Extra pyramidal Tracts

- Descendings tracts other than pyramidal tract are called extra pyramidal tracts
  - Rubrospinal tract
  - Vestibulospinal tract
  - Reticulospinal tract
  - Tectospinal tract
  - Olivospinal tract
  - Medial longitudinal fasciculus

Rubrospinal Tract

- Origin:- arises from nucleus magnocellularis or red nucleus in midbrain
- Course :- fibres cross to the opposite side in the lower part of tegmentum of midbrain
- After that follows a course similar to lateral CS tract
- Termination :- on the interneurons along with CS tract

Functions

- Facilitates flexor muscles and inhibit extensor muscles
- Red nucleus receives corticorubral fibres from ipsilateral motor cortex
- Cortico-rubro-spinal tract acts as a alternate route of pyramidal tract
- Reaches only upper three cervical segments

Vestibulospinal Tract

- Lateral Vestibulospinal Tract:- origin from lateral vestibular nucleus (deiter's) at lower pons
- fibres are somatotopically arranged in this nucleus
- Course :- tract is uncrossed and lies in the ant funiculi
- They terminate on alpha and gamma motor neuron thro interneuron

Functions

- Vestibular nucleus receives afferents from vestibular apparatus mainly from utricle
- Adjustment of postural muscles to linear acceleration
- Facilitates extensor muscles and inhibits flexor muscle
- Maintenance of balance

Medial Vestibulospinal Tract

- Fibres originates from medial vestibular nucleus
- Descends thro the anterior funiculi and mostly uncrossed
- Fibres ends in AH cells either directly or thro interneuron
- Receives inputs from vestibular apparatus mainly from semicircular canals
- Controls movements of head with respect to auditory and visual stimuli .

Reticulospinal Tract

- Two divisions
- Medial – pontine Reticulospinal tract
- Lateral – medullary Reticulospinal tract
- pontine Reticulospinal tract:- arises from medial pontine reticular formation and descends mostly uncrossed and terminates in alpha & gamma motor neurons in spinal cord thro interneurons

Lateral (Medullary) Reticulospinal Tract

- Fibres orginates from medullary reticular formation (gigantocellular) , descends mostly uncrossed in the lateral funiculi and terminates in same way as pontine RS tract

Functions Of Reticulospinal Tract

- Reticular formation Receives afferents from cortex
- Forming cortico-reticulospinal pathway
- Control of movements and muscle tone
- Also convey autonomic fibres from higher center to spinal cord

- Pontine and medullary nuclei functions opposite to one another in controlling
  - Muscle tone
  - Respiration
  - Vascular caliber
  - Antigravity muscles posture

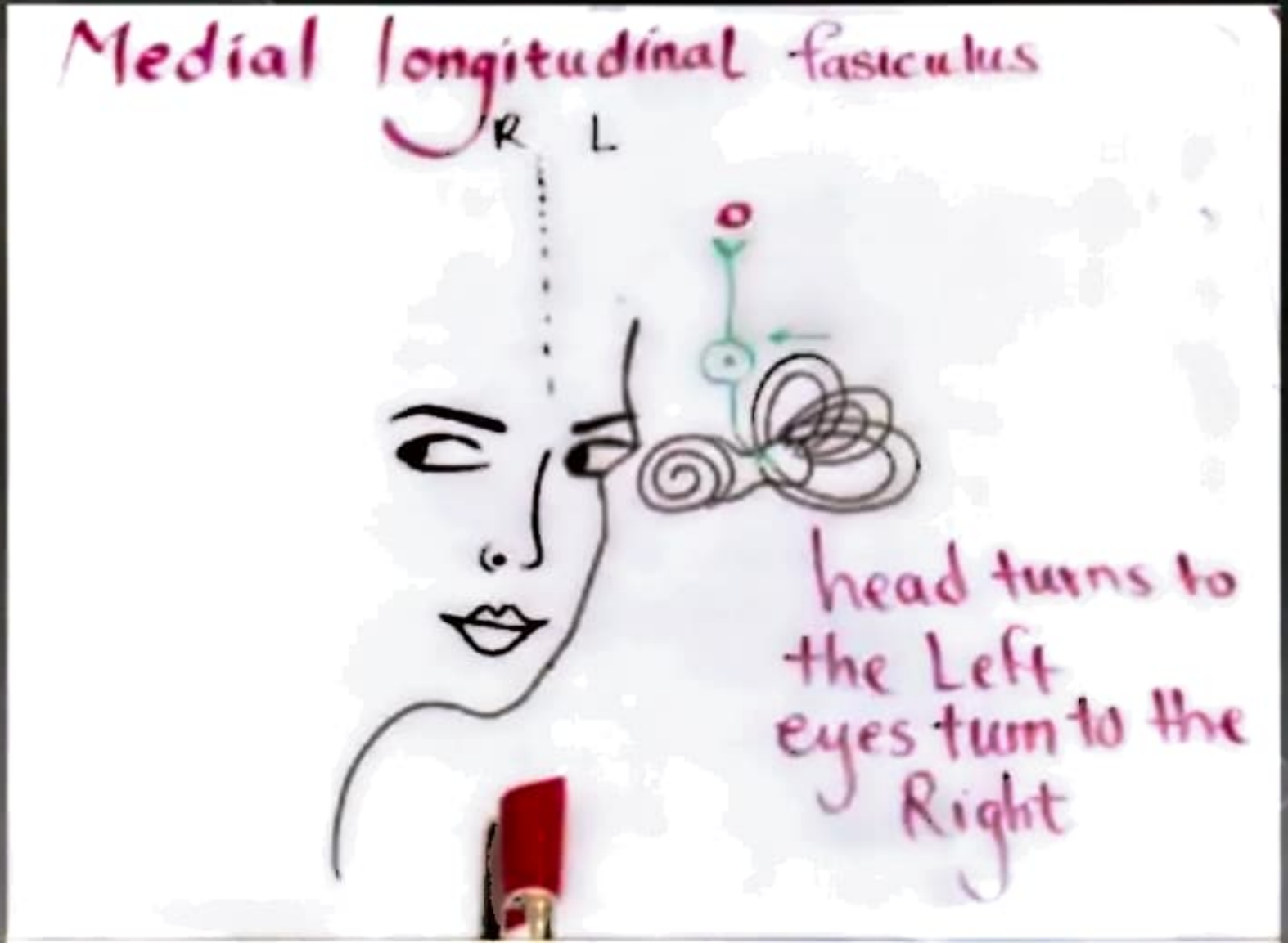
Tectospinal Tract

- Fibres originates from superior colliculi
- Fibres cross the midline at tegmentum of midbrain (dorsal tegmental decussation)
- And descends thro anterior funiculi
- Terminates in AH cells of upper cerviccal levels
- Functions :- turning head and moving arms in response to visual or other stimuli

Olivospinal Tract

- Originates from inferior olivary nucleus
- Descends uncrossed and terminates in AH cells
- May control reflex muscle activity
- Tract is of doubtful existence

Medial Longitudinal Fasciculus



- Extends from midbrain downwards
- Fibres takes origin from
  - Vestibular nuclei
  - Reticular formation
  - Superior colliculus
  - Interstitial nucleus of cajal
  - Posteriior commisure
  - Has connection Cranial nerves 3, 4, 6, 7 , 8, 12
- AH cells of muscles of neck
- Function :- harmonius movement of eye and neck

Functions of Extrapyramidal system

- It prepares muscles to smooth economical movements
- It determines the posture
- It makes automatical involuntary regulation of active conscious movements
- It provides automatical stereotyped movements and reflector protective movements
- It provides motor manifestation of emotions