senzitivní systém

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Senzitivní systém

Praktická cvičení

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Anatomie

Receptor – různé modality

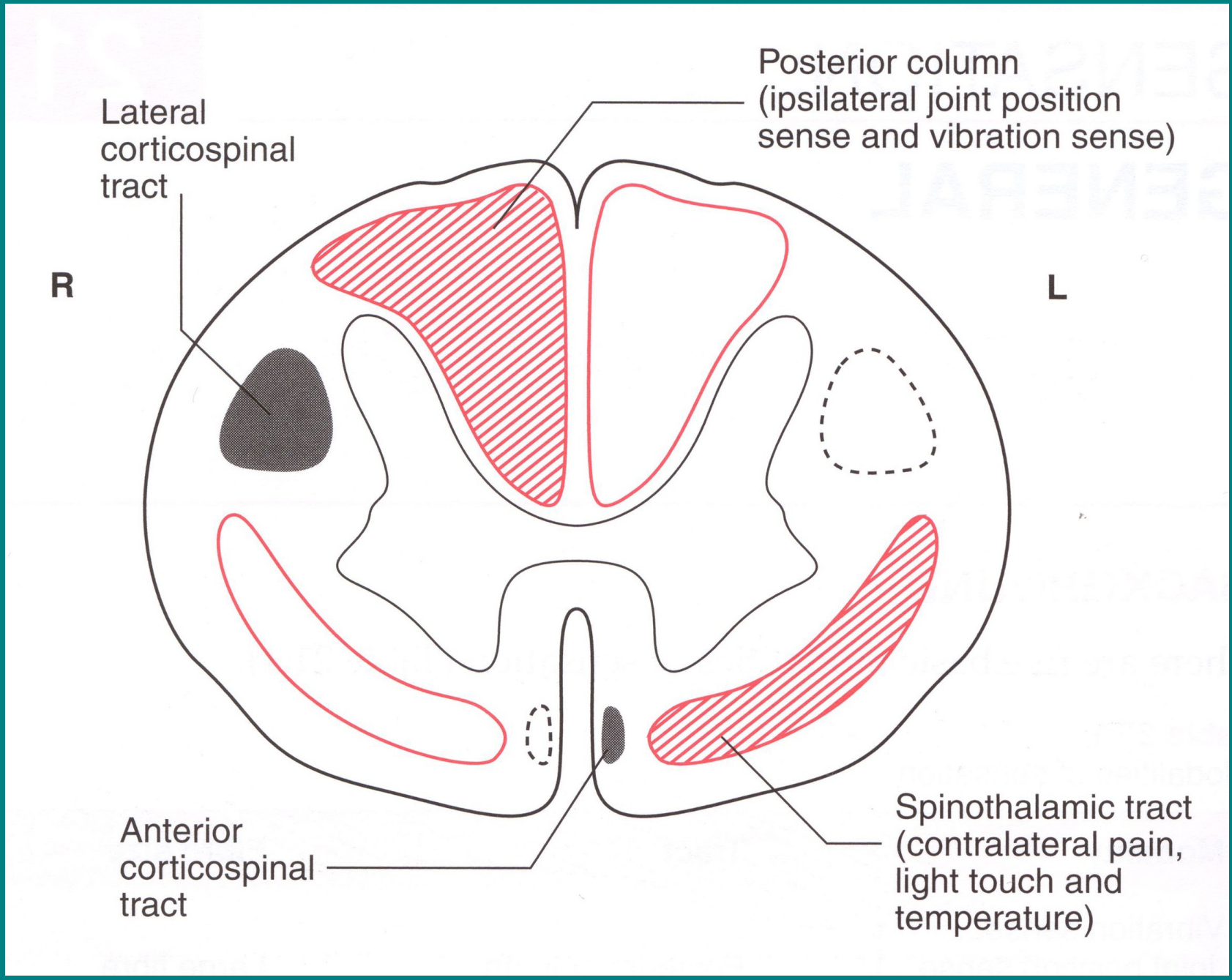
Mechano , termo , proprio , chemoreceptory

1. Periferní senzitivní neuron(ganglion spinální)
2. senzitivní neuron (zadní rohy)
3. senzitivní neuron(thalamus-kortex)

Senzitivní dráhy

- Zadněprovazcová dráha – dotyk , tlak , vibrace , časová a prostorová složka unilaterální průběh v oblasti míchy a křížení dráhy v místě prodloužené míchy
- Spinothalamický ventrální a laterální trakt

  hluboký tlak , bolest , teplo- křížení v oblasti míchy /2 segementy)
- Thalamus , tractus thalamocorticalis – gyrus postcentralis – parietální oblast


Posterior column
(ipsilateral joint position
sense and vibration sense)
Lateral
corticospinal
tract
R
L
Anterior
corticospinal
tract
Spinothalamic tract
(contralateral pain,
light touch and
temperature)

Syndromologie

- Negativní symptomy :
- Hypestézie ,anestézie
- Pozitivní symptomy:
- Parestezie , dysestezie
- Hyperestézie
- Hyperpathie , bolest
- Tinnelův příznak ,
- Lasegueův příznak
- Lhermiteův příznak

Vyšetření citlivosti

- Dotyk , bolest , teplo ,chlad
- Metody používající reakční čas- bolest
- Propriocepce -hluboká citlivost :

polohocit a pohybocit (statestézie , kinestézie)

Vibrace – palestézie – pomocí ladičky

- Dvoubodová diskriminace (inervační denzita – jazyk, rty, bříška prstů)
- Korové syndromy :

Topagnozie , grafestézie , neglekt syndrom – dvojitá simultání stimulace .

