Brainstem (Midbrain and Pons)

Notes: Please bring pencil crayons to class

Objectives:

• Explain how spinal nerves differ from cranial nerves
• Name all the cranial nerves and know their components and functions
• Identify and locate the CN’s associated with the medulla, pons and midbrain
• Recognize the major internal and external landmarks on the dorsal and ventral surface of the brain stem, so that you can determine if a gross or stained cross section is medulla, pons or midbrain.
• Identify on a typical cross section all the brain stem nuclei containing motor neurons that end on striated muscle.
• List the cranial nerves that contain parasympathetic fibers, the location of their nuclei, and their function
• Explain why cranial nerves are so important in localizing lesions.
• Name reflexes that test these nerves and brain stem levels.
• Relate branches of the vertebrobasilar blood supply to the medulla and pons explaining the deficits that would occur with vascular occlusion.
## Cranial nerve overview

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Brain overview

- Brainstem
  - Midbrain
  - Pons
  - Medulla
- Diencephalon
  - Thalamus
  - Hypothalamus
  - Pineal gland
- Corpus callosum
- Lateral ventricle
- 3rd ventricle
- Cerebral aqueduct
- 4th ventricle
Midbrain (External anatomy)

- Quadrigeminal plate (tectum)
  - Superior colliculus (level of CN III)
  - Inferior colliculus (level of CN IV)
- Cerebral peduncles
- CN III. Oculomotor nerve
  - Somatic motor.
  - Visceral motor.
- CN IV. Trochlear nerve
  - Somatic motor.
  - Lesion of nerve
Midbrain (Internal anatomy)

- Tectum
- Cerebral aqueduct
- Red nucleus
- Substantia nigra
- Cerebral peduncles
- Tegmentum
- Oculomotor nucleus
- Edinger-Westphal nucleus
- Functional significance
Midbrain (Arterial supply)

- Posterior cerebral artery branches
- Basilar artery branches
Pons (External anatomy)

- Basilar pons (pons proper)
- Middle cerebellar peduncle
- Basilar artery
- 4th ventricle
- CN V
- CN VI
- CN VII
- CN VIII

Ventral surface of brainstem

Dorsal surface of brainstem (cerebellum removed)
Mid/Rostral Pons (Internal anatomy)

- Trigeminal motor nucleus
- Functional significance
Caudal Pons (Internal anatomy)

- Facial nucleus
- Superior salivatory nucleus
- Abducens nucleus
- Functional significance
Pons (Arterial supply)

- Basilar artery
  - Median and circumferential branches