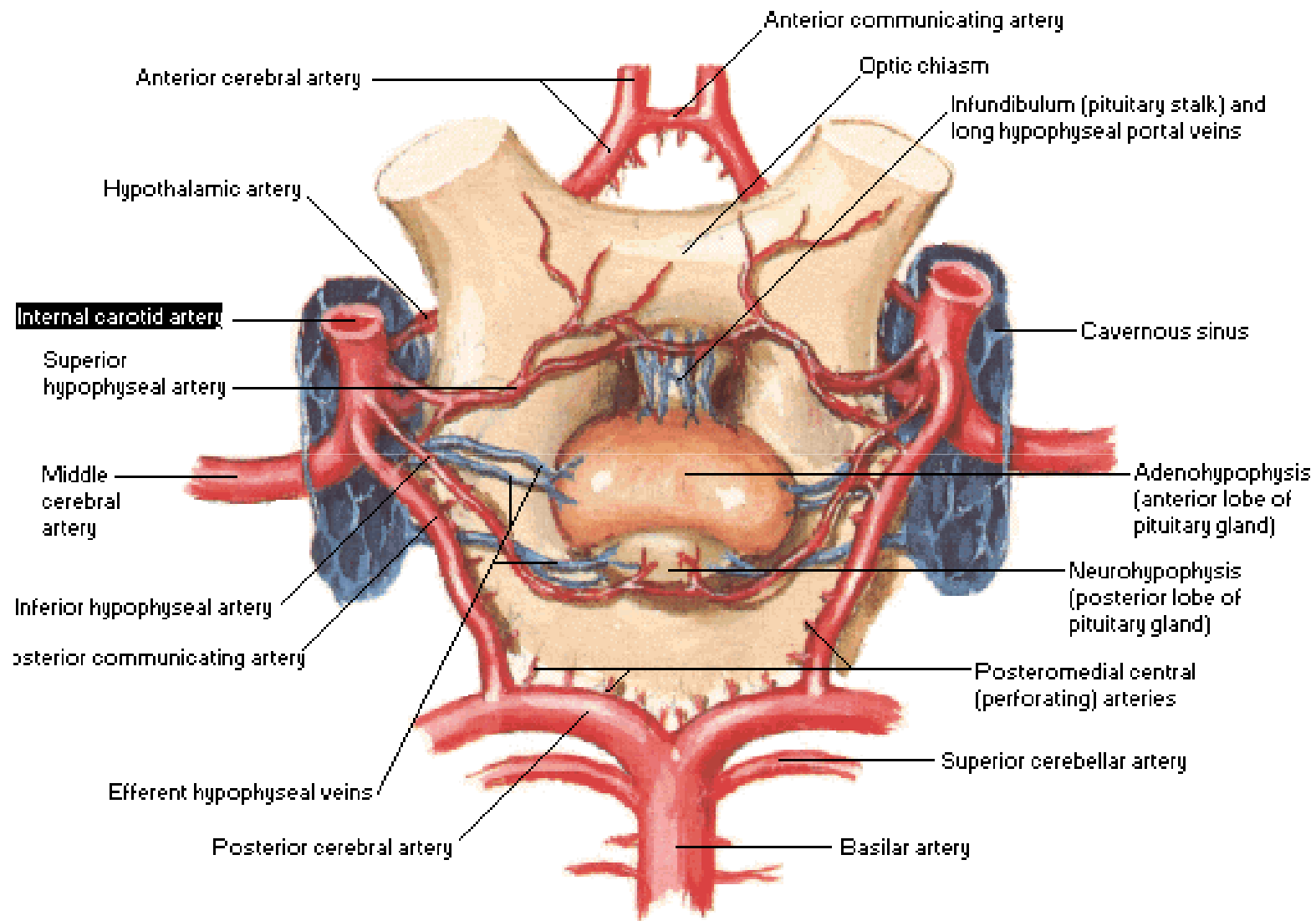
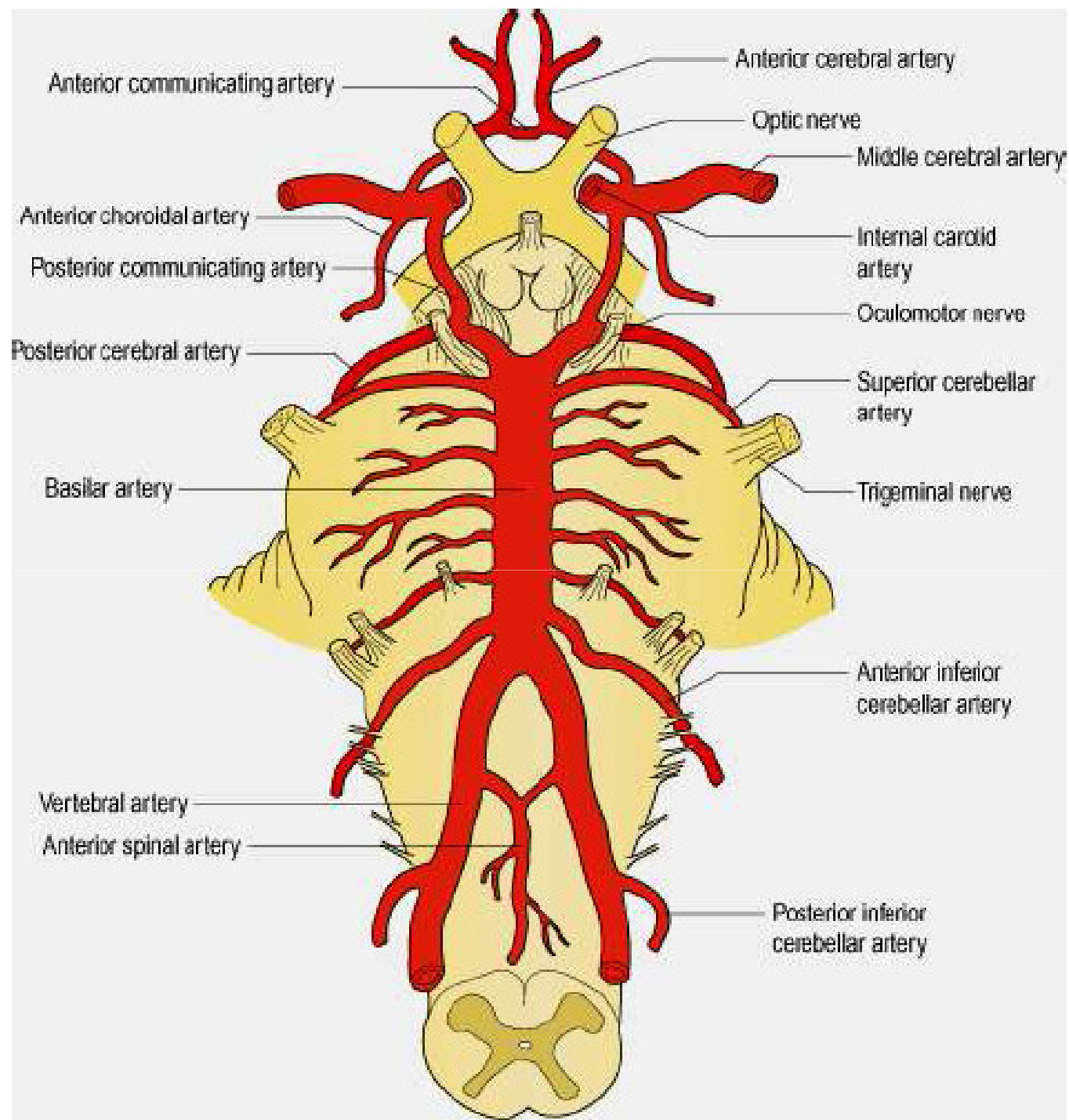
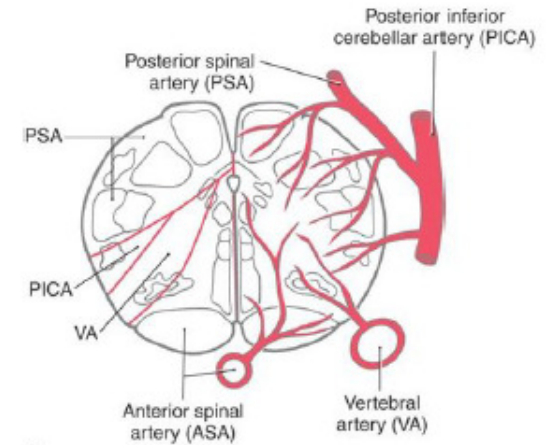
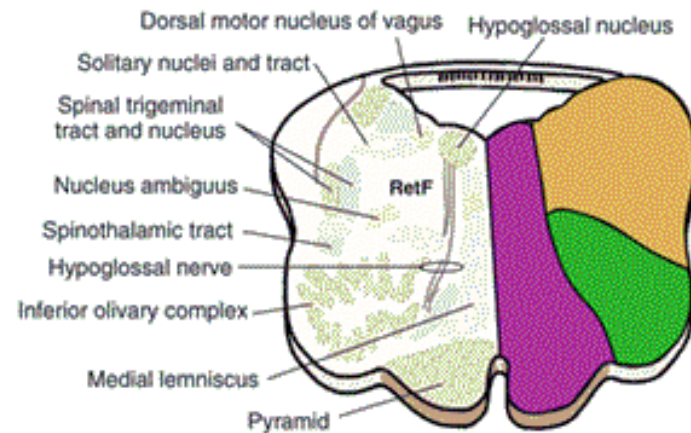
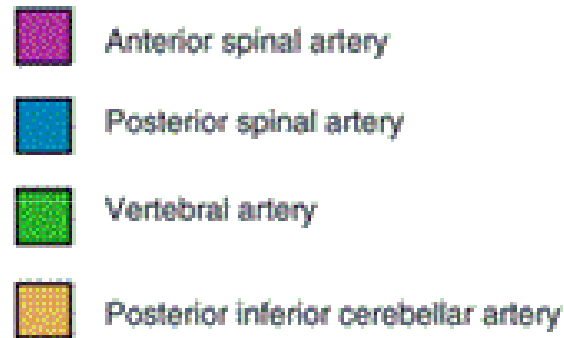
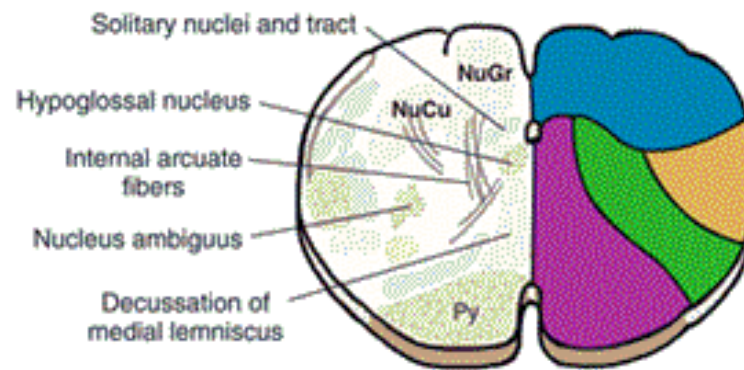