Periferní senzitivní syndromy

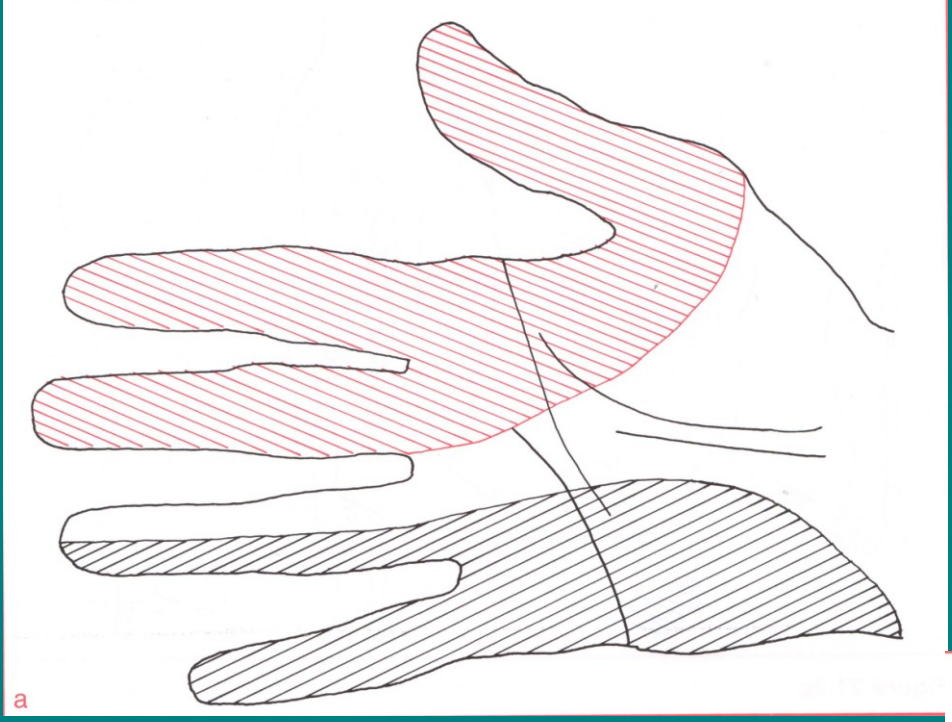
- Area nervorum

Kompresivní etiologie – mononeuropathie

- Kořenová léze – radikulopathie , area radikularis

Kompresivní etiologie – hernie disku

Area nervoru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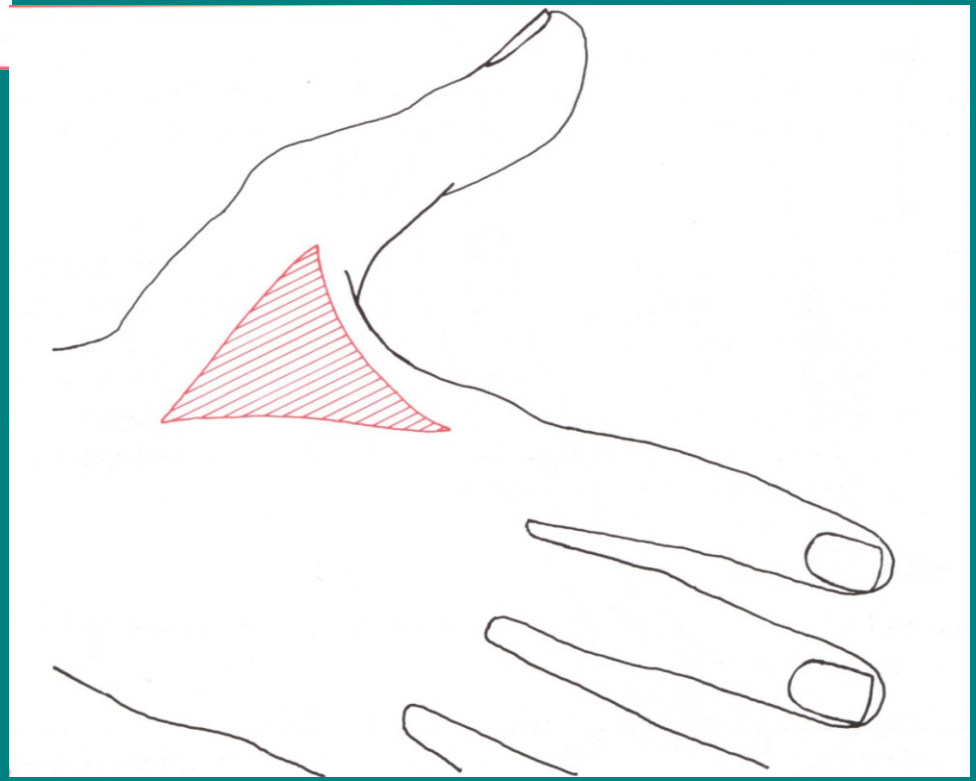
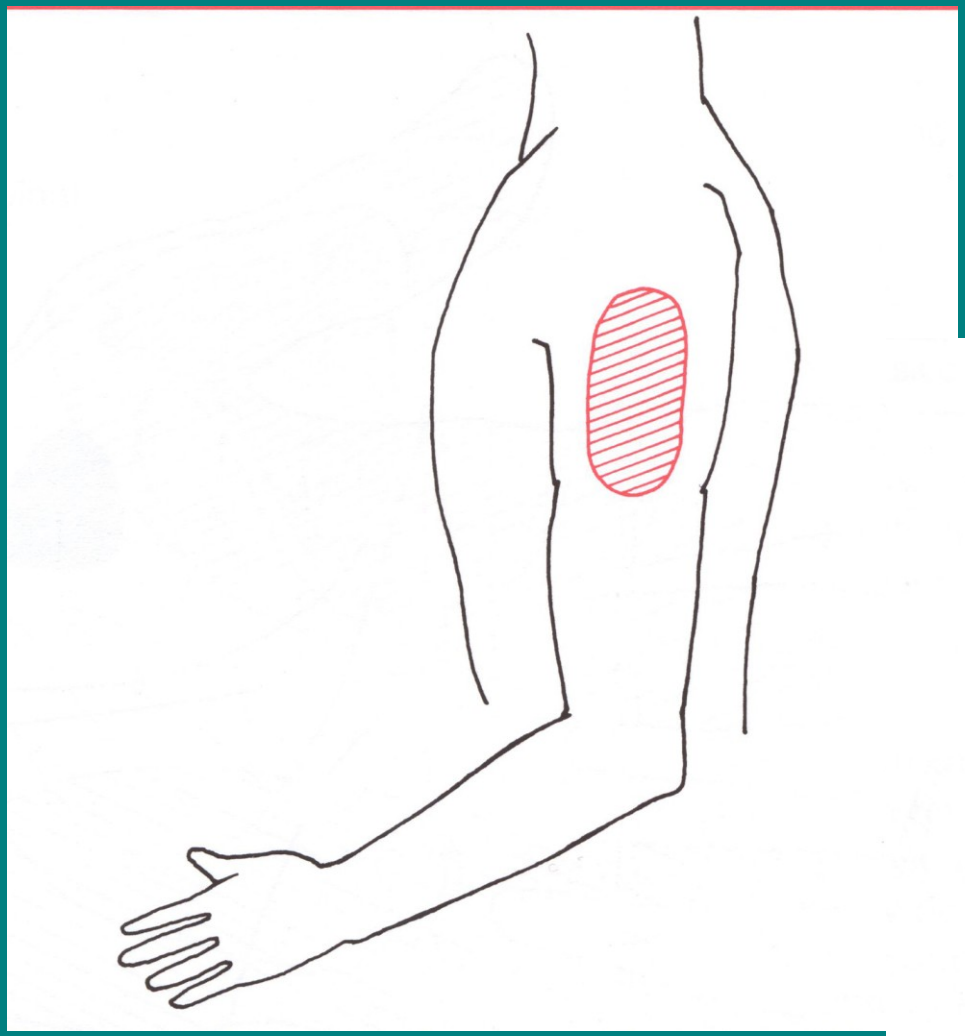
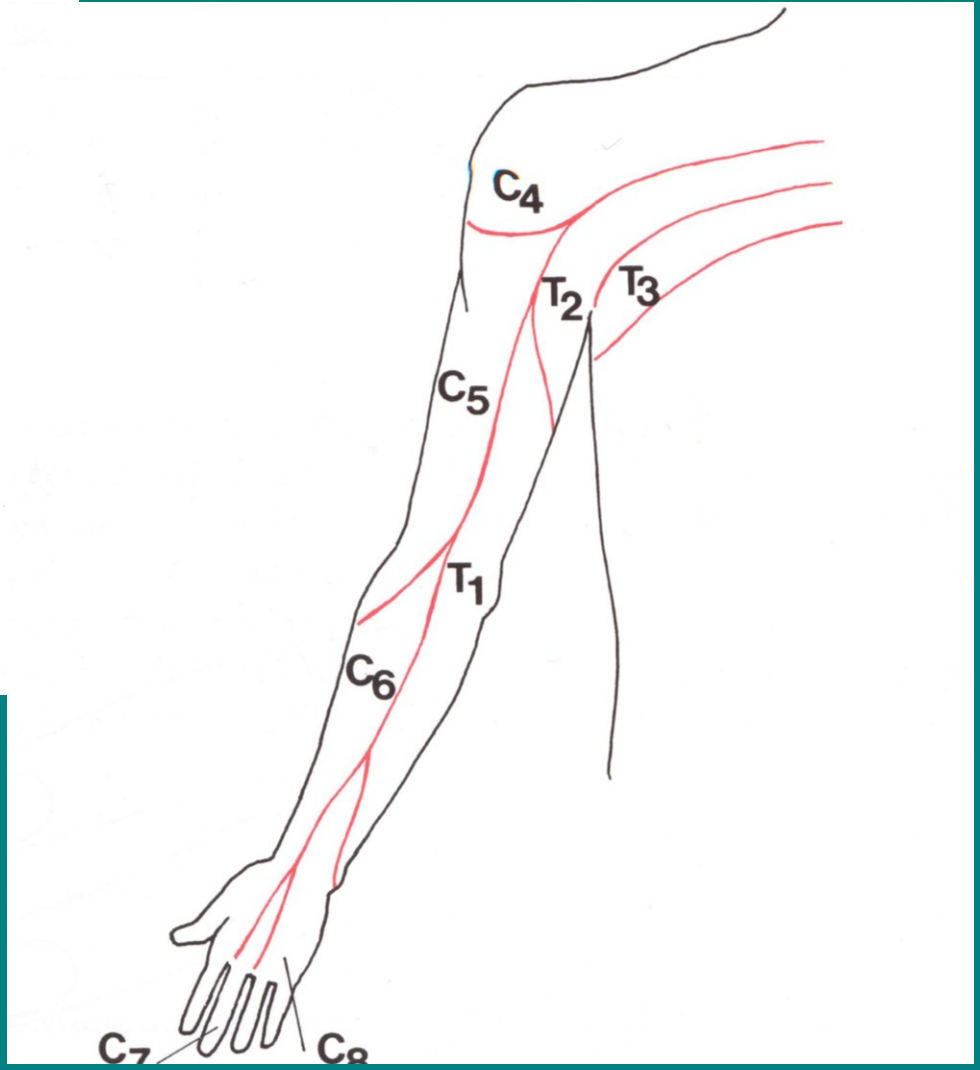
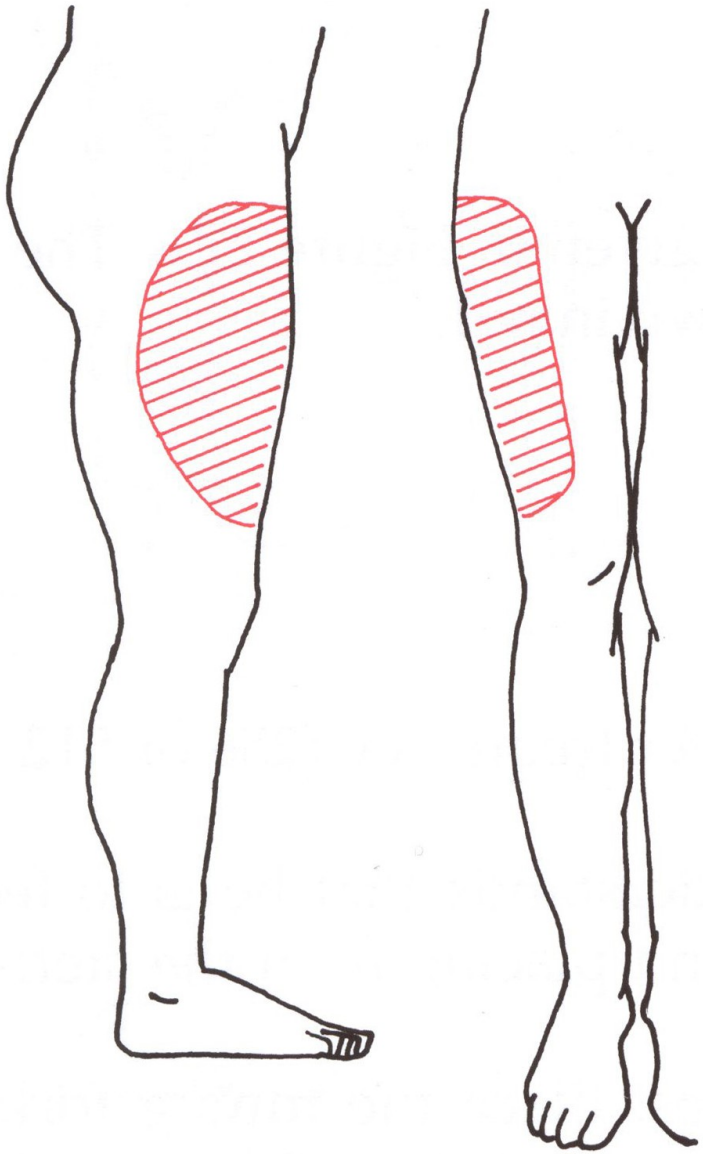
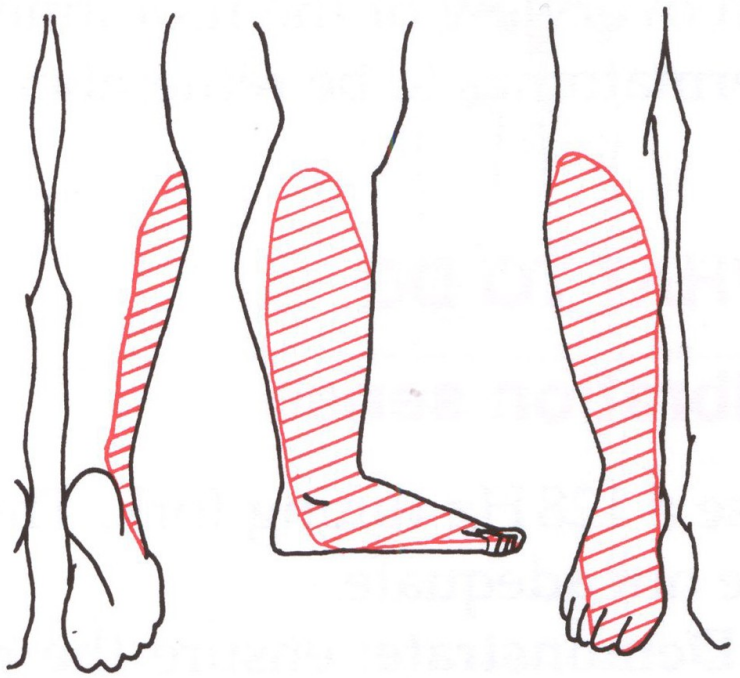


