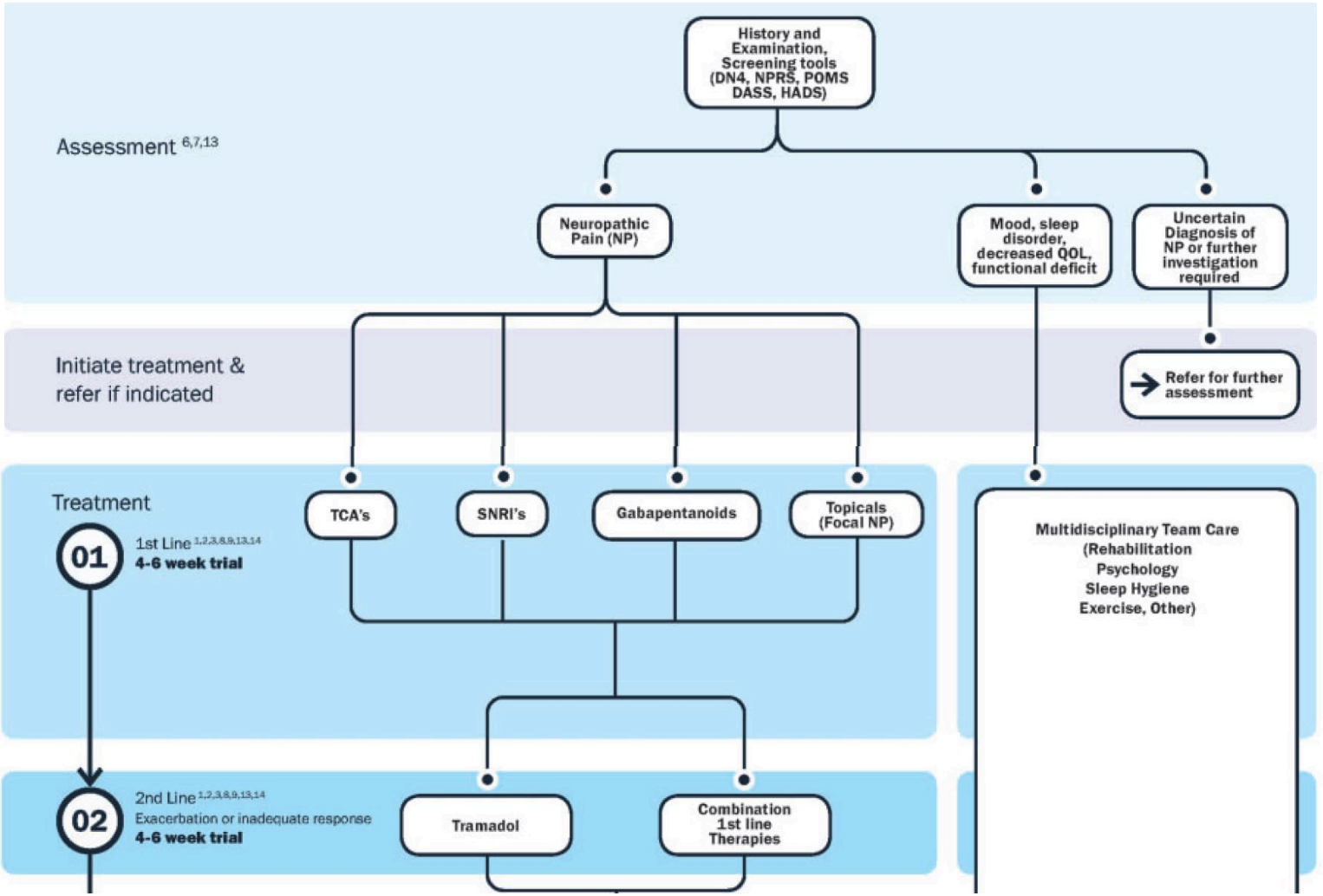



Finnerup NB et al. Pain, 2016

# A Comprehensive Algorithm for Management of Neuropathic Pain

**Daniel Bates, MD,* B. Carsten Schultheis, MD, PhD,† Michael C. Hanes, MD,‡ Suneil M. Jolly, MD,§,¶ Krishnan V. Chakravarthy, MD, PhD,‖,|||| Timothy R. Deer, MD,** Robert M. Levy, MD, PhD,†† and Corey W. Hunter, MD‡‡**

