Brainstem (Medulla)

Dental Neuroanatomy

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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

• Recognize the major internal and external landmarks on the dorsal and ventral surface of the medulla, 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.

• Explain what the meninges cover and what spaces they surround.

• For each meningeal space describe a classic source for blood in the space.

• Describe where CSF is produced and how it circulates and is removed.

• Name the most likely sites of obstruction of CSF circulation and the consequences.

• Explain how the Blood Brain Barrier is different from the CSF Brain interface.

Medulla (External anatomy)

- Pyramid
- Olive
- Pyramidal decussation
- 4th ventricle
- Functional significance of medulla:

CN IX. Glossopharyngeal nerve

- Somatic motor.
- Visceral motor.

CN X. Vagus nerve

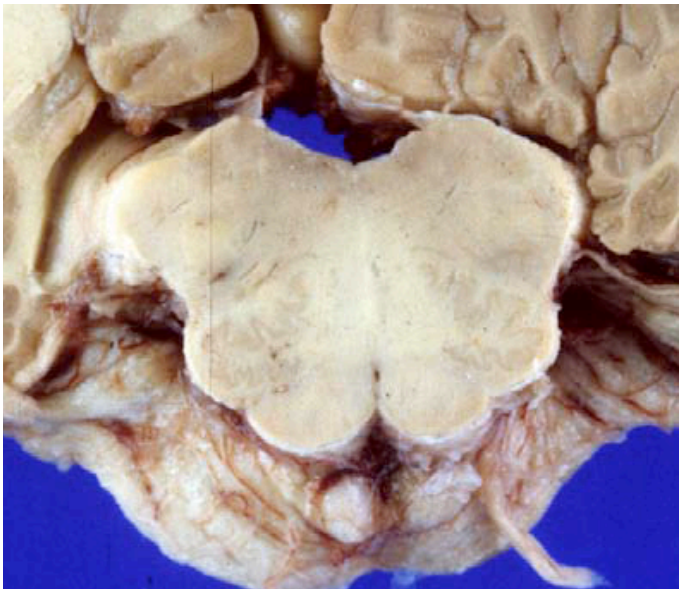
- Somatic motor.
- Lesion of nerve

CN XI. Spinal accessory nerve

- Branchial motor.

CN XII. Hypoglossal nerve

- Somatic motor.

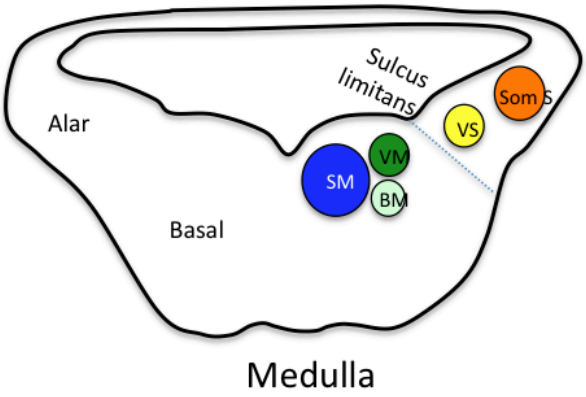


Medulla (x-section)

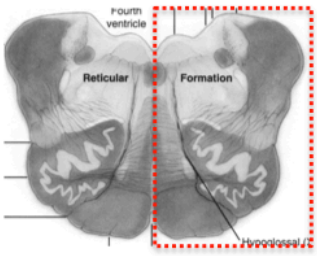
Brainstem (ventral view)

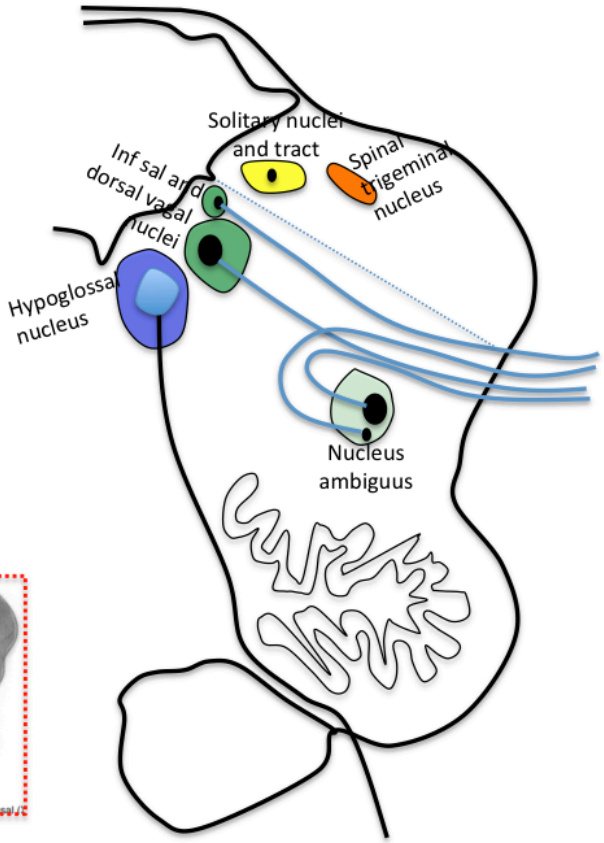
Medulla (Internal anatomy)