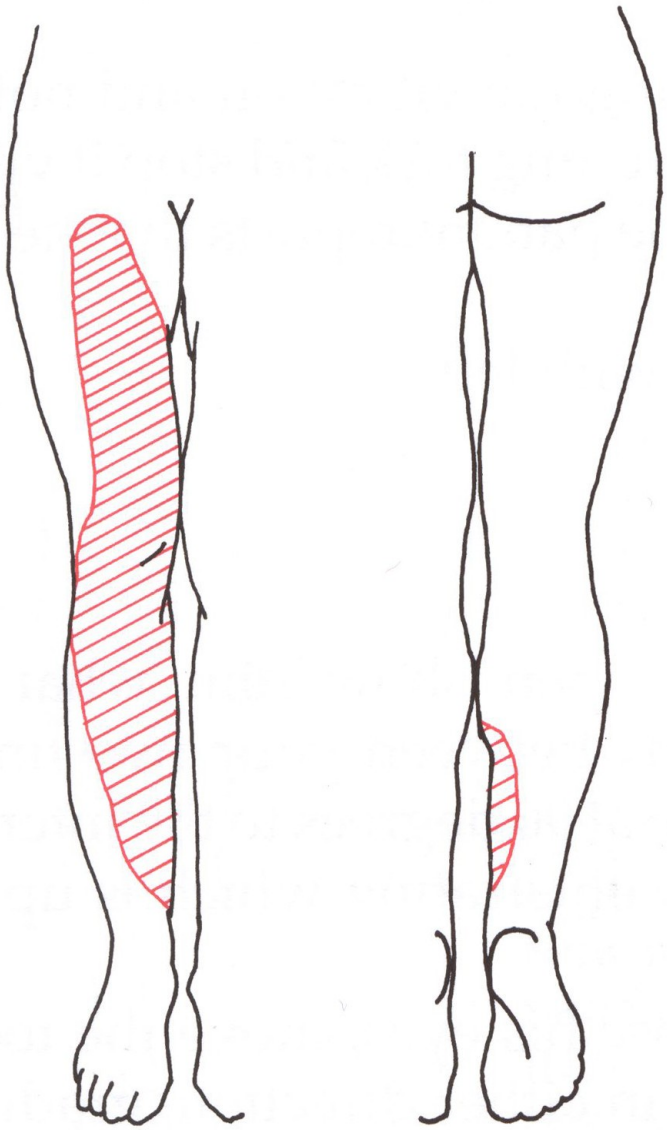
Area nervorum ,area radikularis

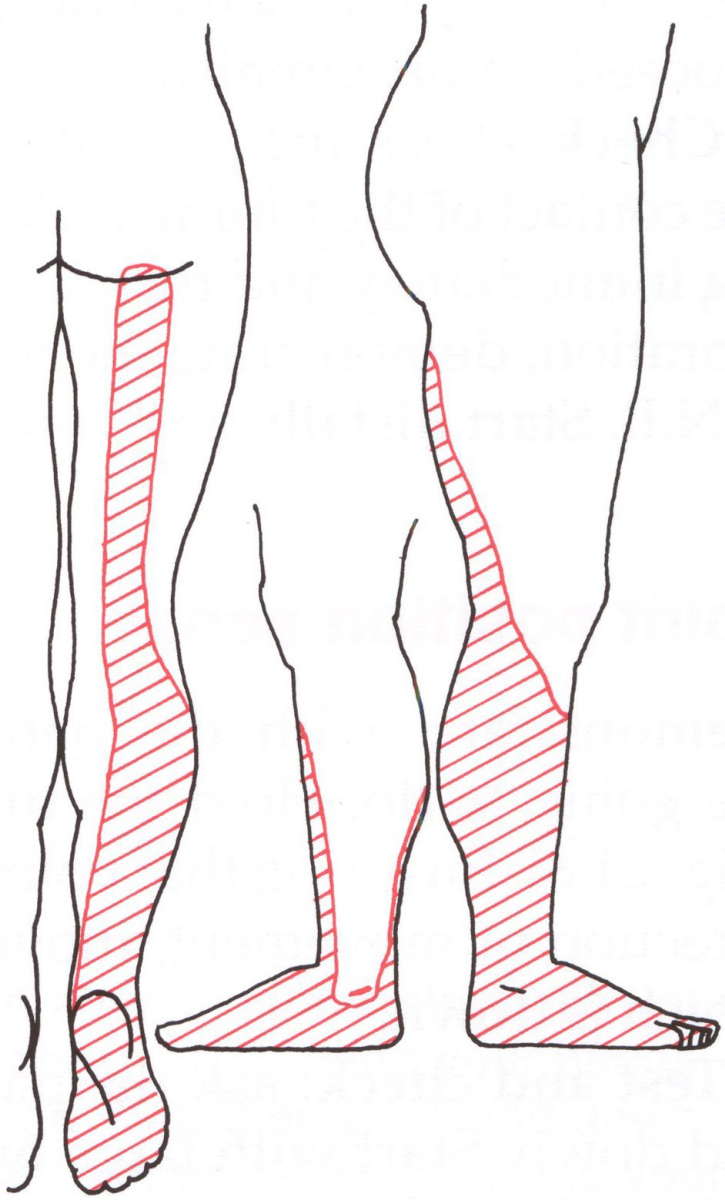


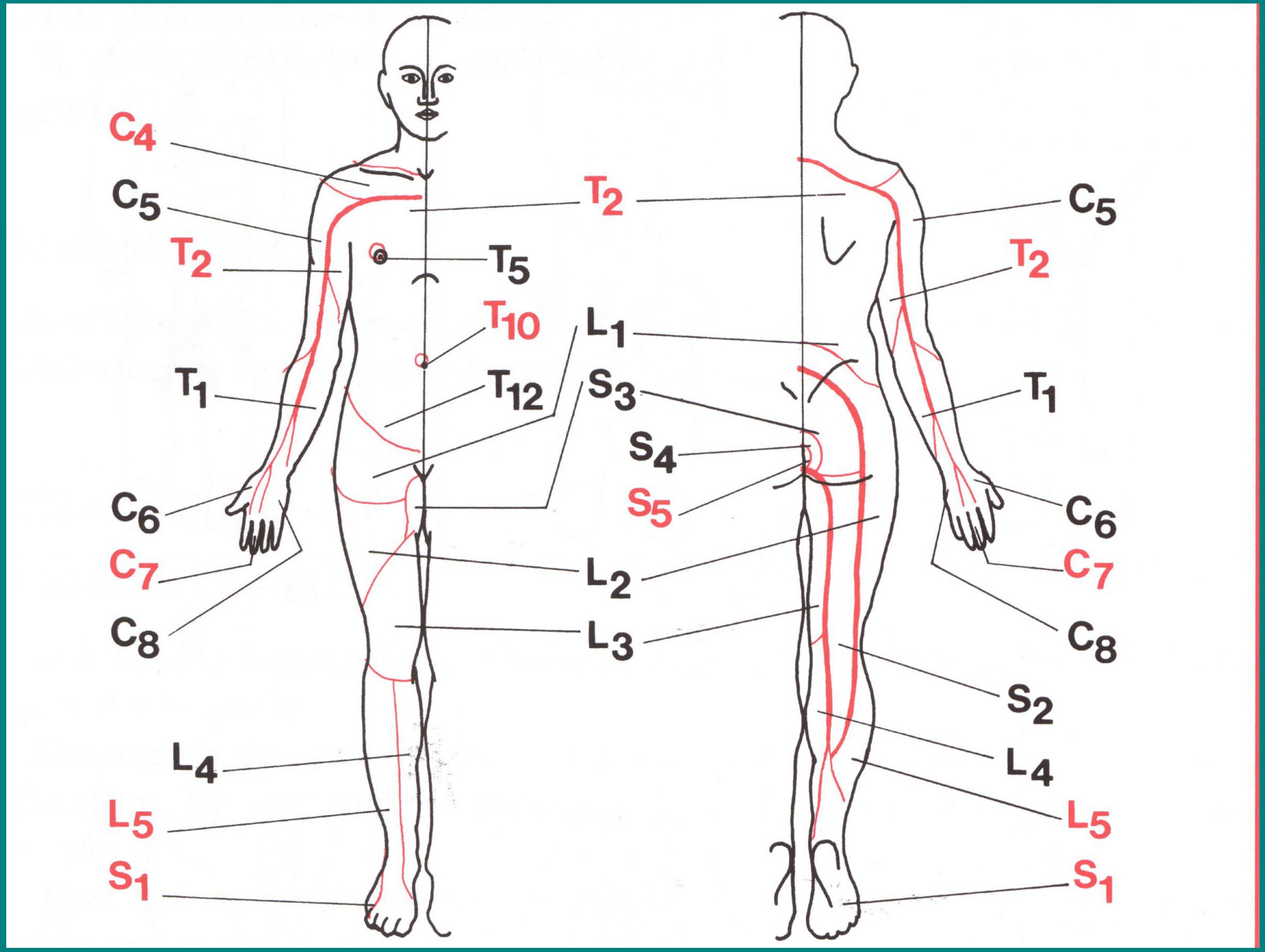

C4
T2
T3
C5
T1
C6
C7
C8

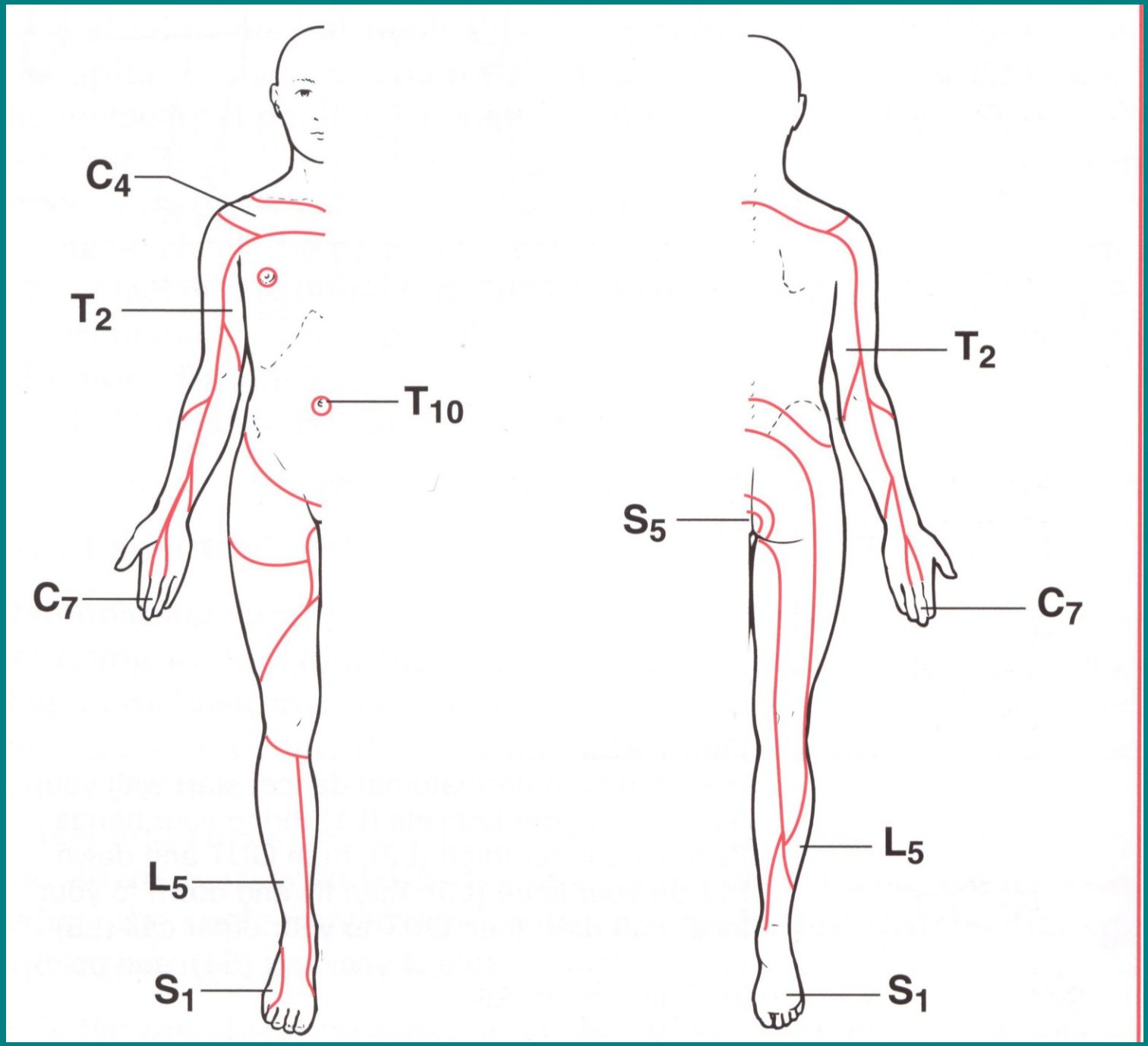









C4
C5
T2
T5
T10
T1
T12