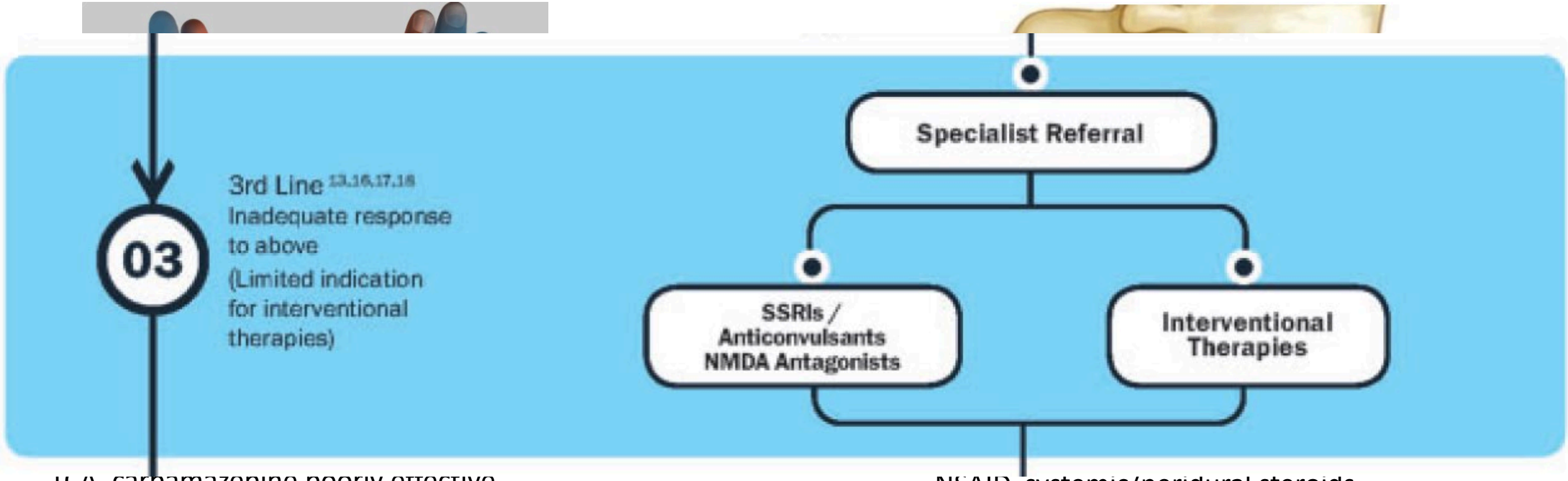
*Pain Medicine*, 20, 2019, S2–S12
doi: 10.1093/pm/pnz075
**Review Article**



# Differential diagnosis of peripheral neuropathic pain Etiological

- **Polyneuropathies:** metabolic, autoimmune, hereditary, idiopathic
- **Mononeuropathies:** due to entrapment, post-traumatic, post-surgical, amputation or continuity neuroma, multiple
- **Radicolopathies:** due to compression (+/- inflammation), infective, metabolic

# Etiological diagnosis is related to therapy?




TCA, carbamazepine poorly effective
Some benefits from steroids
Splint – Surgery

NSAID, systemic/peridural steroids
Week opioids
Intradiscal procedures- Surgery

Hui ACF et al. Europen Journal of Neurology. 2011.
Lyon C et al. J Fam Pract. 2016

Andrea M. Trescot
*Editor*

# Peripheral Nerve Entrapments

## Clinical Diagnosis and Management

EXTRAS ONLINE

Springer

# Differential diagnosis
# Pathogenetic mechanisms

- Since studies on the effectiveness of pharmacological therapies in neuropathic pain of various etiologies have demonstrated unsatisfactory responses, a therapeutic approach based on pathogenetic mechanisms has been proposed
- Forstenpointner et al propose to group patients in three main clusters based on sensory profiles (QST)
  - "Sensory loss": prevalence of negative signs to all stimulation modalities
  - "Thermal hyperalgesia": prevalence of positive signs (allodynia)
  - "Mechanical hyperalgesia": loss of thermal sensitivity (small fibers) and allo allodynia to mechanical stimuli

Forstenpointner J et al. JID 2018

# Bedside clinical evaluation

**Bedside sensory examination.**

| Modality | Bedside assessment |
|---|---|
| Touch | Cotton bud or ball, painter's brush |
| Vibration | Tuning fork |
| Pinprick | Pin, toothpick, cocktail stick |
| Cold | Cold metal, tube with cold water, cloth with surgical spirit, Lindblom roller[21] |
| Warm | Warm metal, tube with warm water, Lindblom roller[21] |