Cerebral Arterial Circle [Willis] - Vessels in Situ

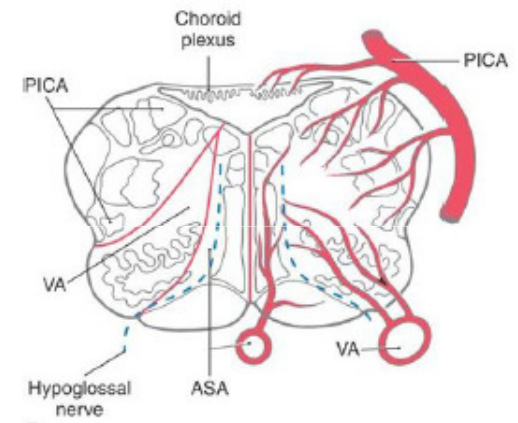
Inferior View



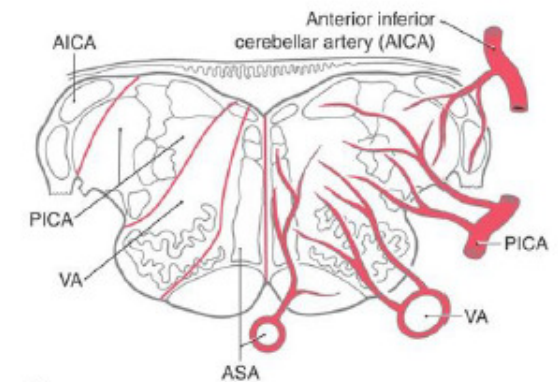




A



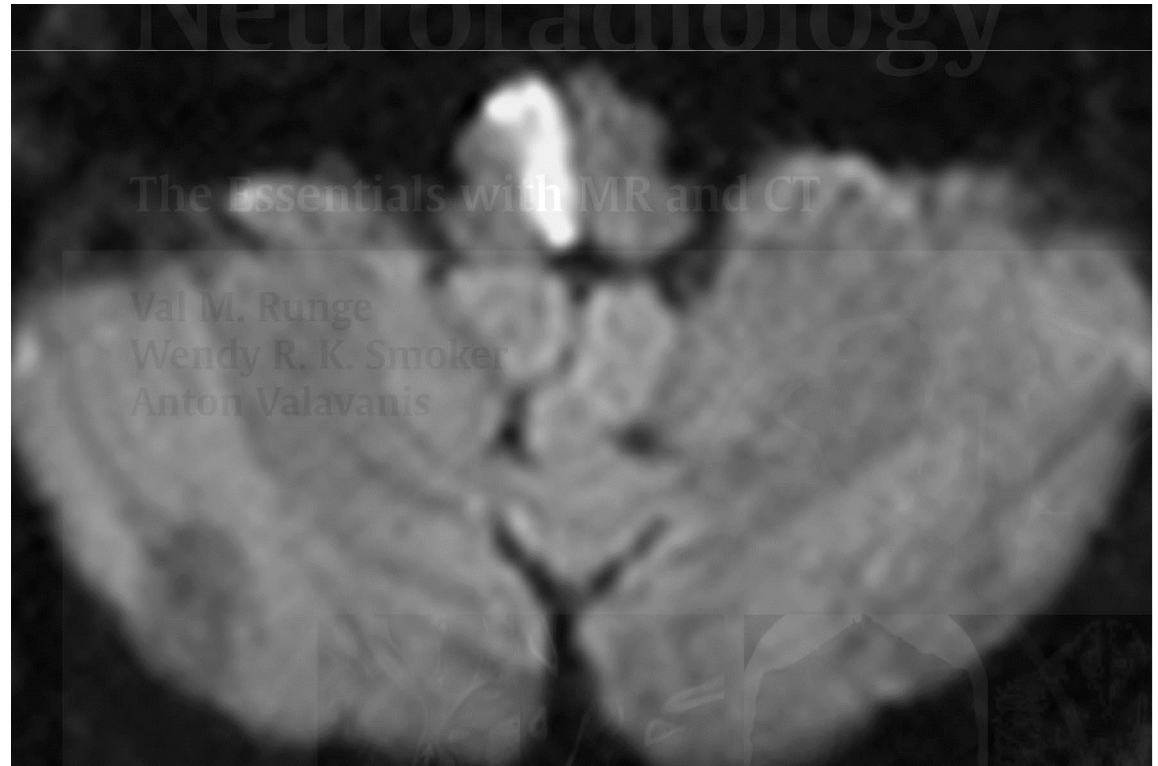
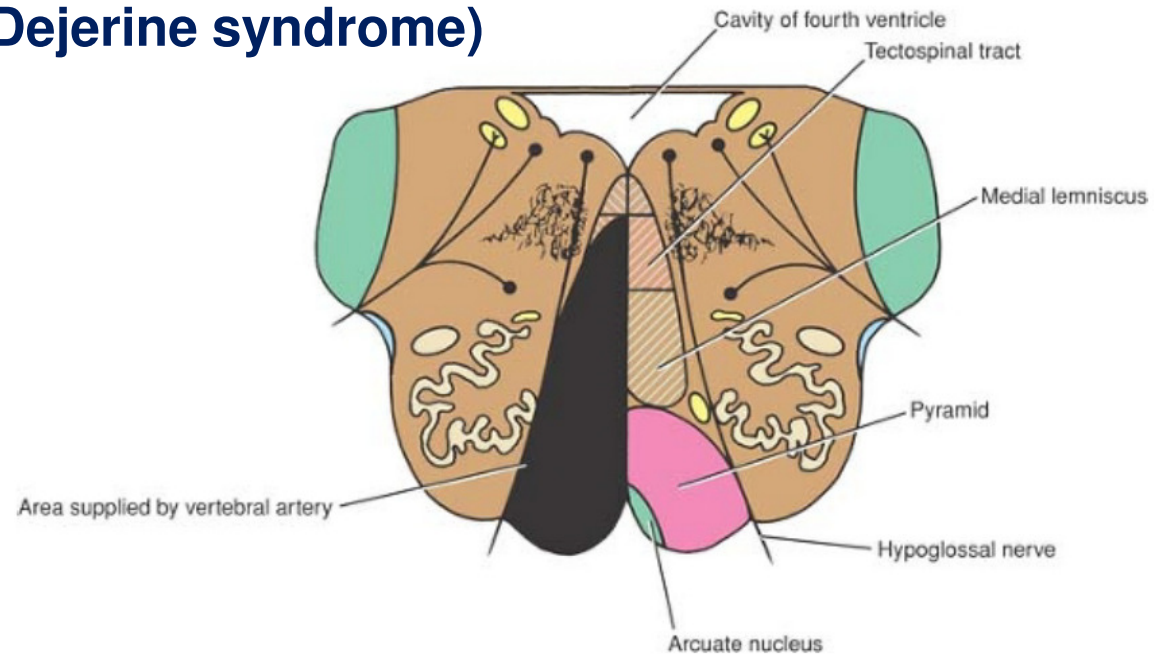
B