C6
C7
C8
L1
S3
S4
S5
L2
L3
L4
L5
S1
T2
C5
T2
T1
C6
C7
C8
S2
L4
L5
S1


C4
T2
T10
C7
L5
S1
T2
S5
C7
L5
S1

Approach to sensory loss

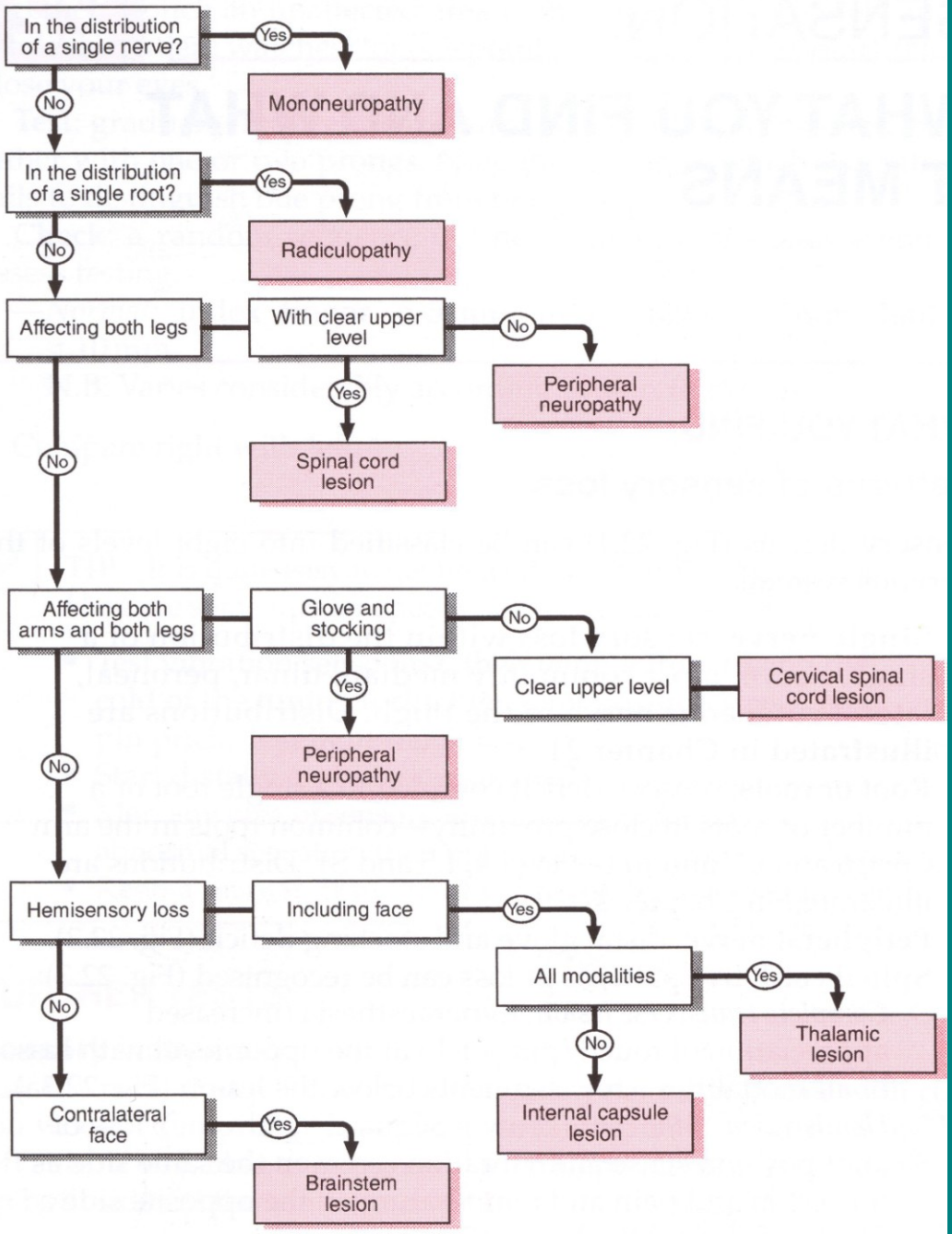
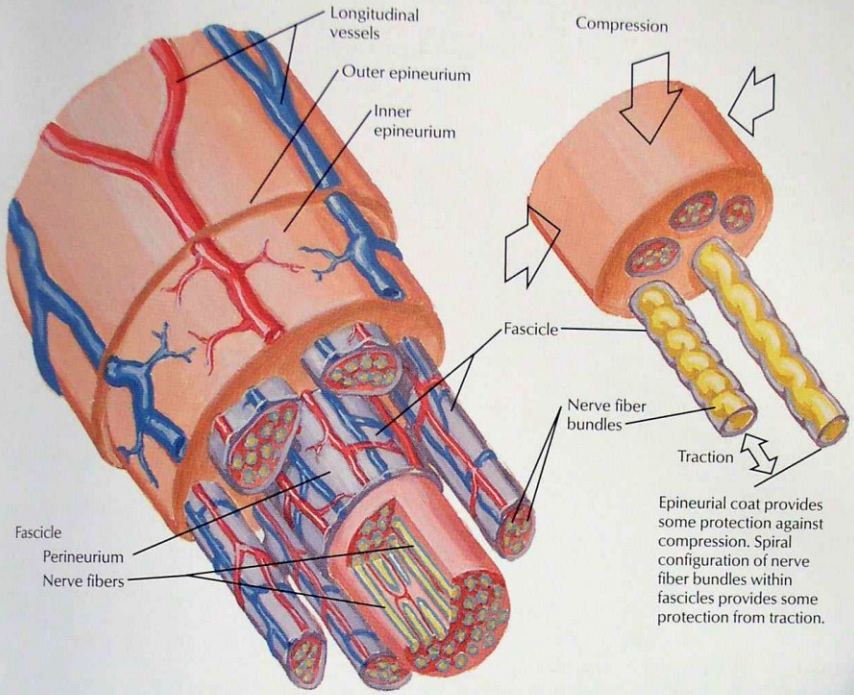
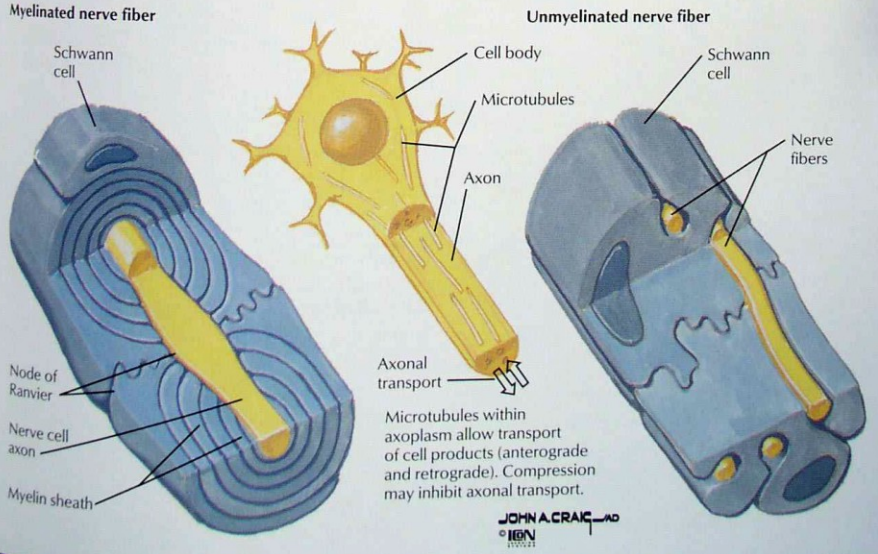


