

Descending Tracts

- Tracts originating from the brain and descending in to spinal cord
- These tracts are concerned with various motor activities of body
- Two groups
 - Pyramidal tract
 - Extra pyramidal tract

Pyramidal Tract

- Aka corticospinal tract
- Contains axons of cell bodies present in motor cortex of brain.
- Pyramidal cells of Betz
- Origin :-
 - 30% from primary motor cortex (Area 4)
 - 30% from premotor area and supplementary motor cortex
 - 40% from the somatic sensory area

Course And Termination

- The fibers descend as a part of corona radiata
- Then pass through the posterior limb of internal capsule
- Then downwards through the brainstem
- Forming pyramids in the medulla
- At the lower part of medulla 90% of the fibers decussate in the midline to reach opposite side
- Forming two separate tracts from here

Lateral Corticospinal Tract

- Constituted by crossed fibers
- Descends in the lateral white funiculus of opposite side
- These fibers terminate in the internuncial neurons of spinal grey matter.
- Internuncial neurons synapse with motor neurons in anterior horn cells
- Some fibers end directly on the AH cells
- Axons of AH cells supply skeletal muscle through spinal nerve

Anterior Corticospinal Tract

- Formed by the uncrossed pyramidal fibers
- They descend thro ant white funiculi on same side
- They reach only till mid thoracic region
- On reaching appropriate spinal segment they cross to the opposite side
- Terminate in the same way as lateral corticospinal tract

Corticonuclear fibres

- In brainstem some fibres terminate in motor nuclei of cranial nerve
- They cross to opposite side at various levels of brainstem depending upon the nuclei
- Which supply muscles of face

Contralateral Innervation

- Both the anterior and lateral corticospinal tracts ultimately innervate opposite side of the body
- i.e. Fibres from the right lobe of cerebral cortex terminate on the left AH cells

Salient Features

- Fibres of CS tract are unmyelinated at birth
- Myelination begins at 2nd week after birth and completes at 2 years of age
- Contains large fibres and small fibres
- Large fibres disappear at old age leading to shaky movements

FUNCTIONS OF PYRAMIDAL SYSTEM

- 1) Initiation of voluntary movements
- 2) The lateral corticospinal tract fibers that descend in the spinal cord for control of muscles of the distal parts of the limbs, especially the hand and digits muscles, which subserve fine skilled movements used in manipulation by hand and fingers, and other accurate motor actions done by the limbs .
- 3) The ventral corticospinal tracts control posture of axial and proximal muscles for balance , climbing and walking.
- 4) Facilitation of muscle tone and deep reflexes through gamma motor neurons
- 5) Those fibers originate from parietal lobe are for sensory-motor coordination
- 6) Corticobulbar tracts /control face & neck muscles & facilitate their tone, and are involved in facial expression, mastication, swallowing