Finnerup NB et al. Pain, 2016

# From clusters to pathogenetic mechanisms

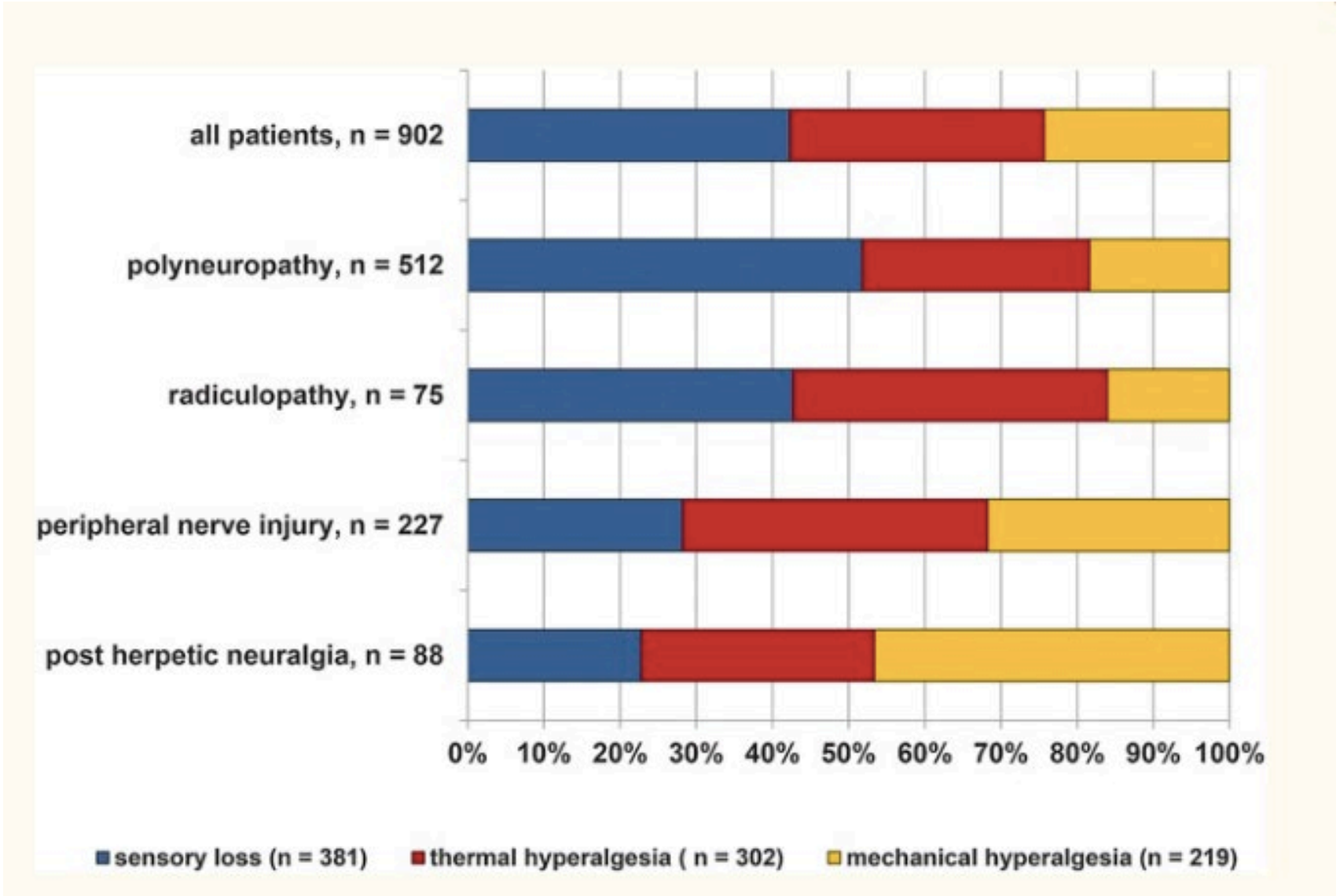
**Sensory loss**: loss of small and large diameter fibre function, paradoxical heat sensation to QST. Spontaneous pain can be due to ectopic action potentials generated in proximal sites of lesioned nociceptors: dorsal root ganglion or deafferented central neurons

**Thermal hyperalgesia:** function of small and large fibres relatively preserved in combination with thermal allodynia and minimal mechano-dynamic allodynia (DMA). Spontaneous hyperactivity of preserved nociceptors can be responsable for spontaneous pain and can induce second order neurons sensitization