Figure 83-1

Anatomy of Peripheral Nerve



Nerve Fiber Types



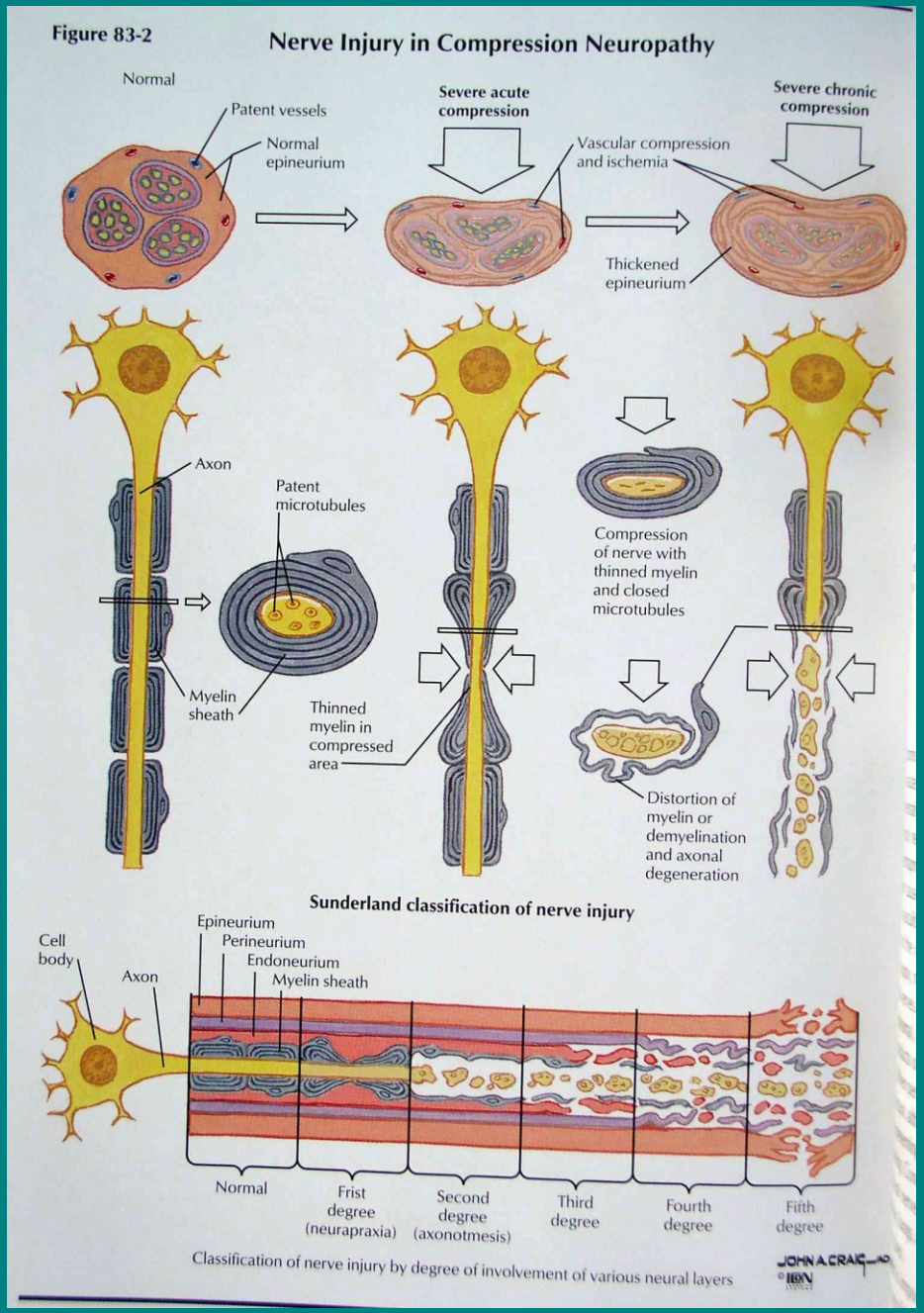
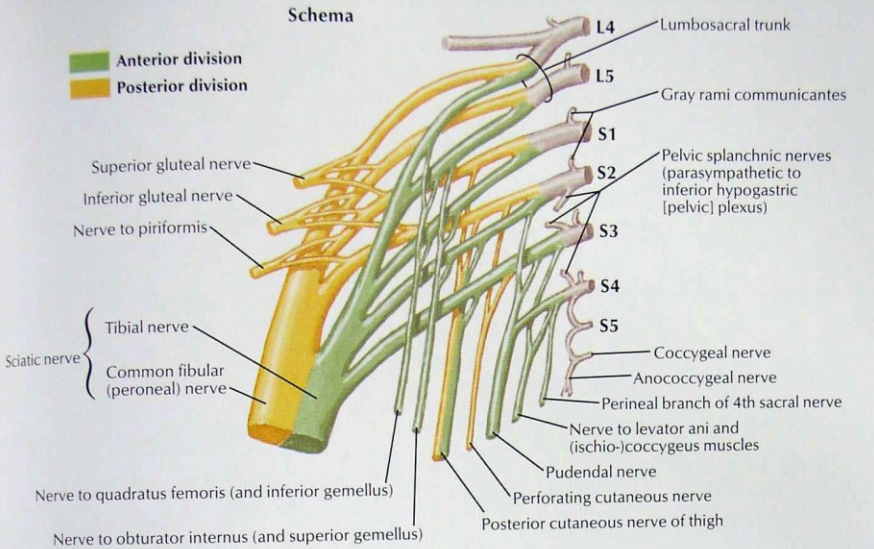
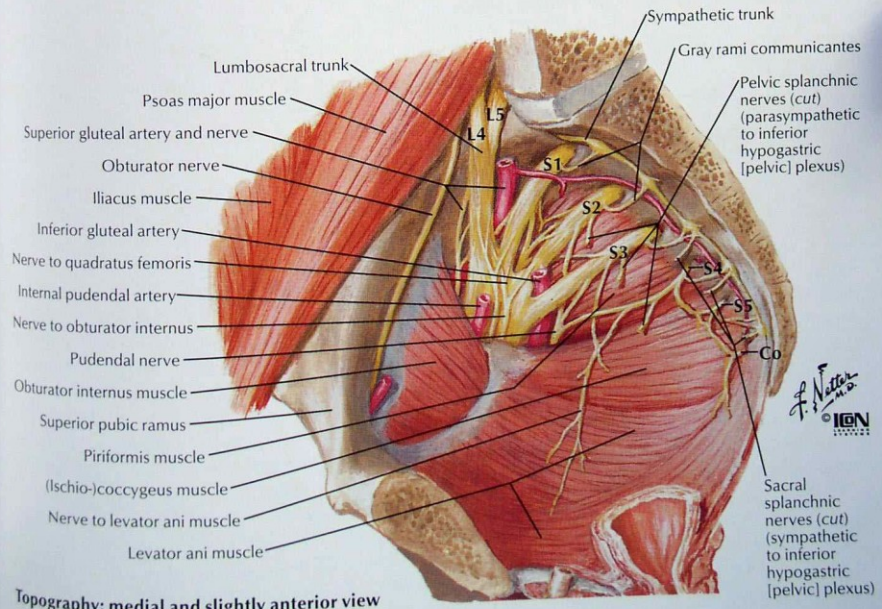


Figure 83-2
Nerve Injury in Compression Neuropathy
Normal
Patent vessels
Normal epineurium
Severe acute compression
Vascular compression and ischemia
Severe chronic compression
Thickened epineurium
Axon
Patent microtubules
Myelin sheath
Thinned myelin in compressed area
Compression of nerve with thinned myelin and closed microtubules
Distortion of myelin or demyelination and axonal degeneration
Sunderland classification of nerve injury
Cell body
Axon
Epineurium
Perineurium
Endoneurium
Myelin sheath
Normal
Frist degree (neurapraxia)
Second degree (axonotmesis)
Third degree
Fourth degree
Fifth degree
Classification of nerve injury by degree of involvement of various neural layers
JOHN A. CRAIG, MD

Figure 82-1B

Sacral and Coccygeal Plexuses

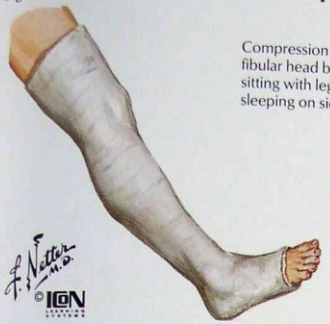




Topography: medial and slightly anterior view of hemisected pelvis

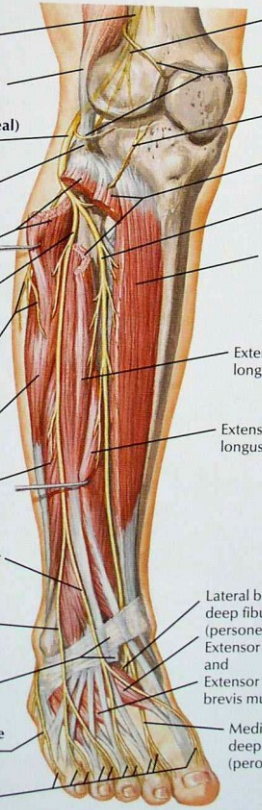
Figure 86-1

Peroneal Nerve



Compression of common peroneal nerve over fibular head by cast, in debilitated patient sitting with legs crossed, or in inebriate sleeping on side on hard surface