- 4th ventricle
- Pyramid
- Olive
- Inferior olivary nucleus
- Inferior cerebellar peduncle
- Hypoglossal nucleus
- Dorsal motor nucleus
- Inferio salivatory nucleus
- Nucleus ambiguus



Medulla

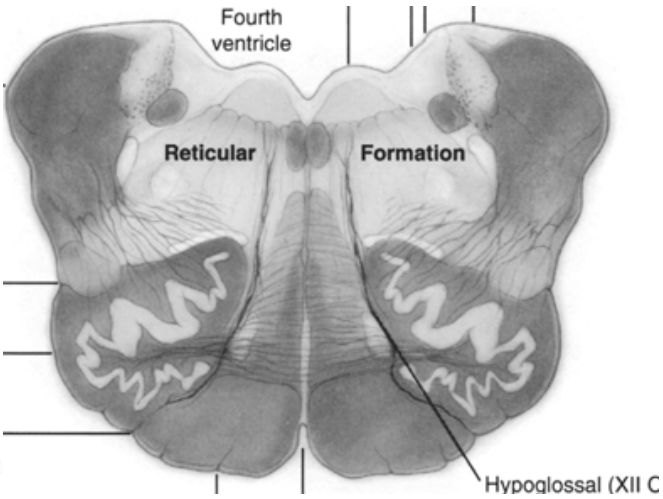


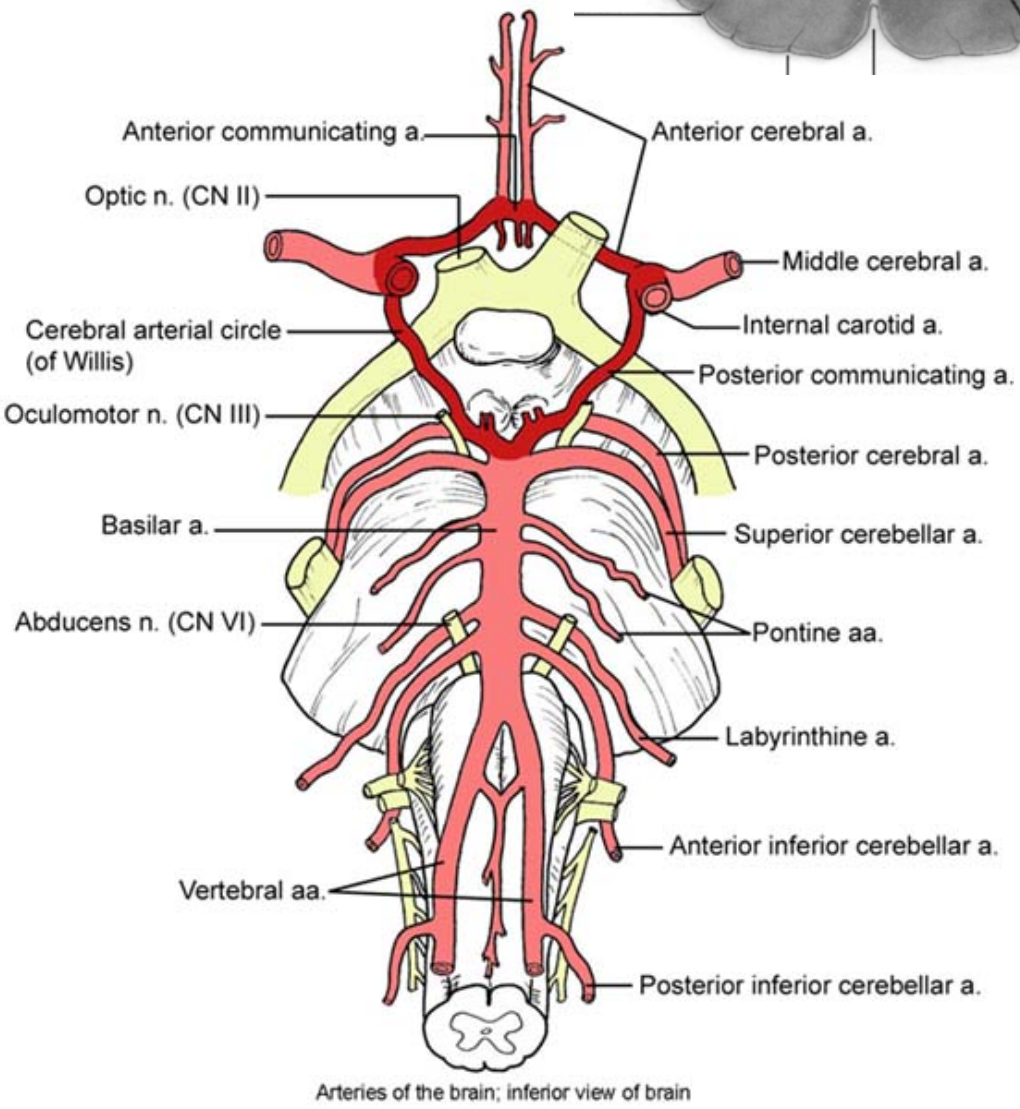


Medulla (x-section)