**Mechanical Hyperalgesia:** predominant loss of function of small and medium diameter (thermal hypoesthesia) associated with pressure hyperalgesia, pinprick hyperalgesia, and severe DMA. Central sensitization is prevalent for mechanical stimuli. Iin this group, spontaneous pain is related to spontaneos activity in the nociceptive system, in the periphery or in the spinal cord

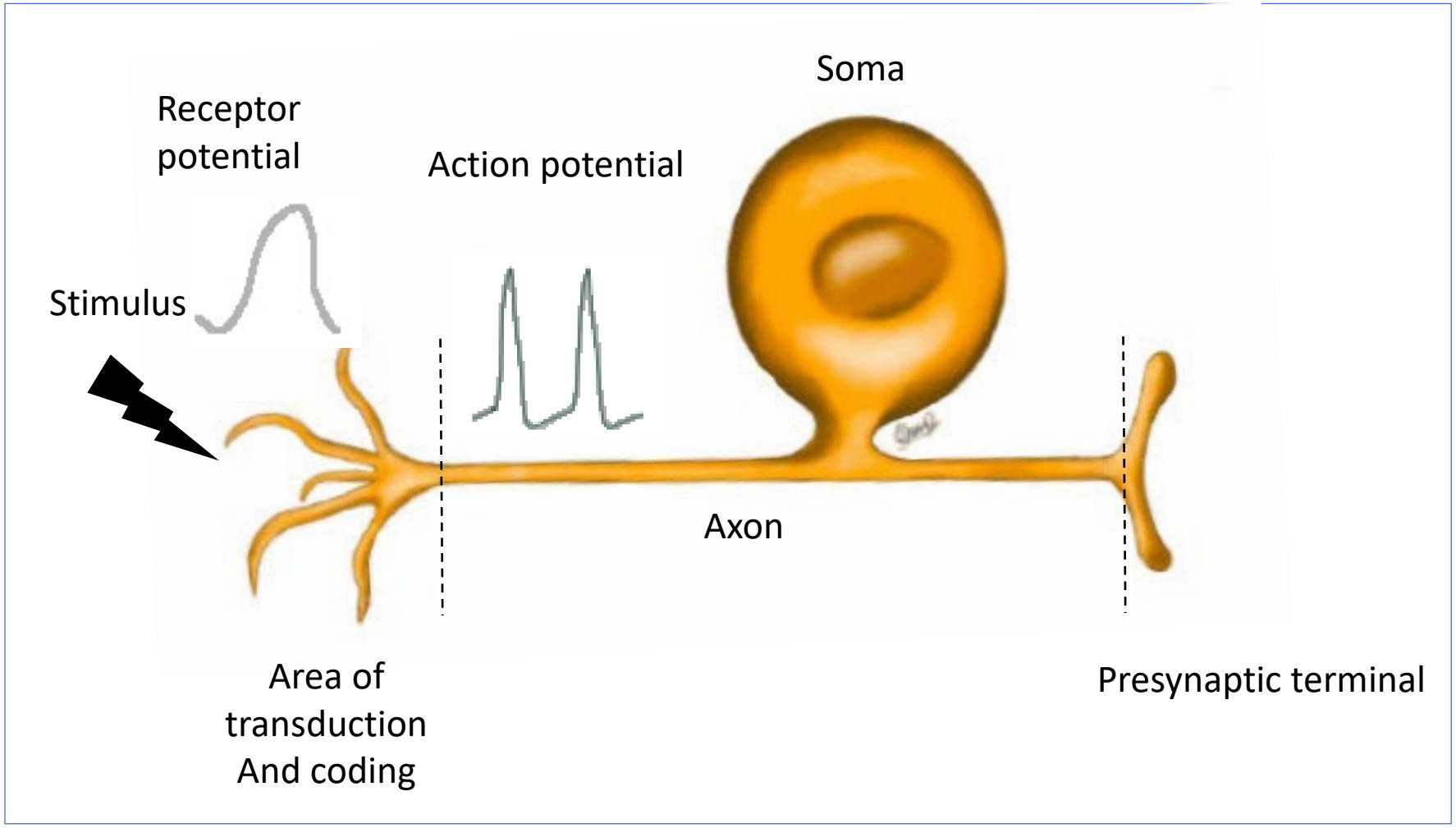