F. Netter M.D.
©IGN



Cutaneous innervation

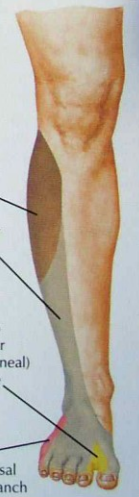


Figure 86-5

Obturator Nerve

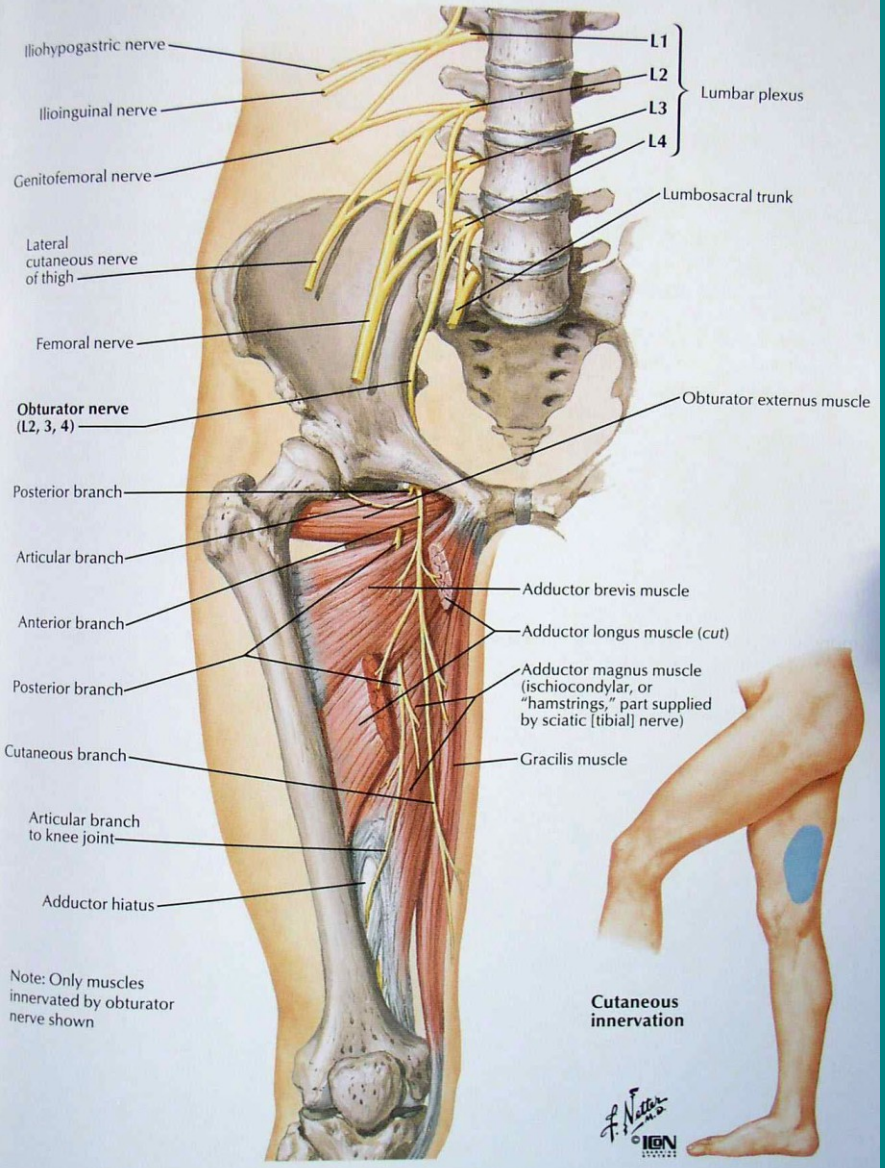
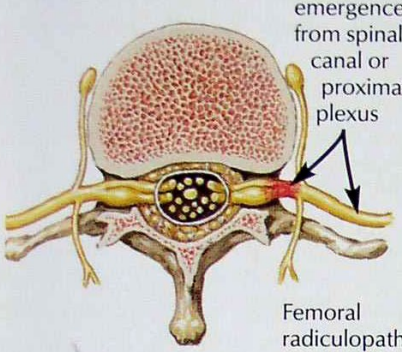


Figure 82-2

Radiculoplexopathies

Diabetic Radiculopathy



Possible site of lesion: roots of spinal nerve at emergence from spinal canal or proximal plexus

Femoral radiculopathy: pain in thigh

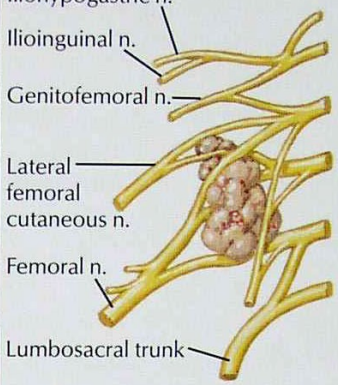
Loss of knee jerk (often unilateral)

Thoracic radiculopathy: woman unfastens brassiere—cannot tolerate tightness because of hyperesthesia and pain in thoracic region

F. Netter M.D. © ICON LEARNING SYSTEMS

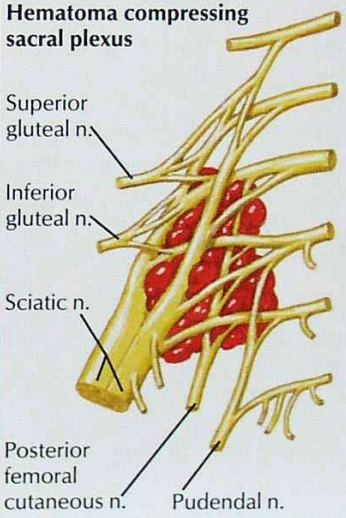
Lumbosacral Plexopathy

Lymphoma compressing lumbar plexus



Pain in femoral region

Hematoma compressing sacral plexus



Pain in back of thigh

Figure 78-1A **Lumbar Disc Herniation: Clinical Manifestations**

Characteristic posture in left-sided lower lumbar disc herniation

Schematic cross section showing compression of nerve root

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Clinical features of herniated lumbar nucleus pulposus

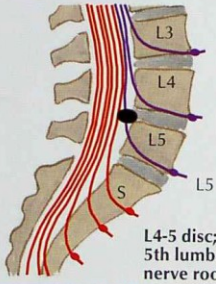
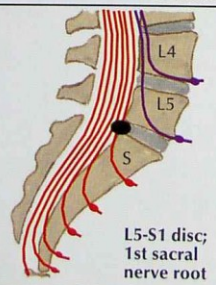
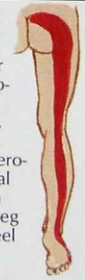
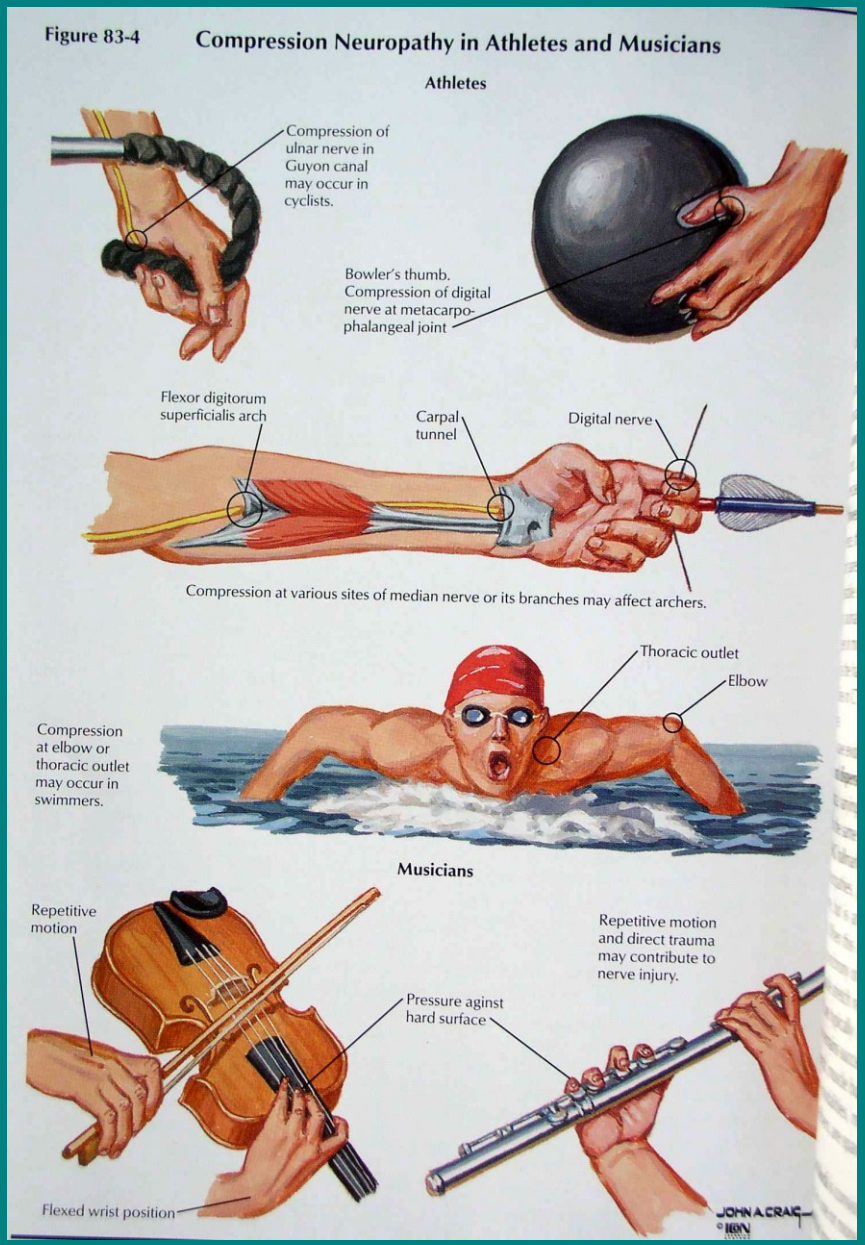
Level of herniation	Pain	Numbness	Weakness	Atrophy	Reflexes
 **L4-5 disc; 5th lumbar nerve root**	 Over sacroiliac joint, hip, lateral thigh and leg	 Lateral leg, first 3 toes	 Dorsiflexion of great toe and foot; difficulty walking on heels; foot drop may occur	Minor	Changes uncommon in knee and ankle jerks, but internal hamstring reflex diminished or absent
 **L5-S1 disc; 1st sacral nerve root**	 Over sacroiliac joint, hip, posterolateral thigh and leg to heel	 Back of calf, lateral heel, foot to toe	 Plantar flexion of foot and great toe may be affected; difficulty walking on toes	 Gastrocnemius and soleus	 Ankle jerk diminished or absent

Figure 83-4 **Compression Neuropathy in Athletes and Musicians**



Centrální senzitivní syndromy

A/Kompletní senzitivní míšní syndrom – transversální míšní léze – hyperestezie na horní hranici anestezie

B/Parciální syndrom: Brown –Sequardův- syndrom mišní hemisekce

Kontralaterálně – algické , termické a dotykové čití – traktus spinothalamicus – cca2 segmetny pod lézí

Ipsilaterálně – propriocepce

- Disociovaná porucha

C/ Syringomyelická disociace - ztráta v oblasti léze algické , termické a dotykové čití

Centrální senzitivní syndromy

D/ Syndrom arteria spinalis anterior – relativní ušetření propriocepce , ztráta citlivost ostatních kvalit

E/Syndrom zadních provazců – propriocepce , ataktická chůze , syndrom nešikovné ruky .

