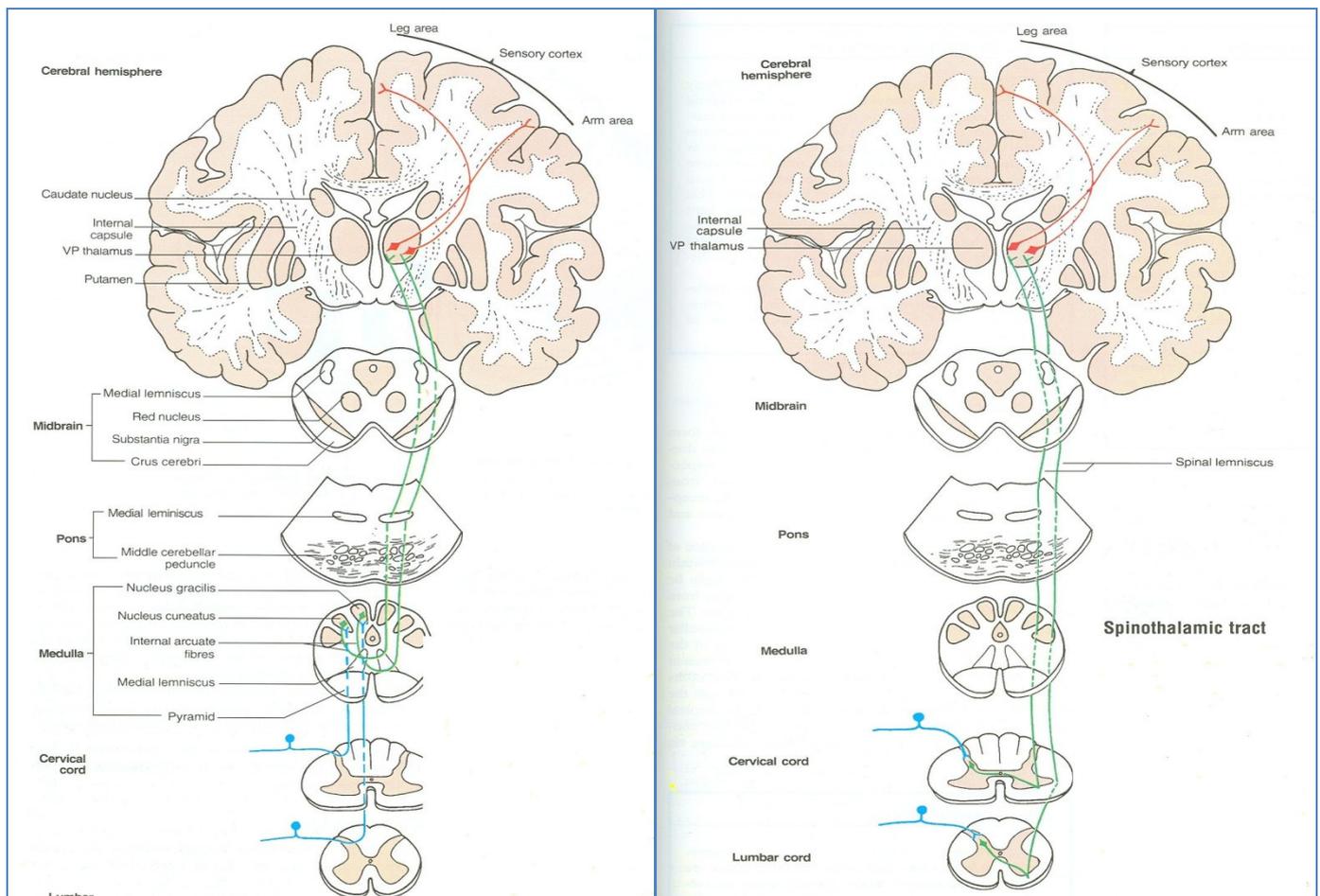


ASCENDING TRACTS

TRACTS REACHING CONSCIOUS LEVEL :