R. Baron et al.·Pain, 2017; 58: 261–272

# Sensory profiling and etiology




R. Baron et al.·Pain, 2017; 58: 261–272

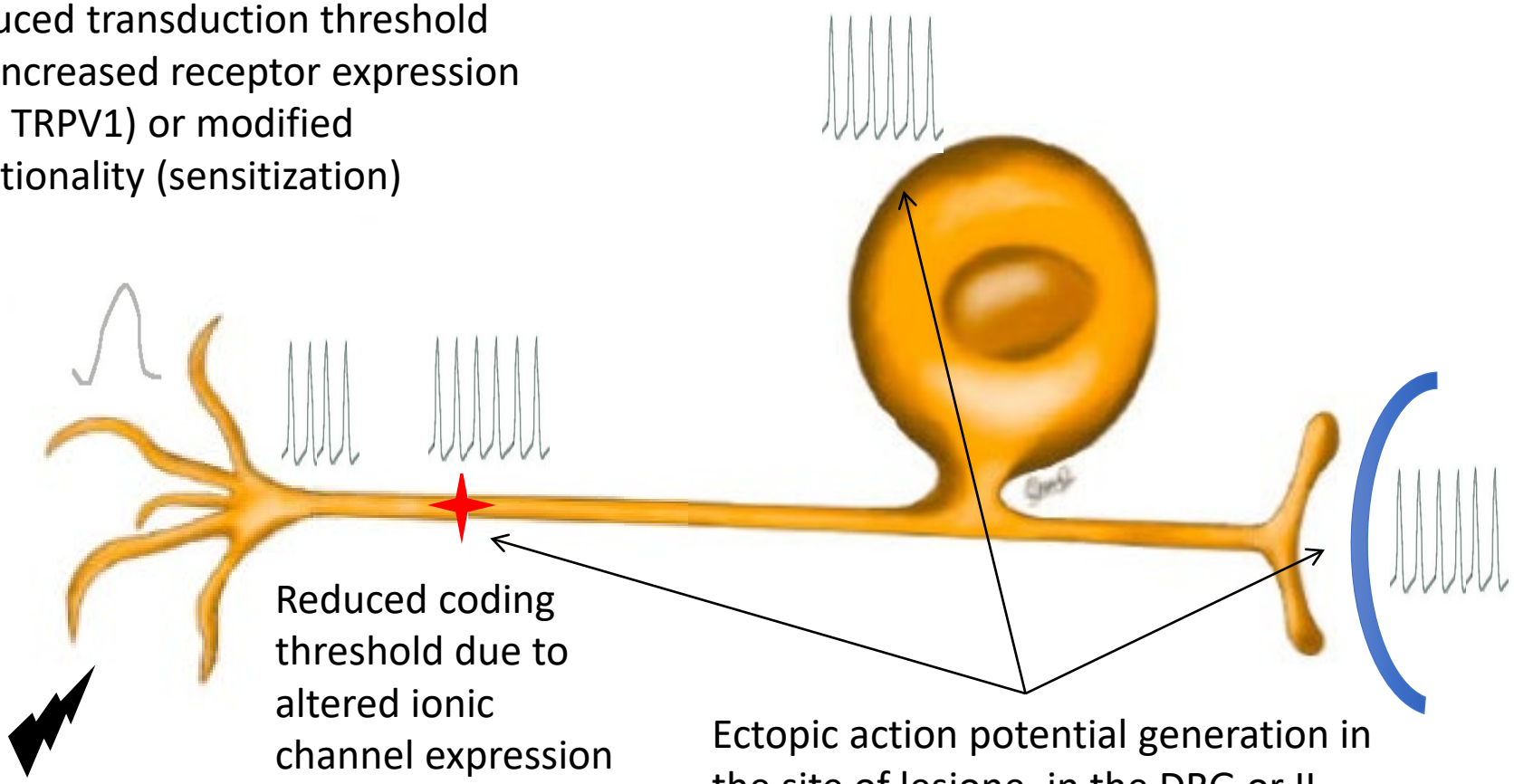
# From physiology to pathophysiology




Laura Demartini. All'origine del dolore

# Sites of possible functional alterations

Reduced transduction threshold
For increased receptor expression
(eg.: TRPV1) or modified
functionality (sensitization)