F/ Tabický syndrom – zadní kořeny , propriocepce + bolesti , areflexie a ataktická chůze

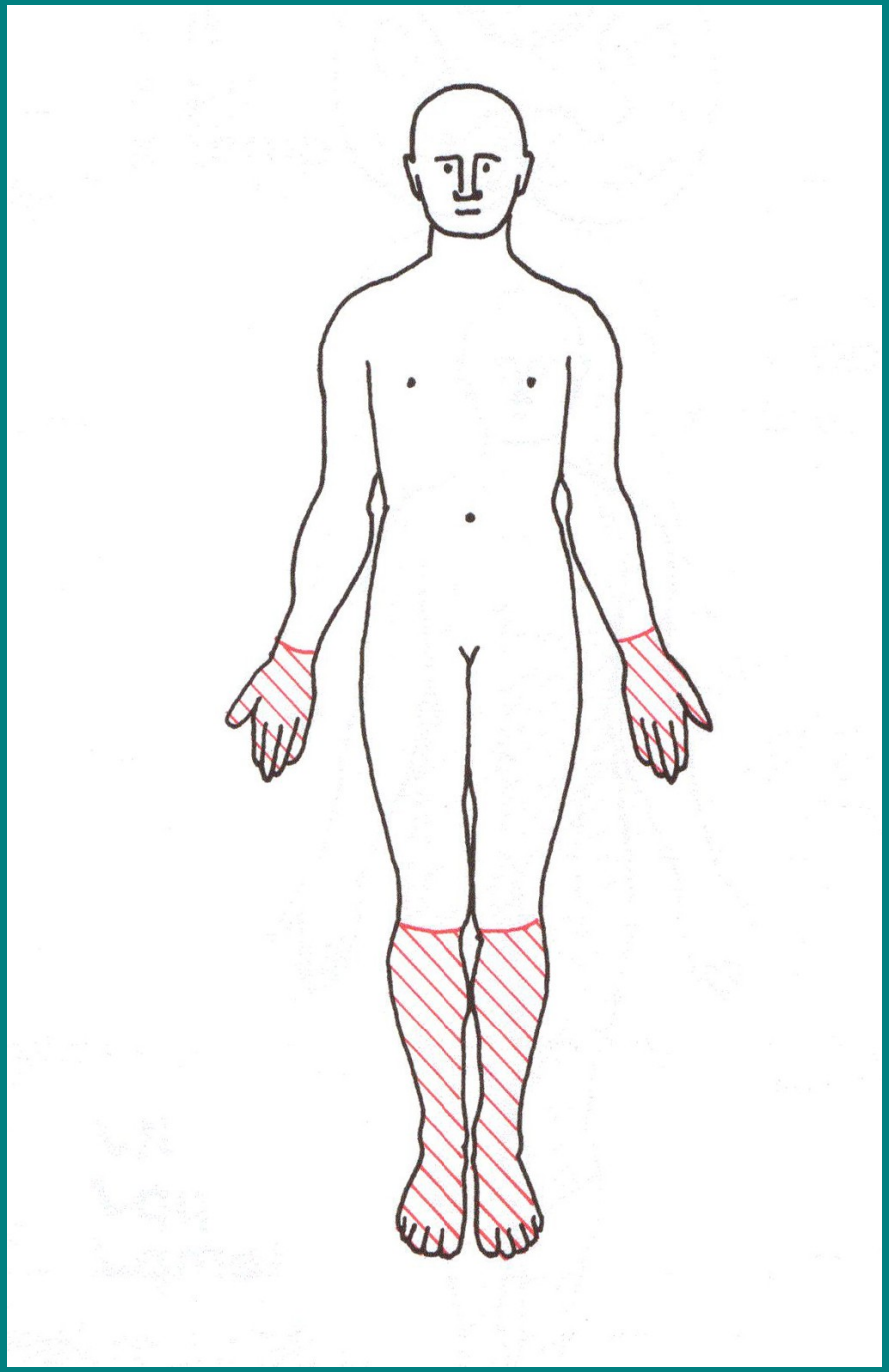
G/ hemialternativní syndromy – mozkový kmen (laterální medullární syndrom)

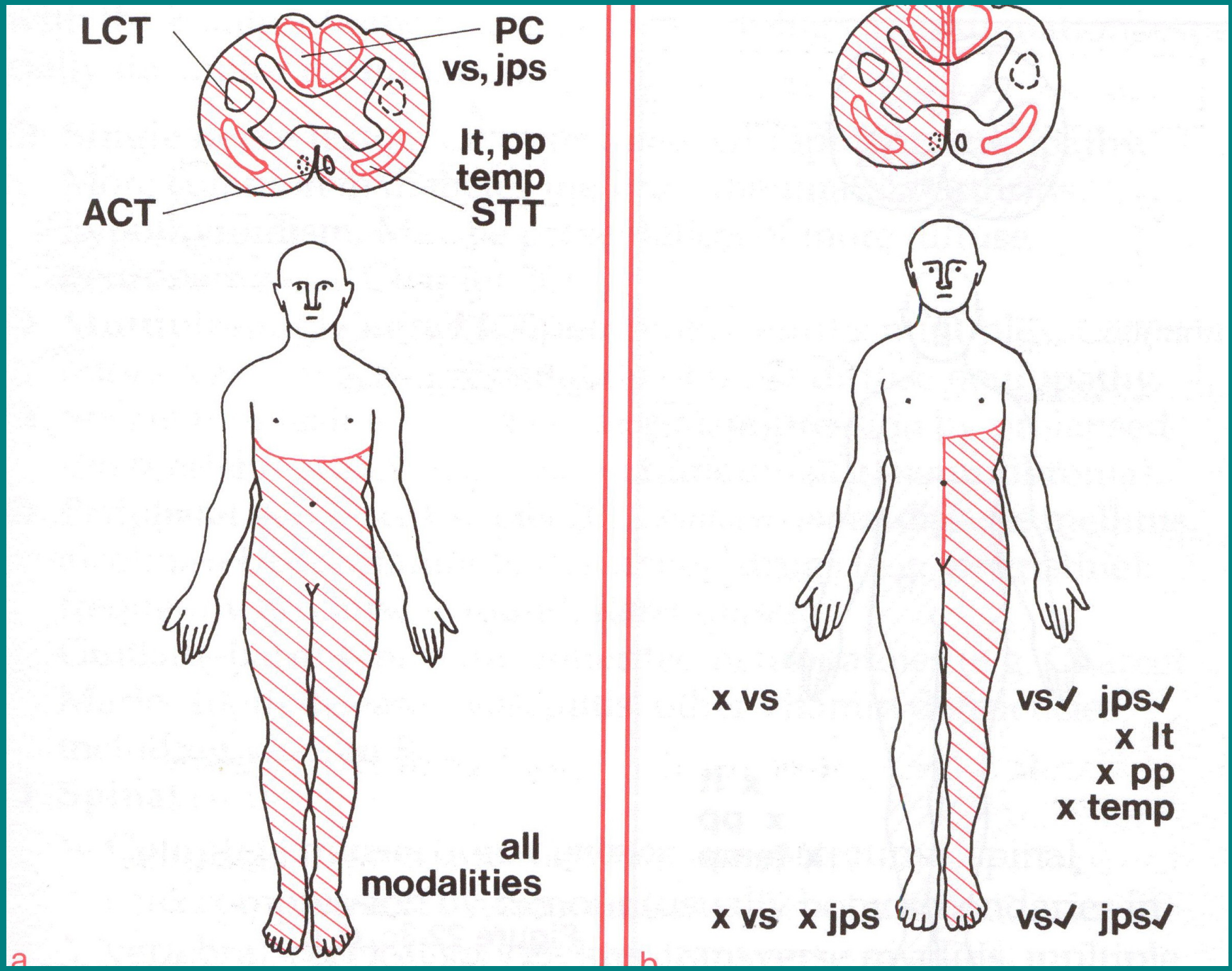
Centrální senzitivní syndromy

H/Thalamický syndrom – kontralaterálně všechny kvality plus thalamická bolest , hyperpathie

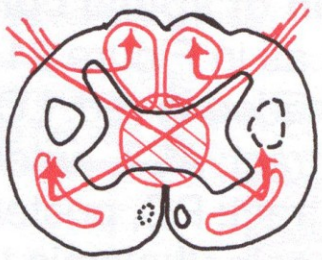
CH/ Syndrom capsula interna – hypestezie pro všechny kvality –kontralaterálně