C

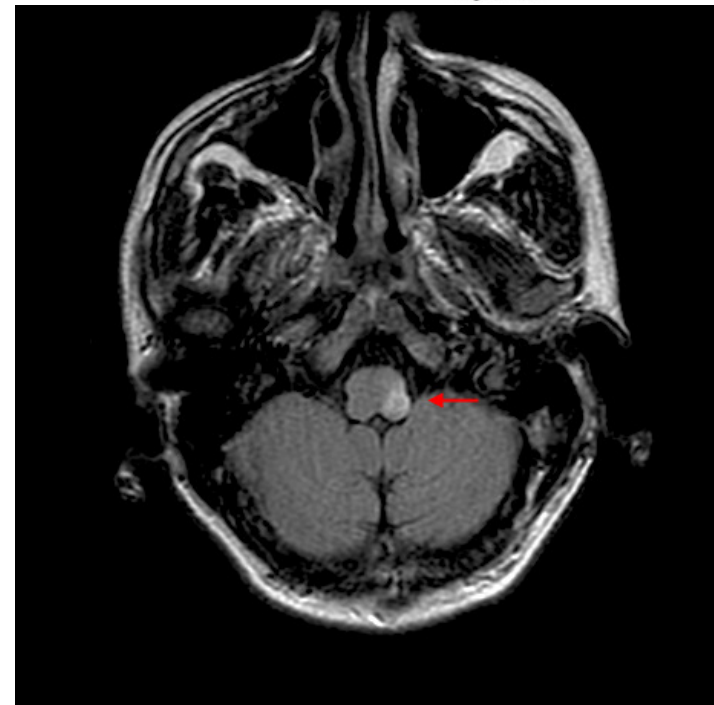
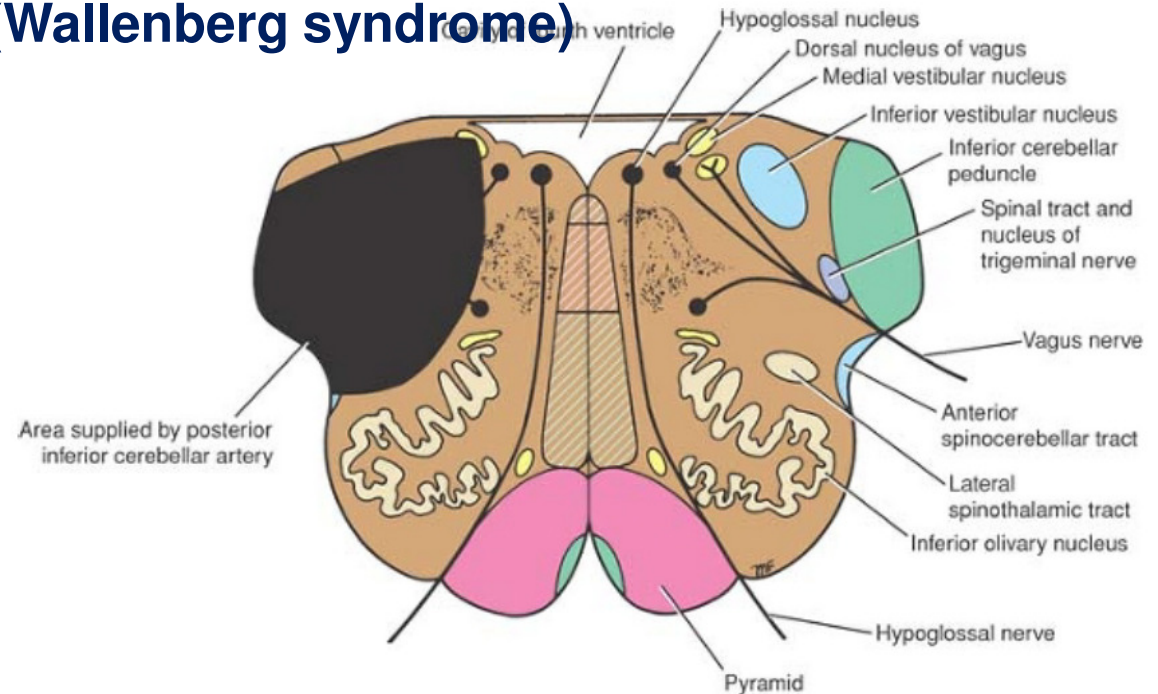
Medial medullary syndrome (Dejerine syndrome)

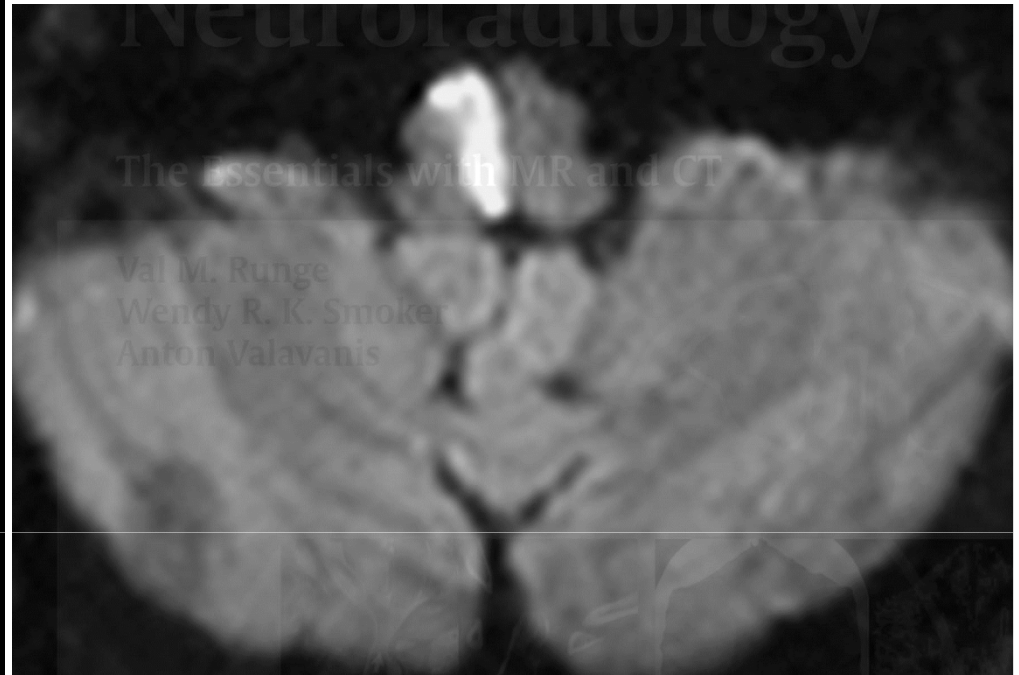
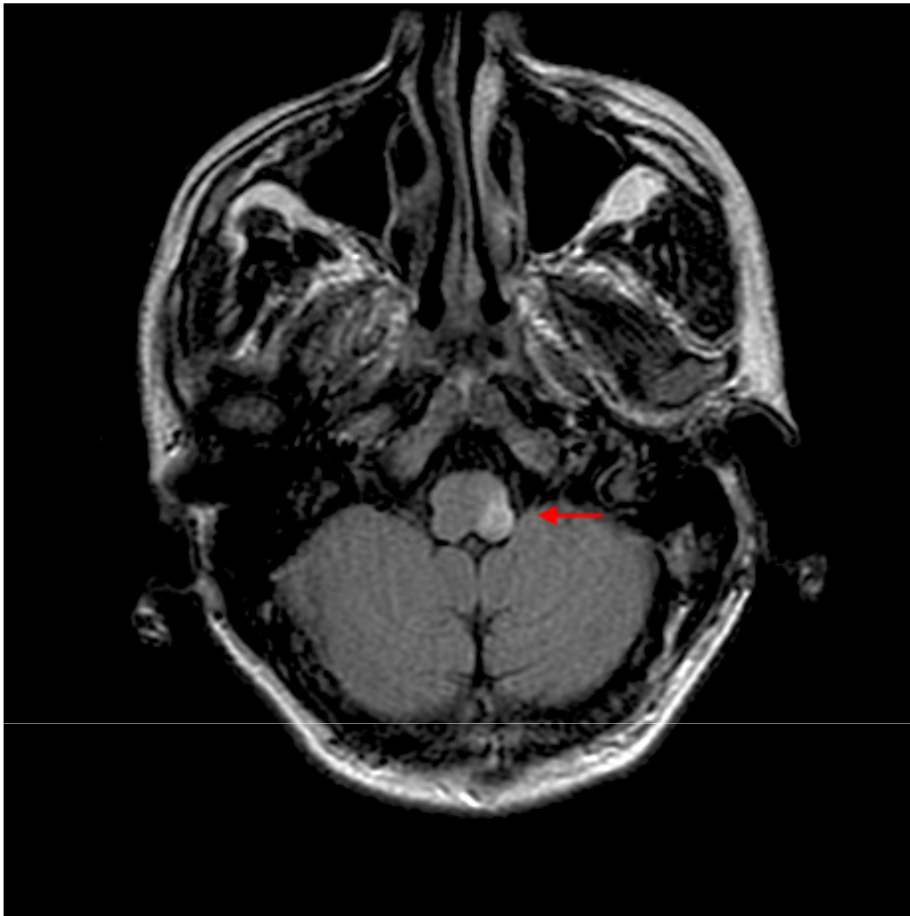
- Symptoms
 - contralateral hemiparesis (pyramidal and corticospinal damage)
 - contralateral loss of proprioception and vibratory sense (medial lemniscus)
 - deviation of the tongue to the ipsilateral side when it is protruded (hypoglossal root or nucleus injury)