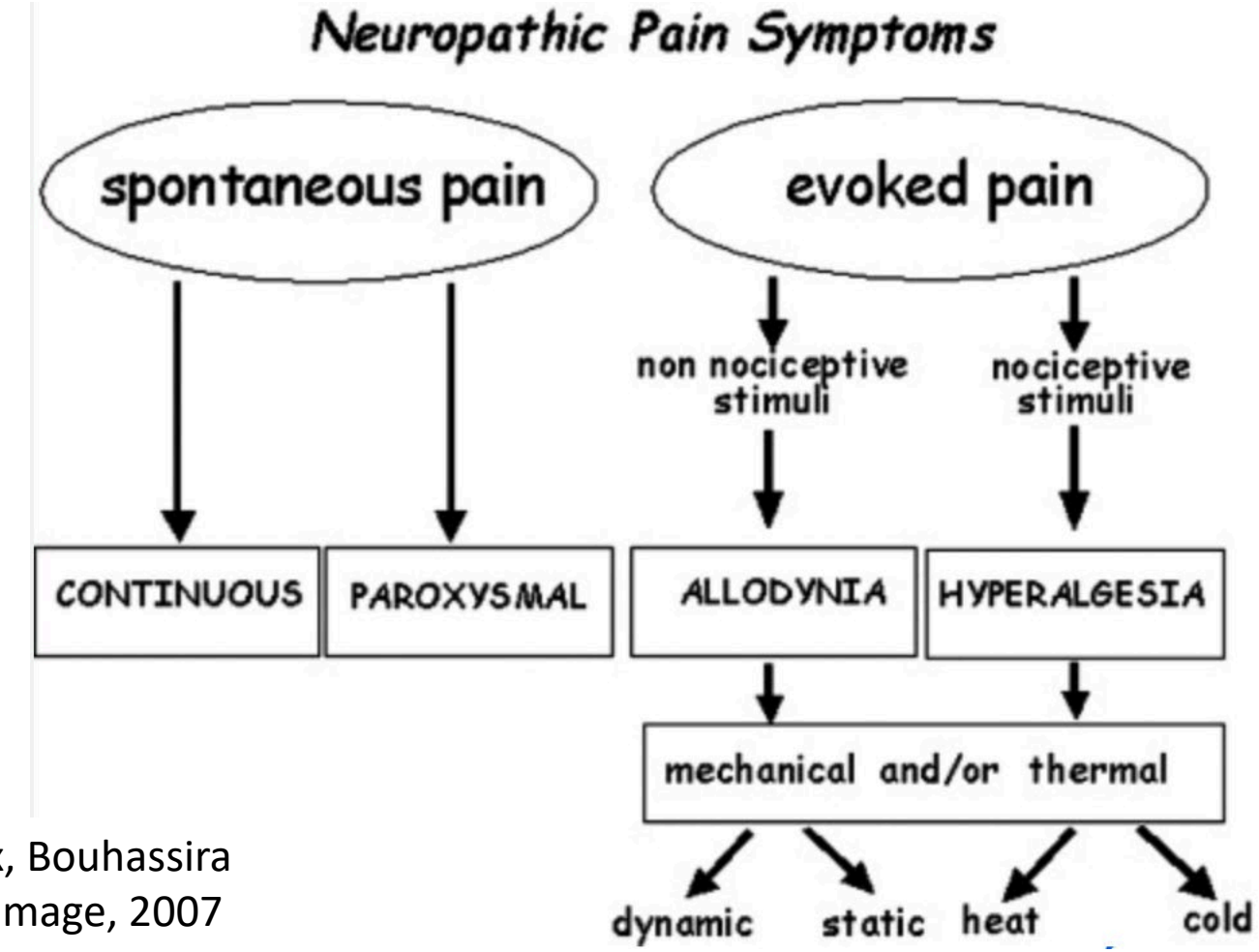


Reduced coding
threshold due to
altered ionic
channel expression

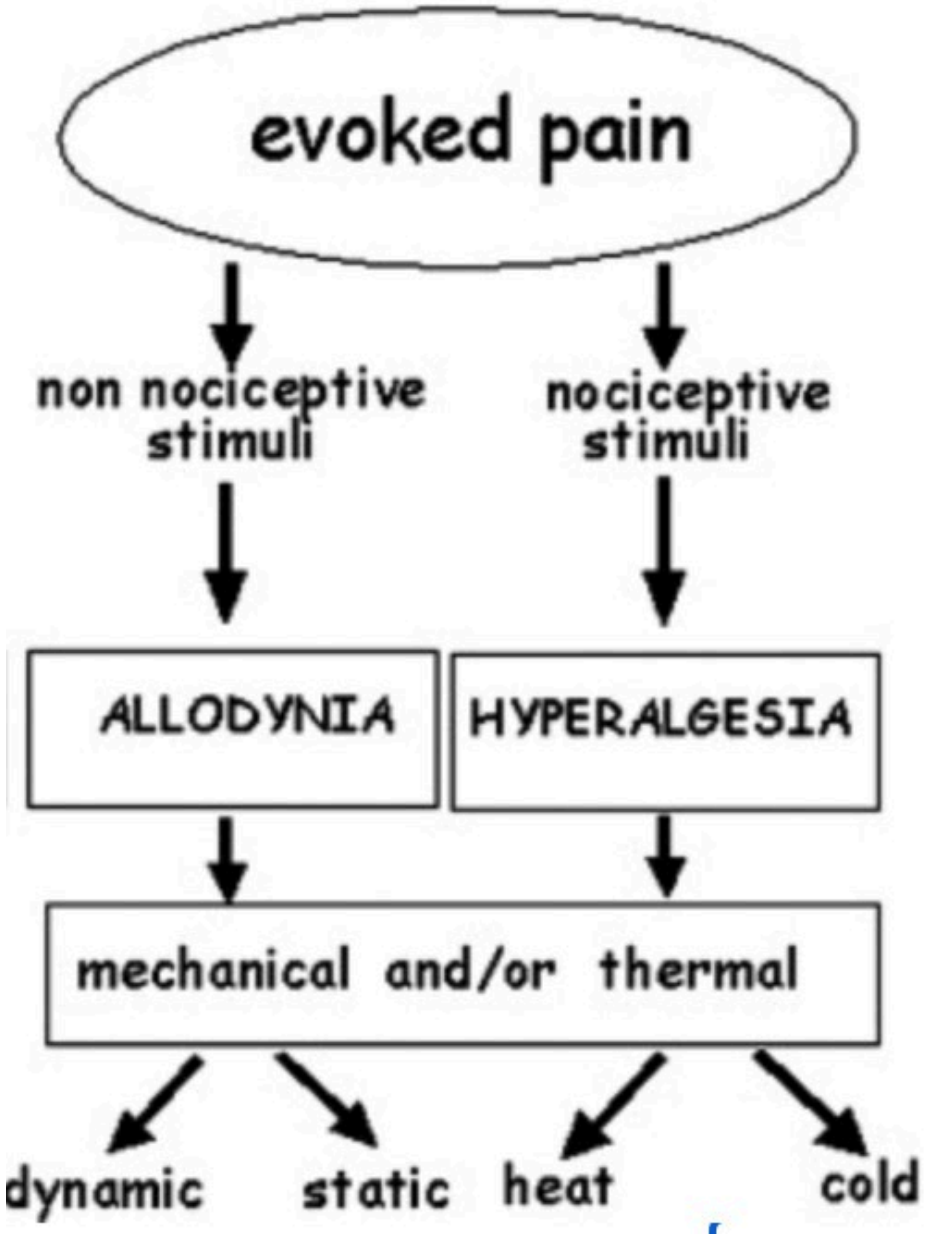
Ectopic action potential generation in
the site of lesione, in the DRG or II
order neuron

Spontaneous pain or
evoked by non-noxious
stimuli

# Proceeding in differential diagnosis
# The stimulating factors




Moisset x, Bouhassira D. Neuroimage, 2007




# Mechanical stimuli in the peripheral territory, on the ectopic site or the ganglion

Non-painful mechanical stimuli, eg.: disk pressure on a lesioned root or ganglion (ectopic site) or Tinel on the median nerve

