DR: FATMA TAREK

Internal structures of midbrain

Cerebral peduncles "Ventral part"

Crus cerebri

- **Anterior part of cerebral peduncle.**
- **It contains the following fibers:**

Medial 1/5	*Middle 3/5*	*Lateral 1/5*
Fronto-pontine fibers.	Cortico-spinal & Cortico-bulbar fibers.	Non Fronto-pontine fibers.

Substantia nigra

- One of **extrapyramidal** motor nuclei.
- **It is divided into 2 parts:**

Pars-Compacta	*Pars-Reticularis*
Posterior	Anterior
CELLS	
Nerve cells contain Melanin pigment	Nerve cells
SECRETION	
Dopamine	GABA

- **It projects 2 types of inhibitory fibers:**

Nigro-striate	*Nigro-thalamic*
THEY CONVEY	
Dopamine to corpus striatum	GABA to thalamus
INHIBIT THE ACTIVITY OF	
caudate nucleus	ventral anterior and ventral lateral thalamic nuclei.

- **LESION:** Parkinson's disease.

Tegmentum

TRACTS "4 lemnisci":

1) Medial lemniscus
2) Trigeminal lemniscus
3) Spinal lemniscus
4) Lateral lemniscus

NUCLEI

- **Nuclei of cranial nerves:**

CN 3	→ at the level of superior colliculus
CN 4	→ at the level of inferior colliculus
CN 5	→ mesencephalic nucleus

- **Other nuclei:**

Red nucleus	→	Extrapyramidal motor nucleus, at level of superior colliculus
Locus coeruleus	→	A pigmented area in the **upper pons** and **lower midbrain** (at the level of inferior colliculus), **cells contain melanin pigments** and **secrete norepinephrine**
Reticular formation		

Red nucleus:

Def	an extrapyramidal motor nucleus. relays motor impulses from cerebral cortex and cerebellum to thalamus & spinal cord (cortico-rubro-spinal and dentato-rubro-spinal).
Input	**a. Cortico-rubral tract:** from the motor and premotor areas of the **cerebral cortex**. **b. Dentato-rubral tract:** from the opposite **dentate nucleus of the cerebellum.**
Output	**a. Rubrospinal tract:** to the spinal cord **b. Rubro-thalamic tract:** to the motor nuclei of the thalamus (VA and VL nuclei).
Lesion	**Signs of cerebellar damage** (contralateral tremor and ataxia)

Tectum "Dorsal part"

- **Four colliculi (corpora quadrigemina): 4 rounded elevations**
  - 2 superior colliculi
  - 2 inferior colliculi.

	Superior colliculus	*Inferior colliculus*
Connection to the opposite side	by posterior commissure	by commissure of inferior colliculus
Connection to the thalamus	to **lateral geniculate body** by **superior brachium**	to **medial geniculate body** by **inferior brachium**
Function	✓ Not relay nucleus in visual pathway. ✓ An important visual reflex center. ✓ An auditory reflex center.	✓ A relay nucleus in auditory pathway. ✓ An auditory reflex center for reflexes associated with sound