Lateral medullary syndrome (Wallenberg syndrome)

- Symptoms
 - contralateral loss of pain and temperature sensation from the body (anterolateral system)
 - ipsilateral loss of pain and temperature sensation from the face (spinal trigeminal tract and nucleus),
 - vertigo and nystagmus (vestibular nuclei),
 - loss of taste from the ipsilateral half of the tongue (solitary tract and nucleus),
 - hoarseness and dysphagia (nucleus ambiguus or roots of cranial nerves IX and X)
 - **Ipsilateral Horner syndrome:**
hypothalamospinal fibers





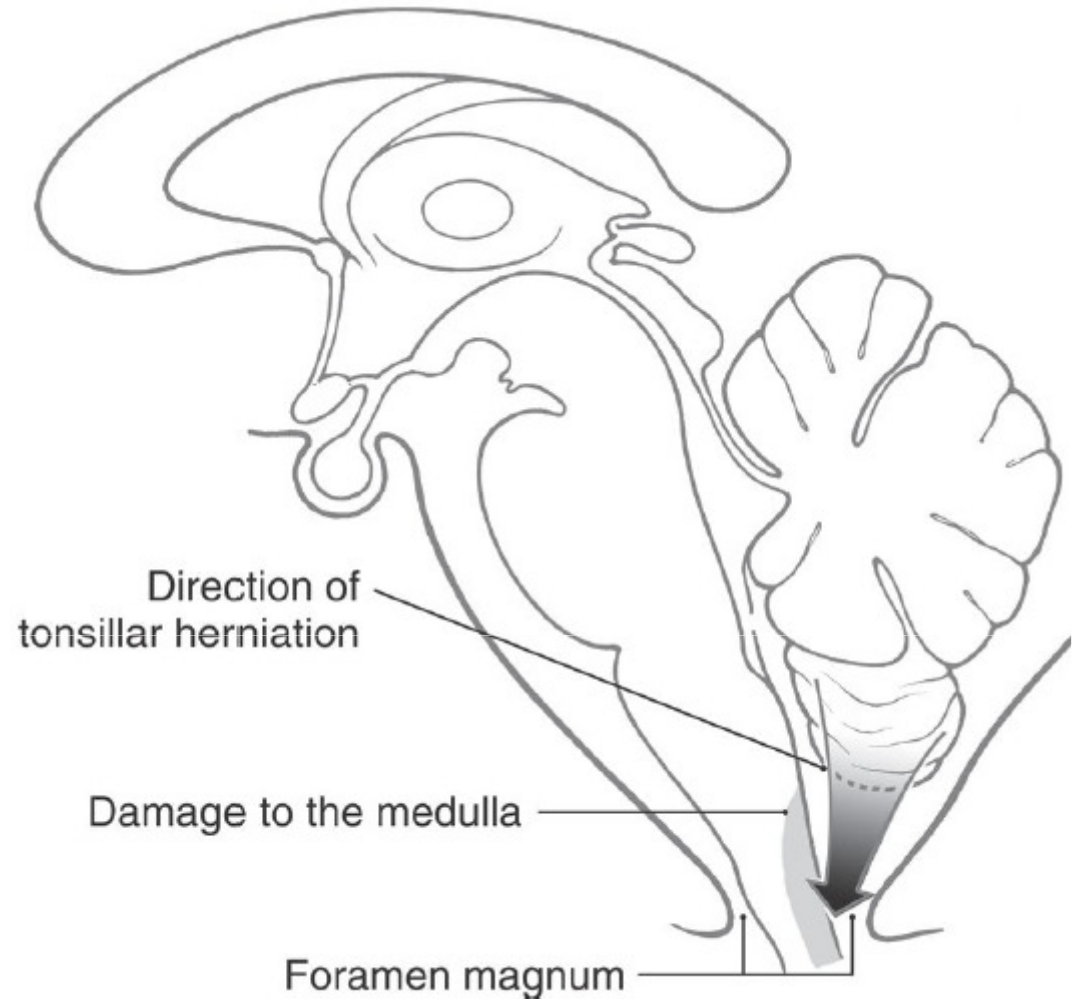
TONSILLAR HERNIATION

❑ Causes:

- mass in the posterior fossa (tumor, hemorrhage)
- **increase in intracranial pressure**
- The major concern in acute herniation is damage to the **ventrolateral reticular area** (heart rate and respiration)