Inflammatory mediators and/or hypoxia make the ectopic site hypersensitive to stimuli. Body temperature can became an effective stimulus

# For a targeted therapy

- Hypothesize the diagnosis of neuropathic pain based on the diagnostic criteria[1,2]
- Identify the site of injury
- Identify the pathogenetic mechanisms and the site of altered functionality
- Identify the presence of stimulating factors or sensitization
- Choose therapies base on mechanisms and dìsite of action

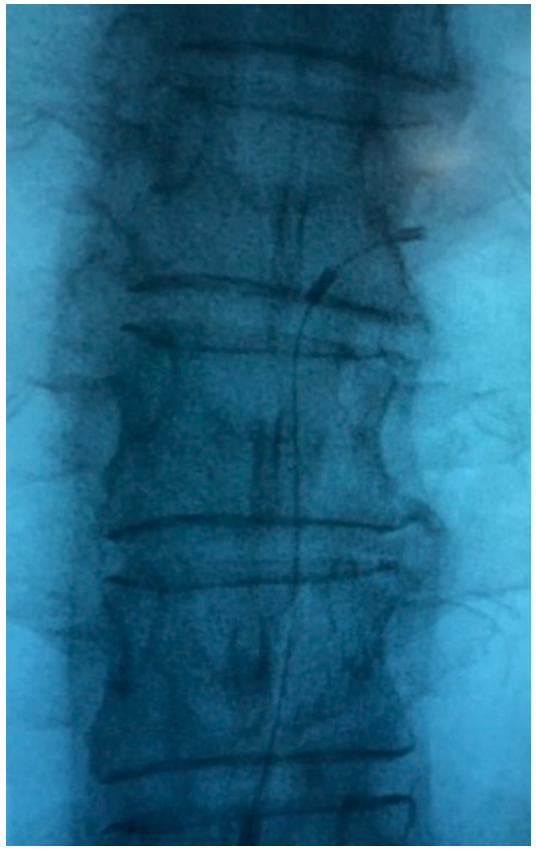

1) Treede RD et al. Neurology 2008.
2) Finnerup Nd et al. Pain, 2016.