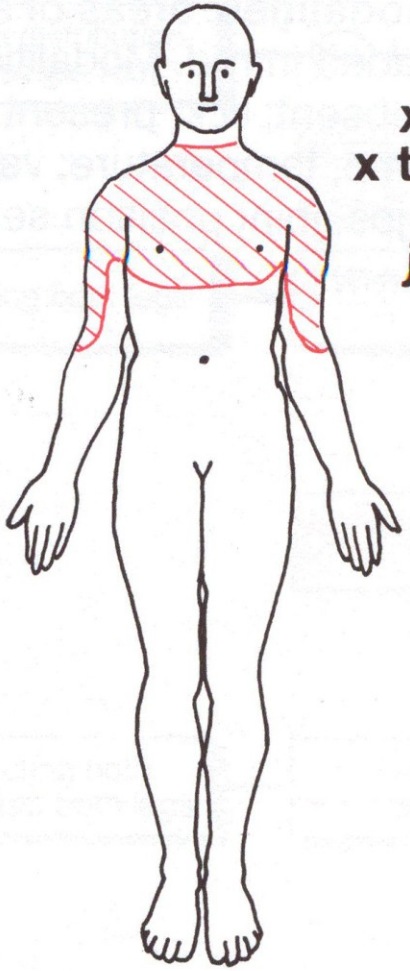
I/ Syndrom léze parietálního laloku polohocit, pohybocit , topagnosie , stereoagnozie ,senzitivní neglekt , Jacksonova senzitivní epilepsie , snížení vnímaní všech kvalit není úplná anestezie




LCT
PC
vs, jps
lt, pp
temp
ACT
STT
all
modalities
a
x vs
vs✓ jps✓
x lt
x pp
x temp
x vs x jps
vs✓ jps✓
b

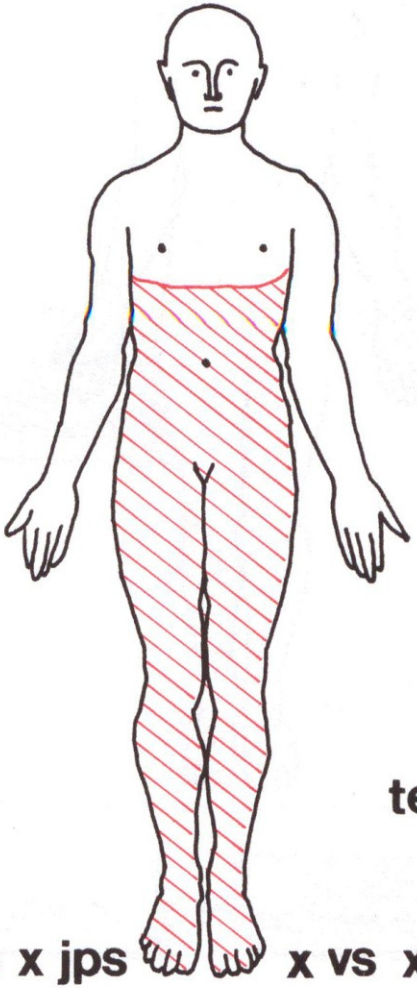
- LCT laterální pyramidová dráha
- ACT přední py dráha
- PC zadní provazce
- STT spinothalamický trakt
- pp bodnutí špendíkem,temp. teplo, vs vibrace ,jps joint pozice





x pp
x temp
vs✓
jps✓
lt✓

c

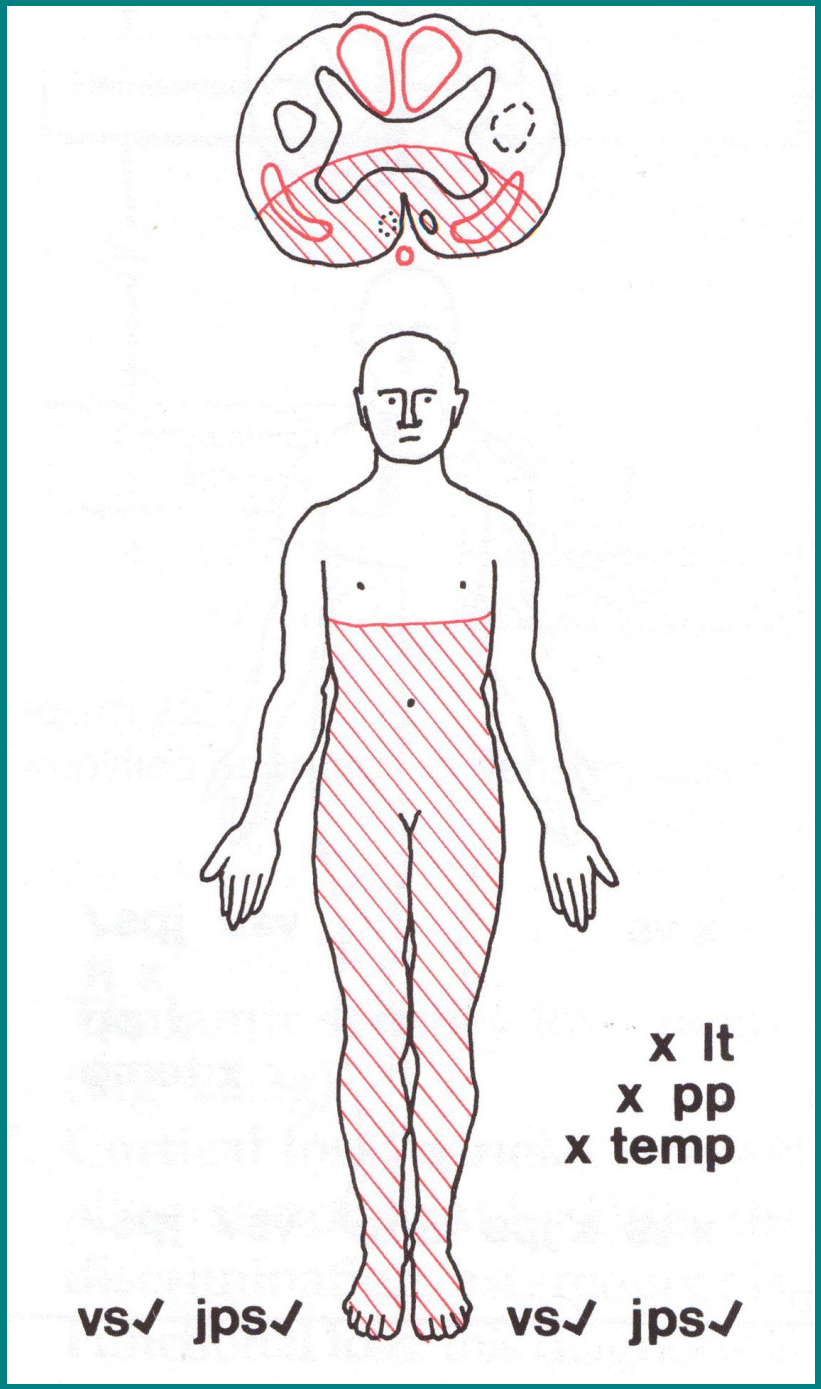


lt✓
pp✓
temp✓

x vs x jps

x vs x jps

d


x lt
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vs✓ jps✓
vs✓ jps✓

x lt
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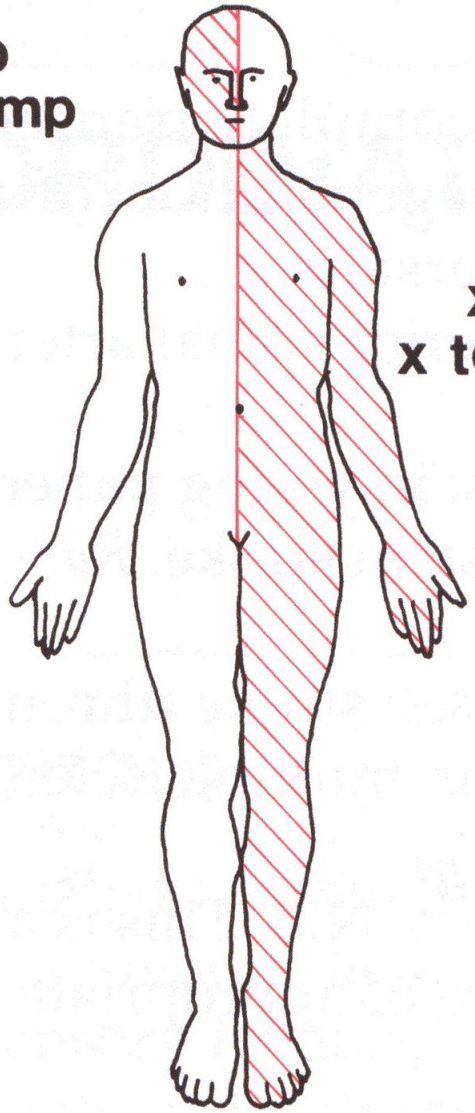

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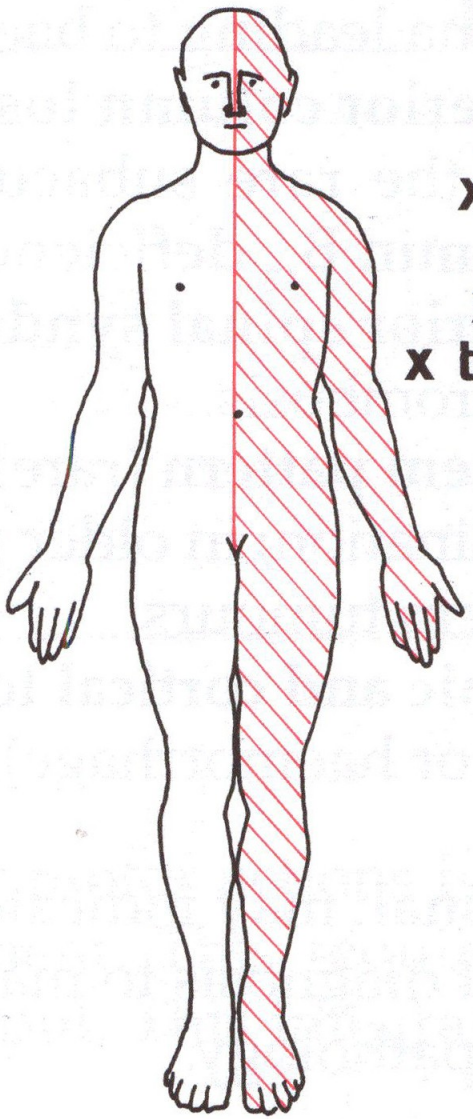
f



x vs
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