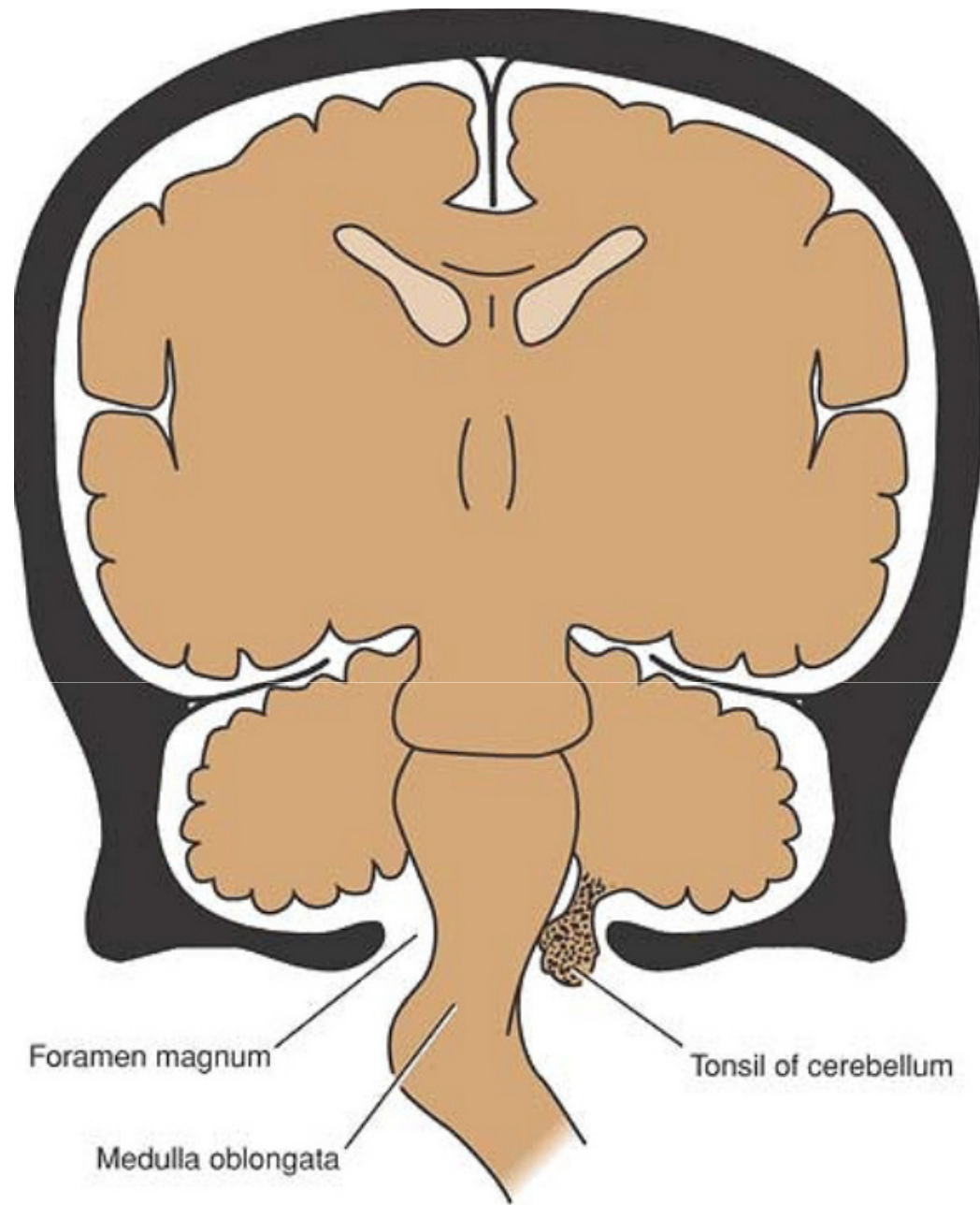
❑ Symptoms

- sudden change in heart rate and respiration
- **hypertension**
- **hyperventilation**
- rapidly decreasing levels of consciousness
- If severe death



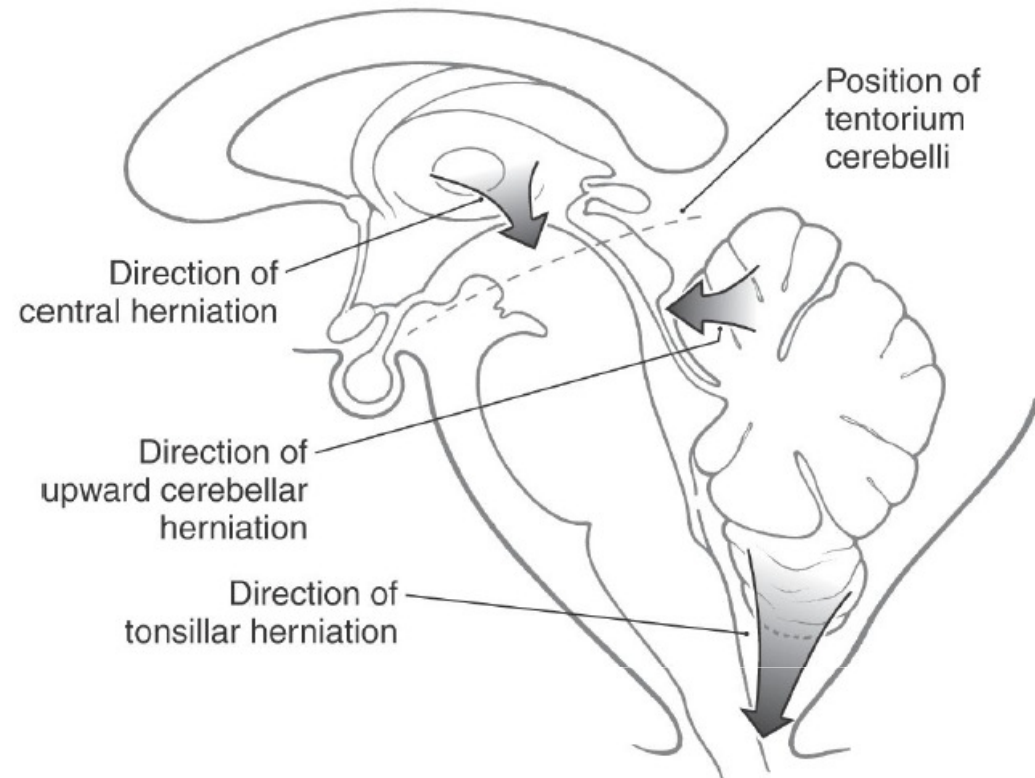
Arnold-Chiari Phenomenon

- Congenital anomaly in which there is a herniation of the tonsils of the cerebellum and the medulla oblongata through the foramen magnum into the vertebral canal



