

BRAIN STEM AND CEREBELLUM..

(CNS Block, Radiology)



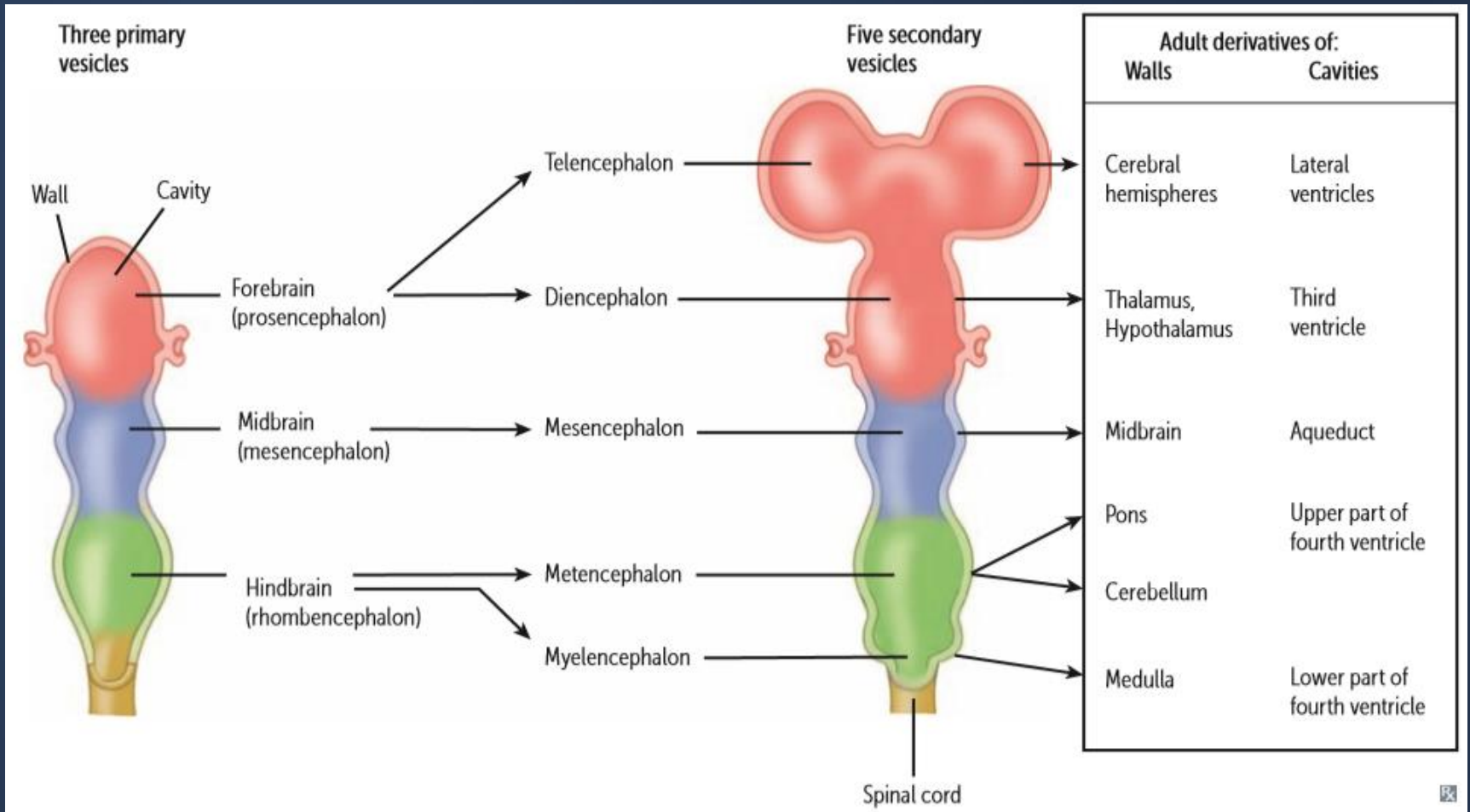
Lecture Objectives..



Students at the end of the lecture will be able to:

- Identify radiological anatomy of brain stem and cerebellum.
- Compares CT and MRI imaging of brain stem and cerebellum.
- Recognize the imaging findings in common diseases involving brain stem and cerebellum.