# Diagnostic tools

- Identify the site of injury
- Identify the pathogenetic mechanisms and the site of altered functionality
- Identify the presence of stimulating factors or sensitization

Diagnostic/therapeutic injections with local anesthetic and steroid

# Diagnostic instruments

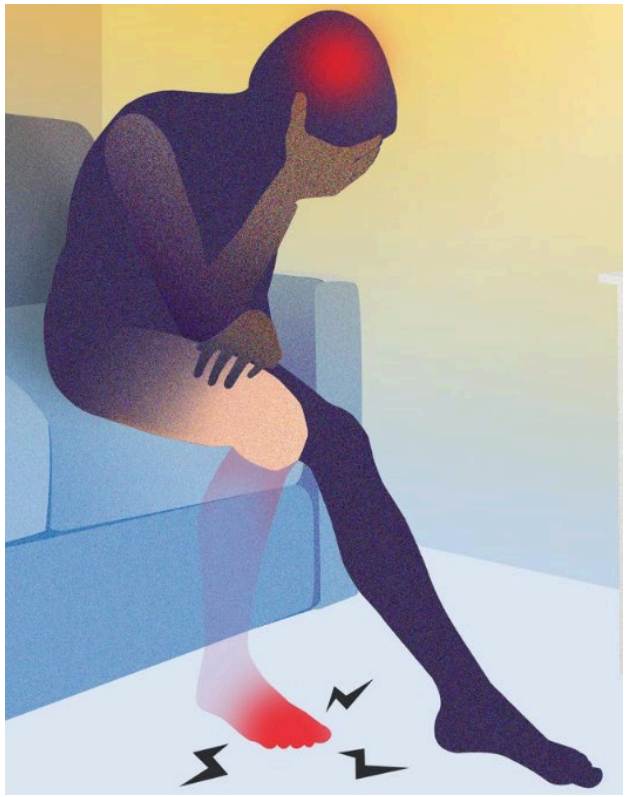


RL-68 y M

Postherpetic neuralgia since 20 y in the territory T1-T3 on the left
Continuous spontaneous pain (NRS 7) plus pain parxysms evokes by light touch (NRS 10)
At clinical evaluation, mechanical allodynia in the painful territoy, light cold allodynia in the same territory,  cold anesthesia in the axillary region, warm anesthesia in the painful area
Cluster Mechanical Hyperalgesia with prevalen loss of small fibres function
RF stimulation on T1 evoked paresthesias in the forearm but not in the arm; on T2, at 1 V pain was evoked in painful territory without paresthesia demostrating a prevalent large fibres lesion; on T3, stimulartion at 0,4 V evoked paresthesias in the caudal part of painful area

PRF on DRG: a diagnostic instrument for ganglion functionality

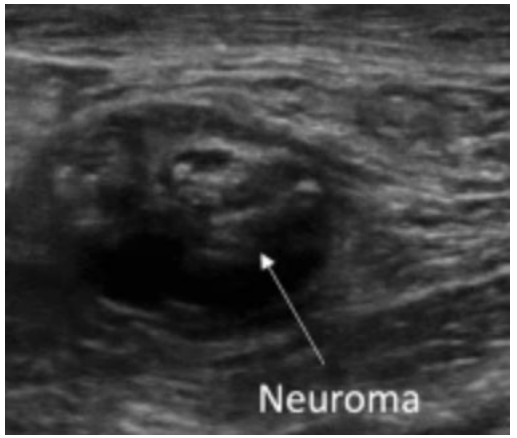
# Another hystory



**PC-42 y F**
At the age of 16, amputation at the middle third of left thigh for a sarcoma
Postoperative period complicated by infectionwith pain in the lateral posterior aspect of the foot
In the following years episodes of severe pain in the same area with long periods without pain
Now she presents 3-4 episodes/year of severe pain lasting about 48 h interferin with every activity

Why every 4 months?

How to treat this patient?




sssac.it
Podcast
SSSAC
PILLOLE ALGOLOGICHE