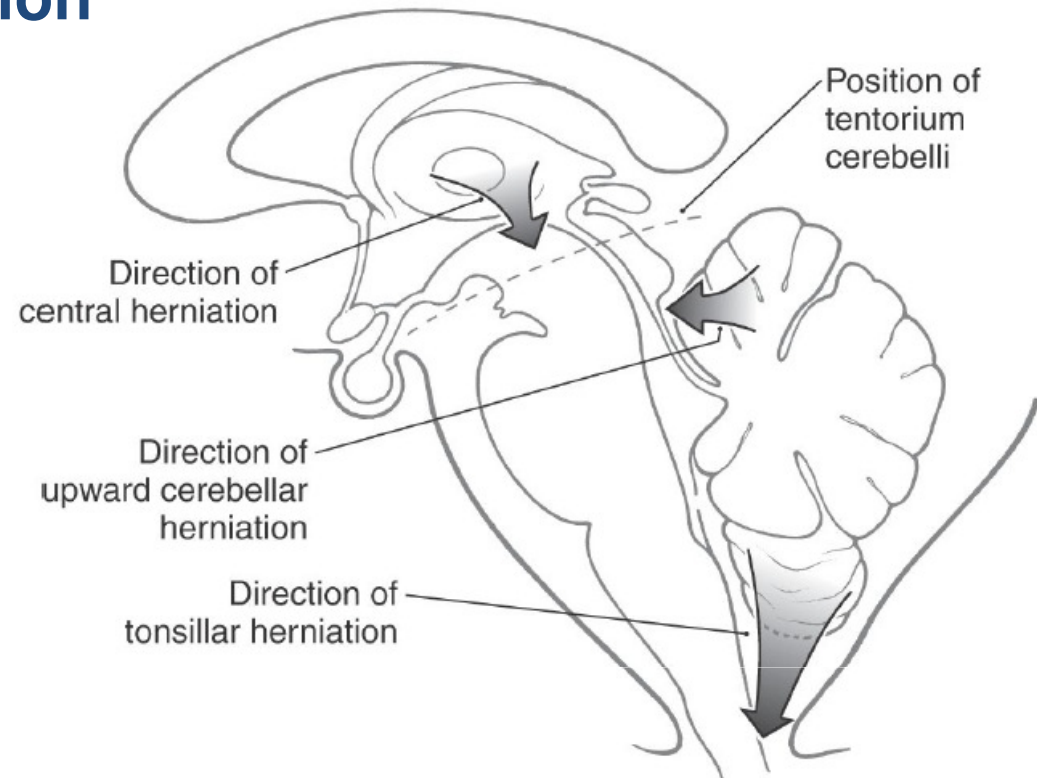
Central herniation

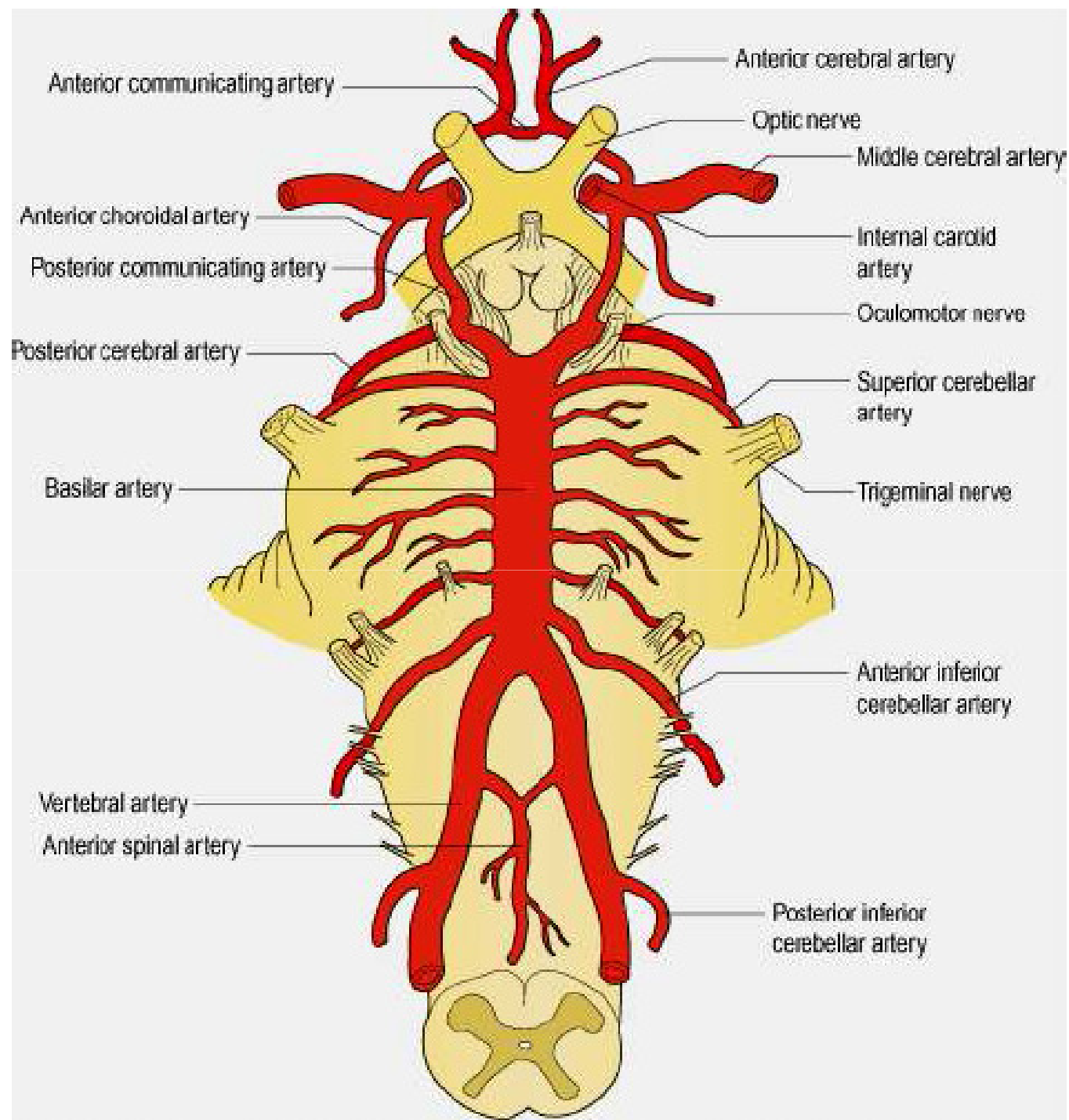
- ❑ space occupying lesion in the hemisphere (supratentorial compartment) elevates intracranial pressure and forces the diencephalon downward through the tentorial notch and into the brainstem
- ❑ Symptoms: change in respiration, eye movements are irregular,
 - As the damage progresses downward into the brainstem, there is significant change in respiration
 - Tachypnea and apnea
 - profound loss of motor and sensory functions,
 - probable loss of consciousness.

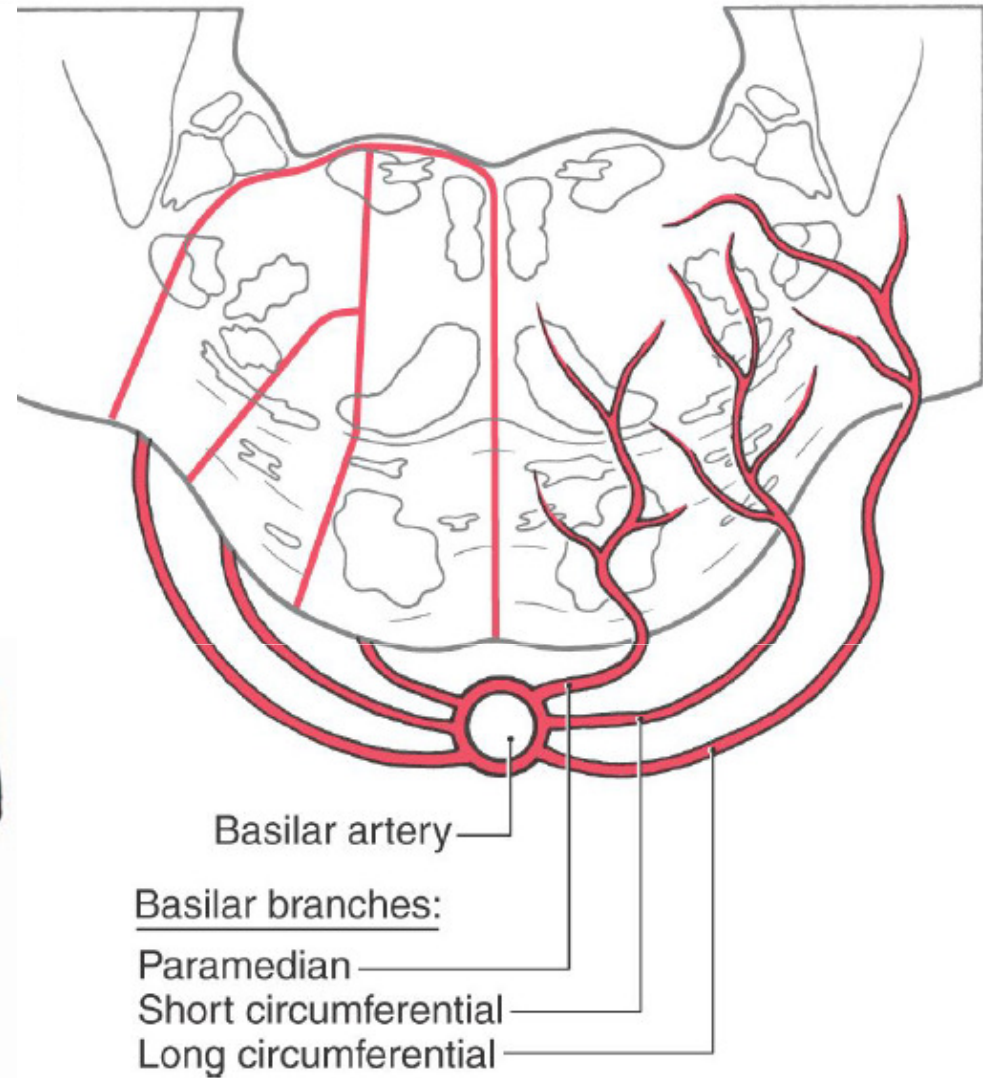
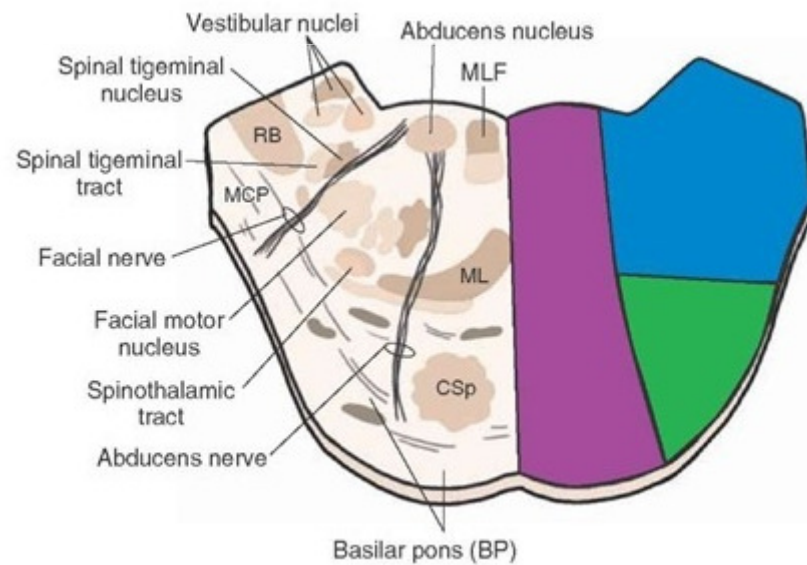
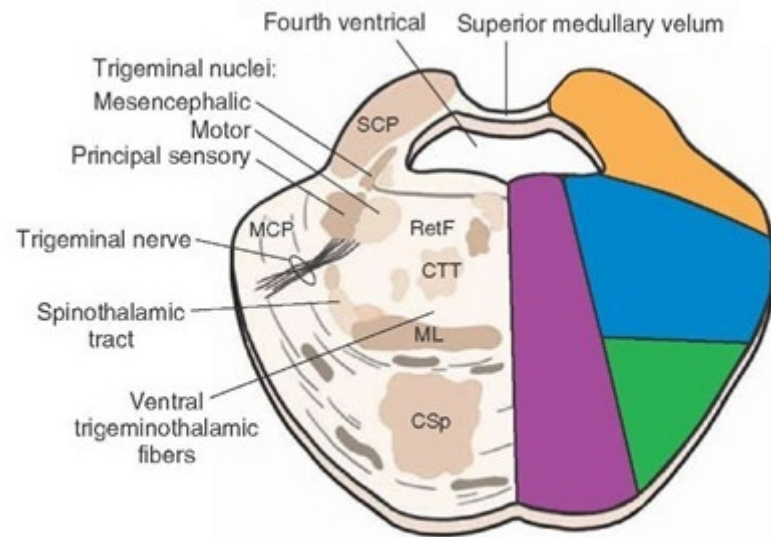