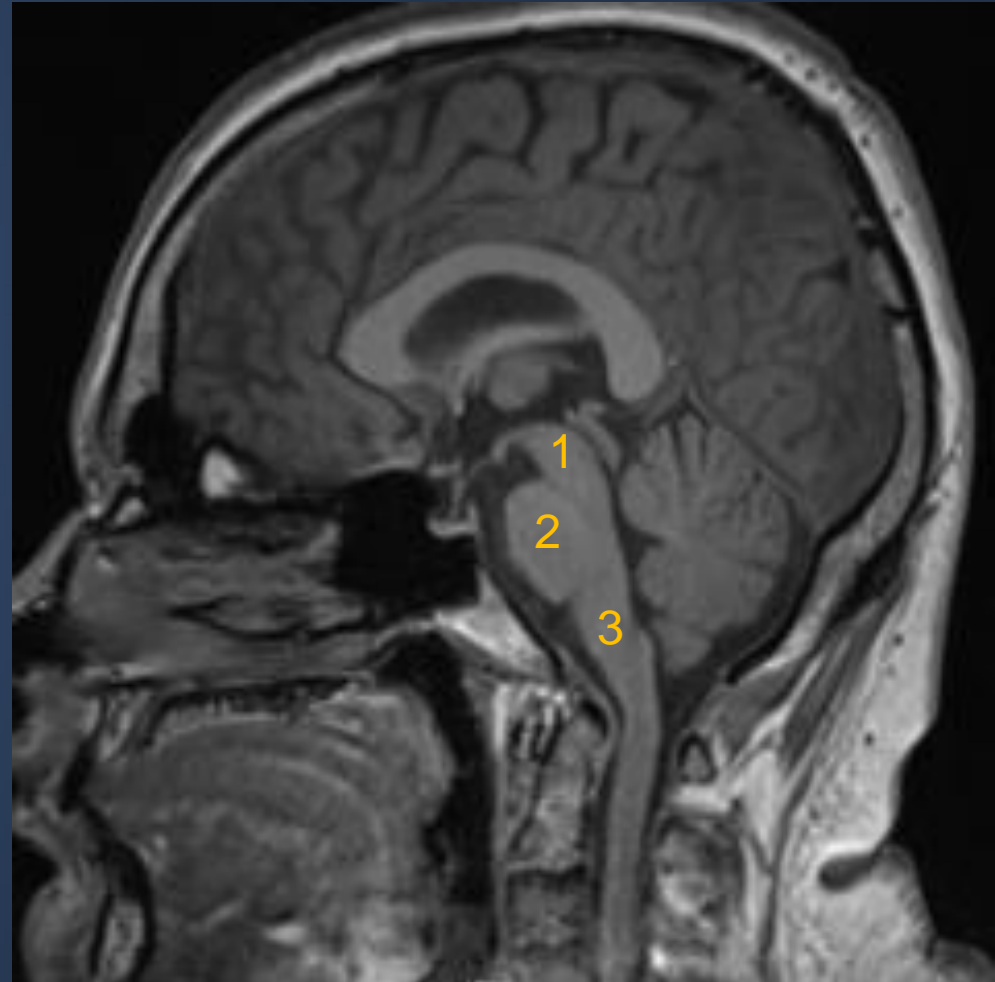
Brain Divisions..



Brain Stem..