Midbrain (Arterial supply)

- Vertebral artery
- Anterior spinal artery
- PICA

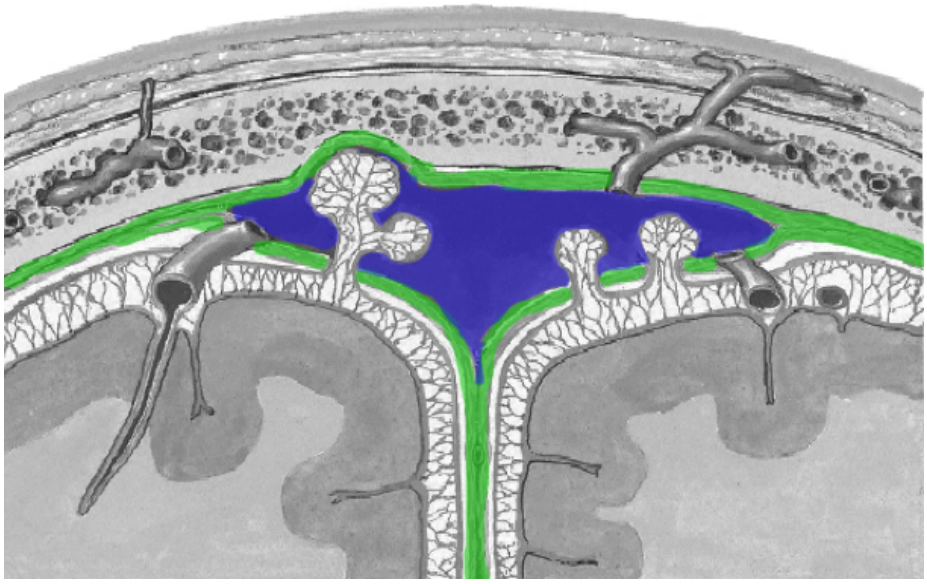




Arteries of the brain; inferior view of brain

Cranial meninges

- Dura mater
    - Periosteal layer
    - Meningeal layer
- Arachnoid mater
- Pia mater



- Blood in meningeal spaces or potential spaces

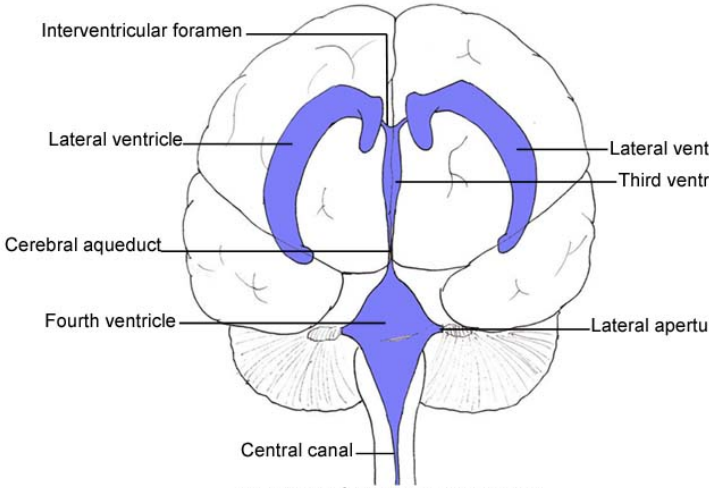
1. Epidural hemorrhage

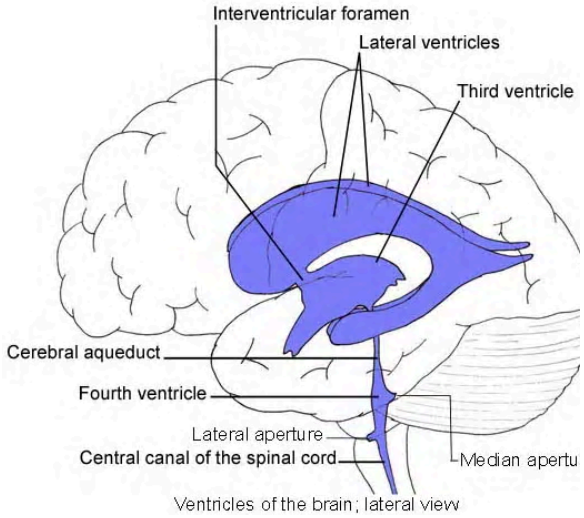
2. Subdural hemorrhage

3. Subarachnoid hemorrhage

- Stroke

The ventricular system





- Hydrocephalus
    - Obstructive (non-communicating) hydrocephalus

    - Communicating (non-obstructive) hydrocephalus