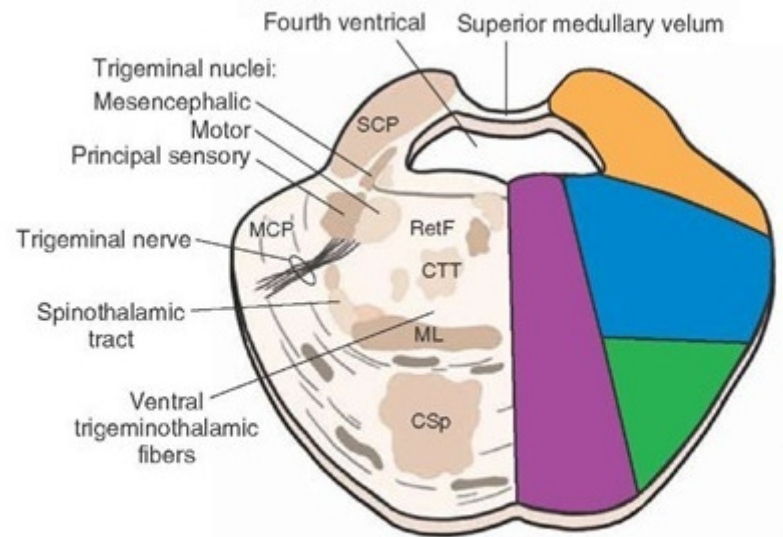
Upward Cerebellar Herniation

- A mass in the posterior fossa may force portions of the cerebellum upward through the tentorial notch (upward cerebellar herniation) and compress the midbrain
- The result may be occlusion of branches of the superior cerebellar artery with resultant infarction of cerebellar structures or obstruction of the cerebral aqueduct and hydrocephalus.
- The latter is seen as signs characteristic of an increase in intracranial pressure
- vomiting, headache, lethargy, decreased levels of consciousness).

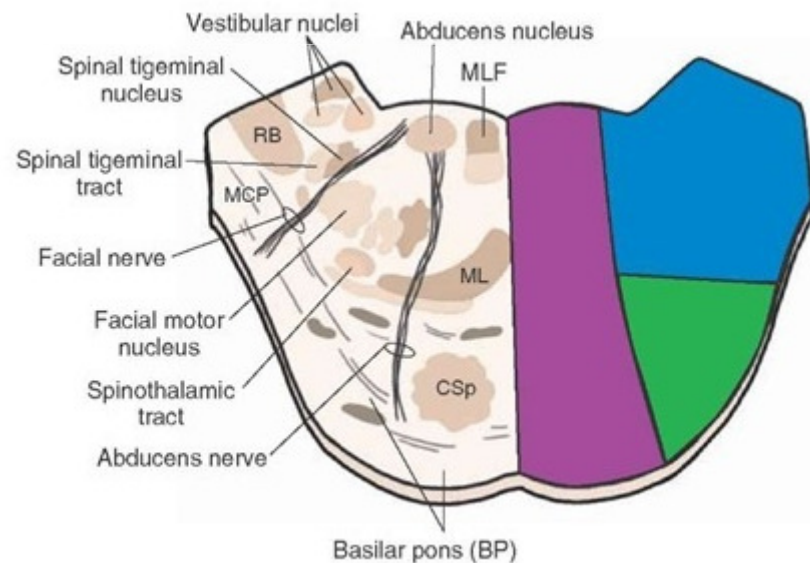








-  Paramedian branches of basilar artery
-  Long circumferential branches of basilar artery and branches of anterior inferior cerebellar artery (AICA)
-  Long circumferential branches of basilar artery
-  Long circumferential branches of basilar artery and branches of superior cerebellar artery (SCA)

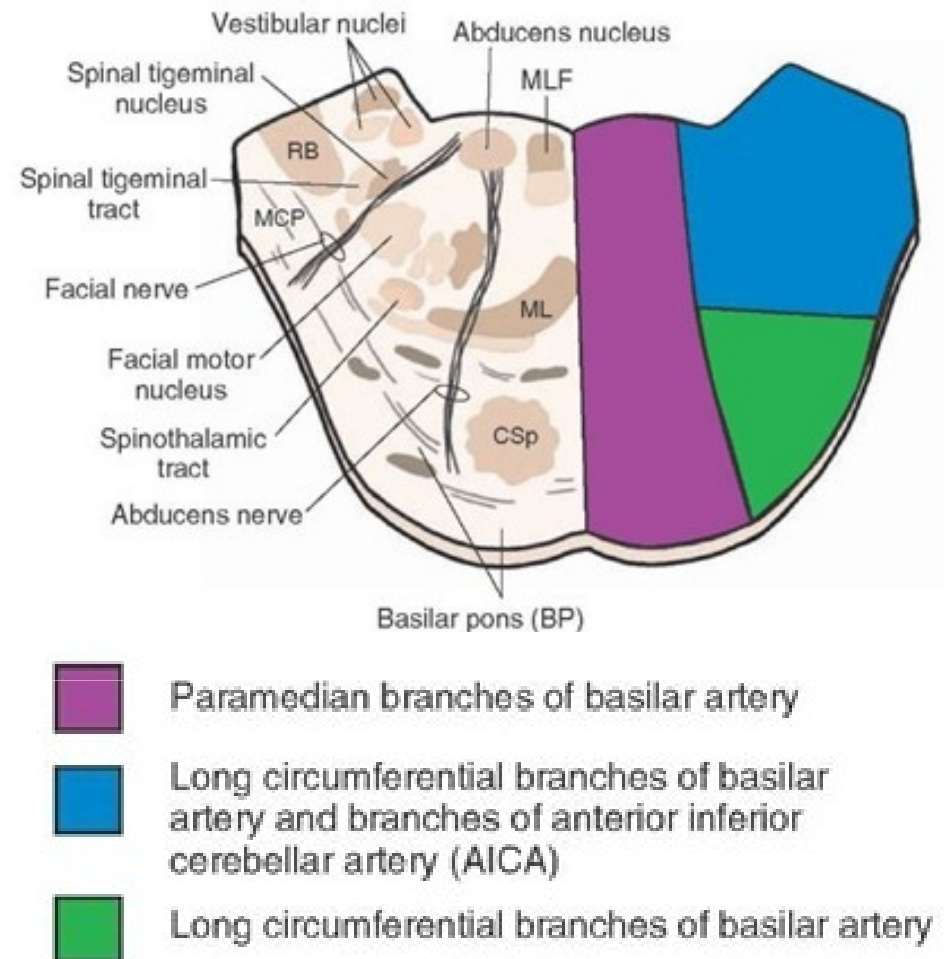


Foville syndrome

- Due to: Occlusion of the paramedian branches
- ipsilateral abducens nerve paralysis
- contralateral hemiparesis
- variable contralateral sensory loss reflecting various degrees of damage to the medial lemniscus