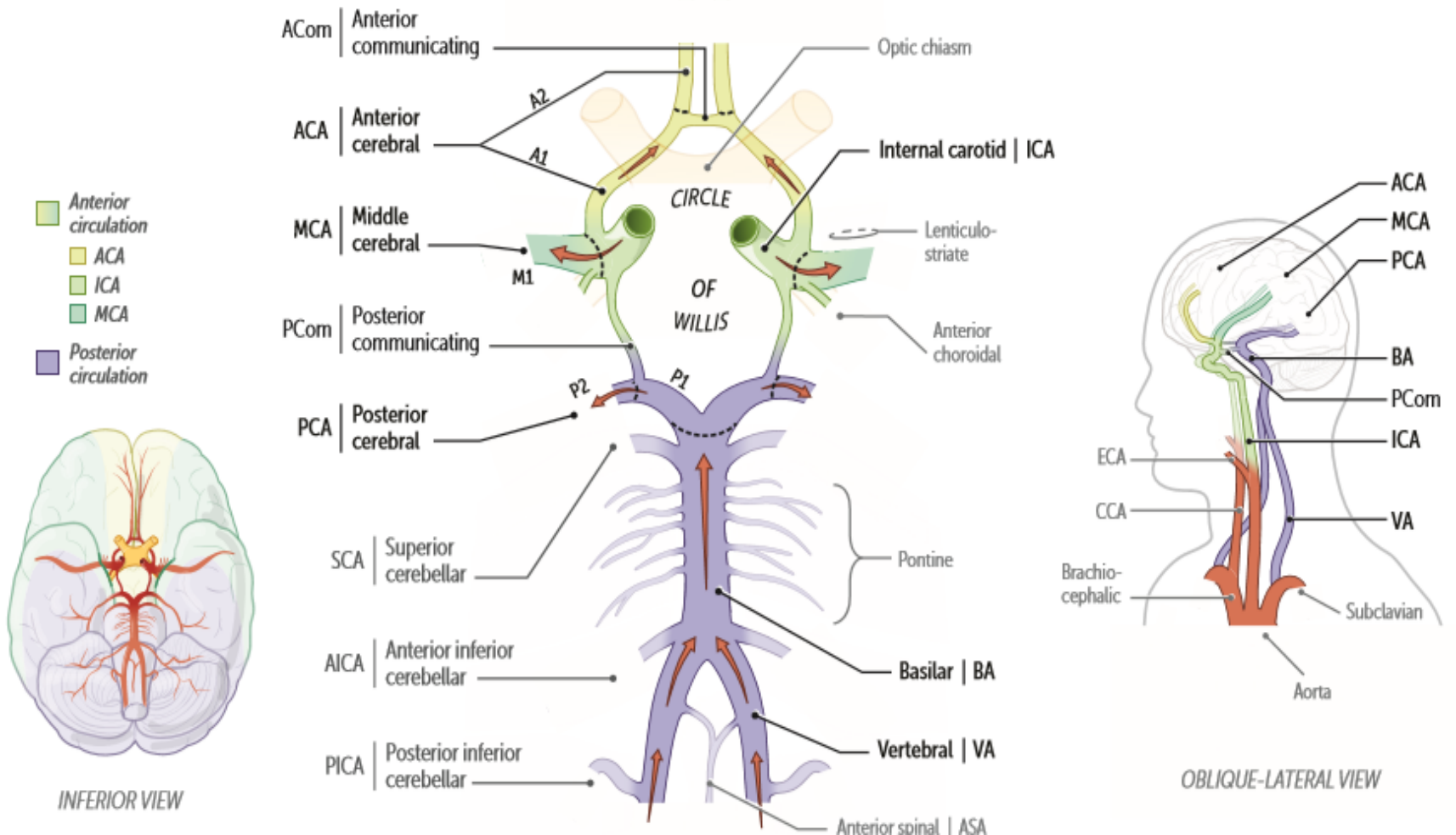
- Three parts from superior to inferior:
 - 1 midbrain
 - 2 pons
 - 3 medulla oblongata



Brain Stem..

Circle of Willis

System of anastomoses between anterior and posterior blood supplies to brain.

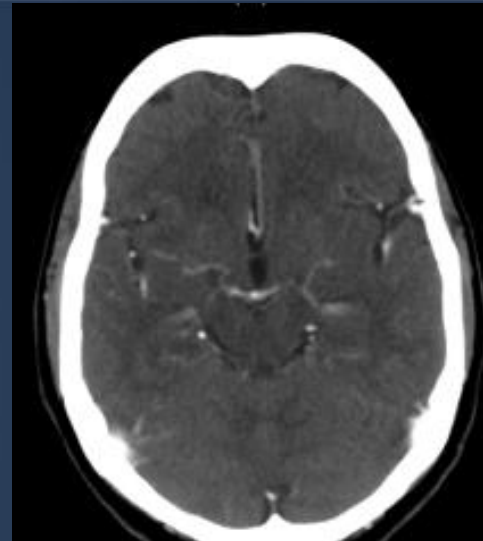


Midbrain..

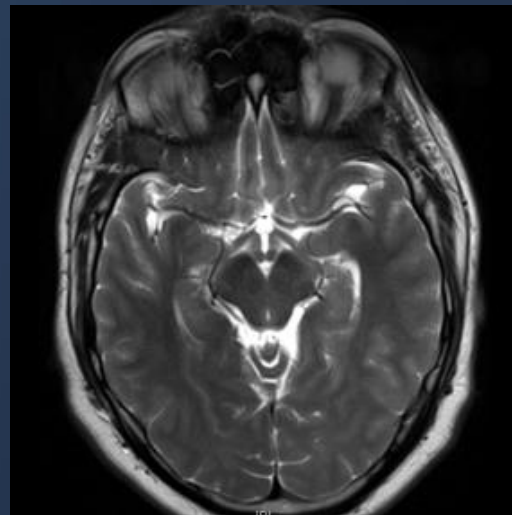


Radiological Features:

- At the level of circle of willis
- Anteriorly two cerebral peduncles separated by interpeduncular fossa
- Posteriorly four rounded prominences (superior and inferior colliculi)