- **Dorsal column (Gracile & Cuneate) tract** : proprioceptive sensation & discriminative touch.
 - **Lateral spinothalamic tract** : pain & temperature.
 - **Ventral spinothalamic tract** : crude touch.
 - **All tracts have 3 neurones to reach cerebral cortex.**
- **First order neurone** : Cells of dorsal root ganglion.
- **Second order neurone** :
- **In the medulla** : gracile & cuneate nucleus (for dorsal column tract).
 - **In the spinal cord** : dorsal horn cells.
1. **Substantia gelatinosa of Rolandi** (for lateral spinothalamic tract).
 2. **Nucleus proprius** (for ventral spinothalamic tract).
- Axons cross midline & decussate to form **medial lemniscus (for dorsal column tract)**, or **spinal lemniscus (for spinothalamic tracts)**.
- **Third order neurone** : Cells of postero-ventral lateral nucleus of thalamus.
- Its axons form the **sensory radiation**.
 - They ascend in the **posterior limb of internal capsule**.
 - They terminate in the **postcentral gyrus (somatosensory cortex)**.



Dorsal column tract

Spinothalamic tract

TRACTS REACHING SUBCONSCIOUS LEVEL – SPINOCEREBELLAR TRACTS :

- They carry **proprioceptive fibers to the cerebellum** for the control of posture & coordination of movement.
- The fibers form 2 tracts :
 1. **Dorsal (*uncrossed*) tract.**
 2. **Ventral (*crossed*) tract.**
- Each tract is formed of **2 neurones**.
- **First order neurone** : *Cells of dorsal root ganglion.*
- **Second order neurone** : *Clarke's nucleus (in base of dorsal horn).*
- **Dorsal tract** : axons ascend in ipsilateral **lateral** white column then enter the cerebellum through the inferior cerebellar peduncle.
- **Ventral tract** : axons decussate & ascend in contralateral **lateral** white column then enter the cerebellum through the superior cerebellar peduncle.

SPINORETICULOTHALAMIC SYSTEM :

- The tract carries **exteroceptive sensation** to the cerebral cortex for cortical activation.
- The tract may be **the route for dull aching slow pain to be perceived by the cerebral cortex.**
- **First order neurone** : *Cells of dorsal root ganglion.*
- **Second order neurone** : *Dorsal horn cells of spinal cord.*
 - **Axons terminate in reticular formation (particularly in medulla).**
- **Third order neurone** : *Cells of intralaminar nuclei of thalamus.*
 - Axons reach the cerebral cortex.

LESION OF DORSAL COLUMN TRACT :

- **Tabes Dorsalis** :
 - Late stage of syphilitic infection of CNS.
 - **Sensory ataxia.**
 - Positive Romberg's sign.
- **Subacute combined degeneration** :
 - Due to deficiency of vitamin B12.
 - Lateral columns are also affected.

LESION OF SPINOTHALAMIC TRACTS :

- **Syringomyelia** :
 - **Cavitation in the central canal.**
 - Usually in **lower cervical & upper thoracic.**
 - Fibers of **lateral spinothalamic tract** crossing around central canal are affected.
 - Loss of pain & temperature on both sides with preserved touch sensation (**dissociated sensory loss**) taking a **Jacket distribution.**

SELF QUIZ

1- Regarding second order neurone, all are true EXCEPT :

- a. In the medulla : gracile & cuneate nucleus.
- b. Substantia gelatinosa of Rolandi for ventral spinothalamic tract.
- c. Nucleus proprius for ventral spinothalamic tract.
- d. Axons cross midline & decussate to form medial lemniscus.
- e. Spinal lemniscus for spinothalamic tracts.

2- Third order neurone :

- a. Its axons form the sensory radiation.
- b. They ascend in the posterior limb of external capsule.
- c. They terminate in the precentral gyrus (somatosensory cortex).
- d. Its axons form the motor radiation.
- e. They descend in the posterior limb of external capsule.

3- Tabes Dorsalis :

- a. Negative Romberg's sign.
- b. Late stage of syphilitic infection of CNS.
- c. Early stage of syphilitic infection of CNS.
- d. Sensory asyringomyelia.
- e. It is parasitic infection.

1. b	2. a	3. b
------	------	------



THE END

LoveTomy Team 426

Team leader : Dr. hams

Dr. S Dr. noop Omar H

ابنسم !! همي بروحي

M.A.M Abo Slo7 Cute Killer