Millard-Gubler syndrome

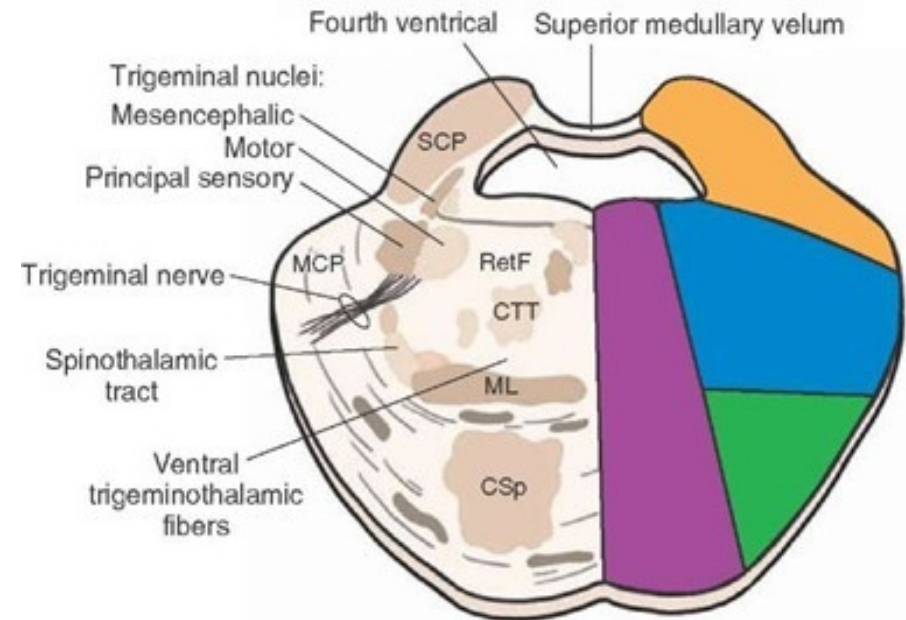
- If the area of damage is shifted somewhat laterally to include the root of the **facial nerve along with corticospinal fibers**, the patient has **a contralateral** hemiparesis and an ipsilateral paralysis of the facial muscles



syndrome of the midpontine base

- Due to: Occlusion of the paramedian branches and short circumferential branches
- Corticospinal fibers (contralateral hemiparesis)
- sensory and motor trigeminal roots (ipsilateral loss of pain and thermal sense and paralysis of the masticatory muscles),
- fibers of the middle cerebellar peduncle (ataxia).

hallmark of brainstem vascular lesions, **ipsilateral cranial nerve sign coupled with a contralateral long tract sign**



Paramedian branches of basilar artery



Long circumferential branches of basilar artery and branches of anterior inferior cerebellar artery (AICA)

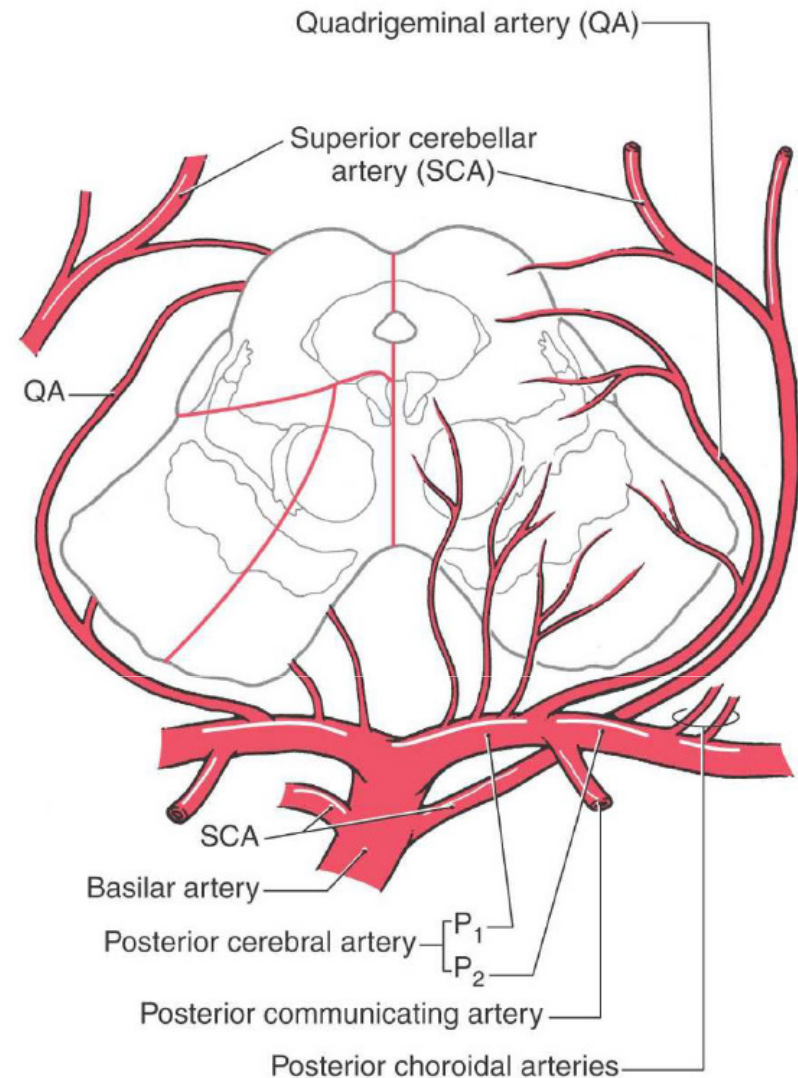


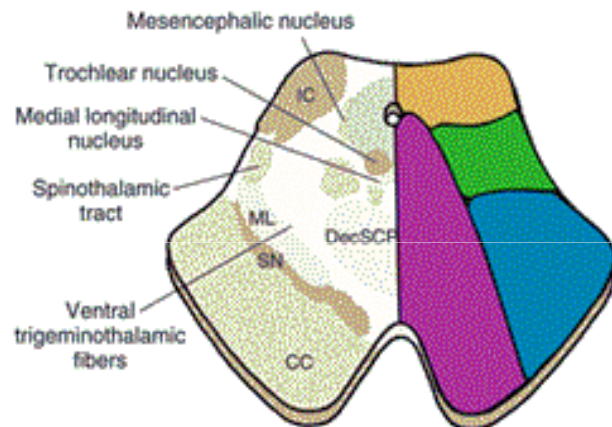
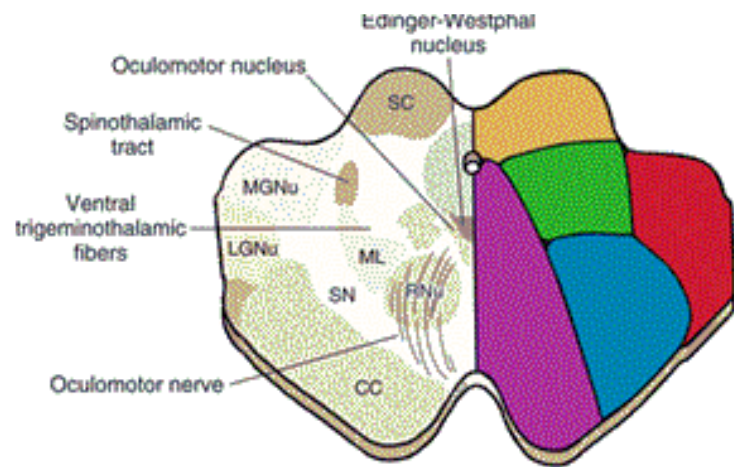
Long circumferential branches of basilar artery



Long circumferential branches of basilar artery and branches of superior cerebellar artery (SCA)

- **basilar artery**
 - **quadrigeminal**
 - **superior cerebellar arteries**
- **Internal carotid: anterior choroidal artery**
- **Posterior cerebral artery: medial posterior choroidal artery**





-  Anteromedial (paramedian) branches of basilar bifurcation and posterior cerebellar artery (paramedian branches)
-  Anterolateral (short circumferential) branches of the quadrigeminal and medial posterior choroidal arteries
-  Lateral branches of quadrigeminal (level of inferior colliculus) and posterior medial choroidal arteries (level of superior colliculus)
-  Quadrigeminal and superior cerebellar arteries (level of inferior colliculus), quadrigeminal and posterior medial choroidal arteries (level of superior colliculus)
-  Thalamogeniculate artery posterior cerebral artery

paramedian branches

are the oculomotor, trochlear, and Edinger-Westphal nuclei; the exiting oculomotor fibers; the red nucleus; and medial aspects of the substantia nigra and crus cerebri

Medial regions of the midbrain receive numerous small branches from posterior cerebral artery and from the **posterior communicating artery**

Ventrolateral regions of the midbrain are served by penetrating branches of the **quadrigeminal artery the anterior choroidal artery, and the medial posterior choroidal artery**. The region served by these branches includes the lateral parts of the crus and substantia nigra and the medial lemniscus

The posterior midbrain is served primarily by the **quadrigeminal artery** which typically arises from posterior cerebral artery. Much of the periaqueductal gray, the nuclei of the superior and inferior colliculi, the anterolateral system, and the brachium of the inferior colliculus are served by quadrigeminal branches. Additional blood supply medial branches of the **superior cerebellar artery**