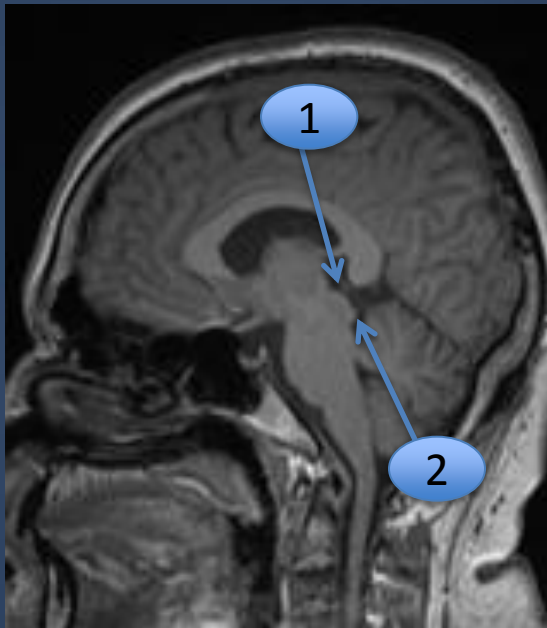
CT+



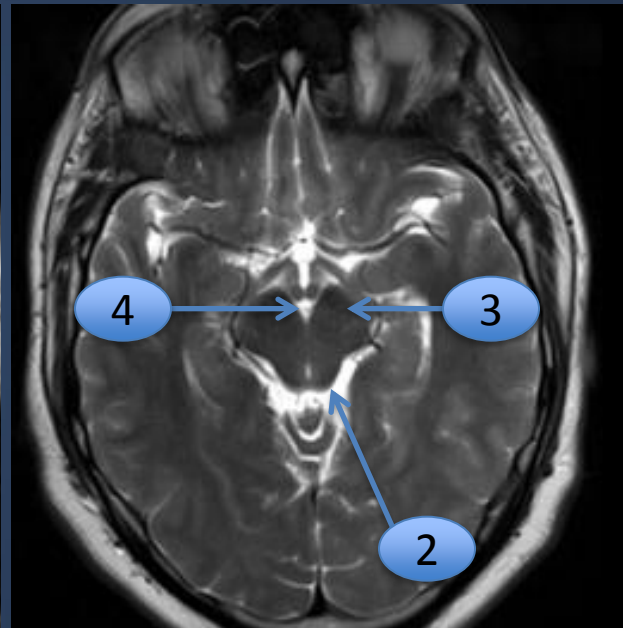
MRI
T2WI

Midbrain..

MRI Sagittal T1WI



MRI axial T2WI



- 1 superior colliculus
- 2 inferior colliculus
- 3 cerebral peduncle
- 4 interpeduncular cistern

Pons..



Radiological Features:

- Basilar artery lies in groove anteriorly
- Posterior surface of the pons forms the upper part of the floor of the 4th ventricle.
- Bony anterior relation:
clivus centrally and petrous temporal bones laterally



CT+

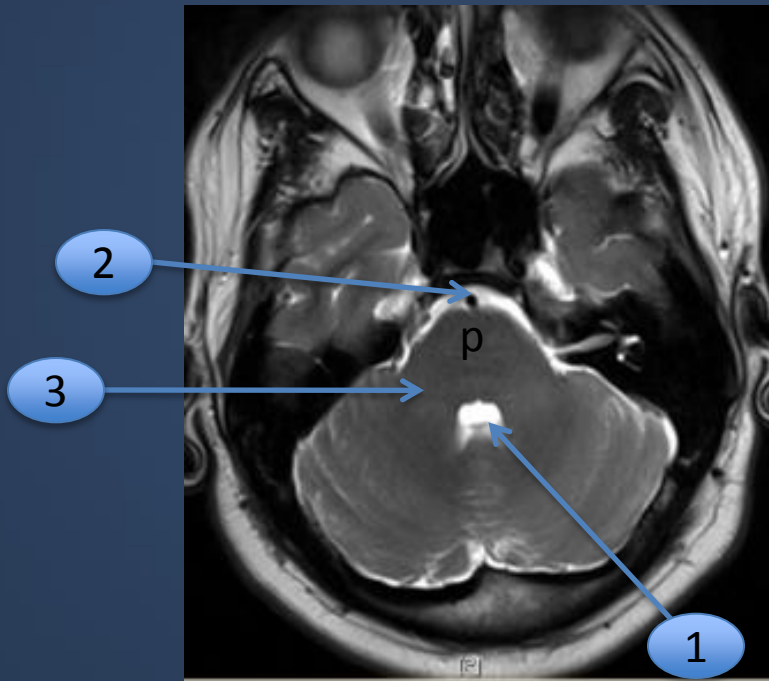
Petrous bone



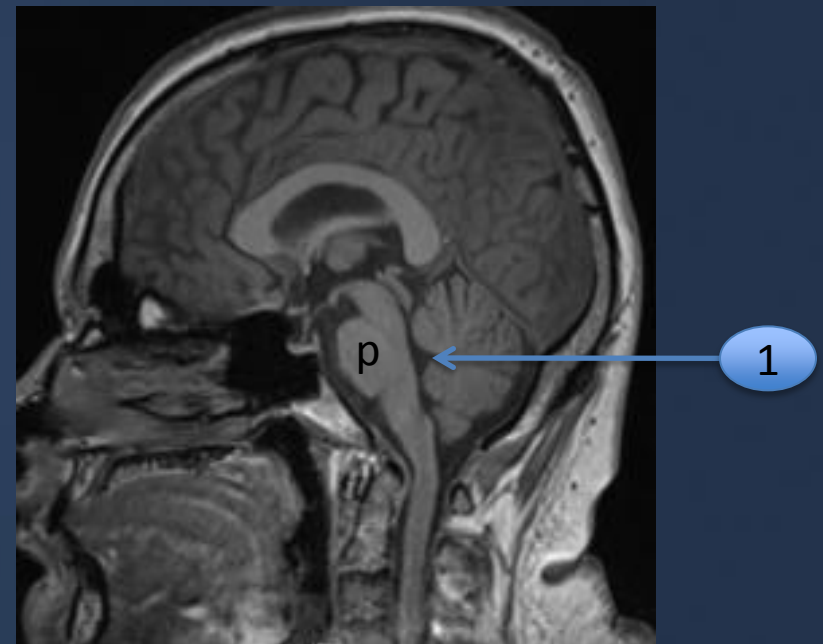
Basilar artery

Pons..

MRI axial T2WI



MRI Sagittal T1WI



P pons

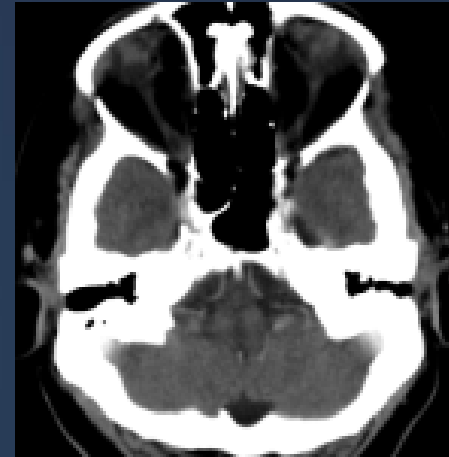
- 1 4th ventricle
- 2 basilar artery
- 3 middle cerebellar peduncle

Medulla oblongata..

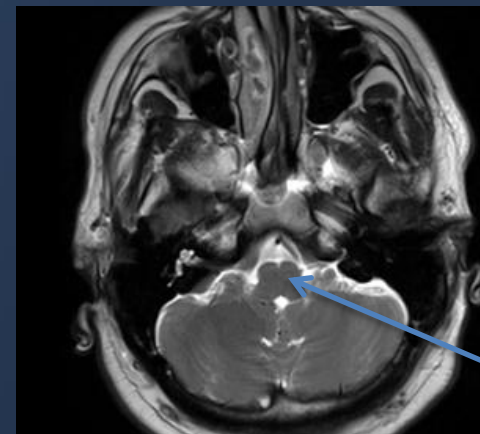


Radiological Features:

- The ventral median fissure is seen anteriorly with the pyramid laterally
- The 4th ventricle is seen posteriorly



CT+



MRI axial
T2WI

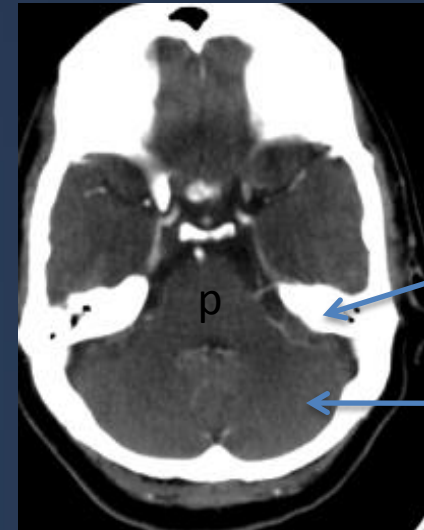
medulla

Cerebellum..



Radiological Features:

- On axial Ct & MRI the cerebellum is separated from the pons by the 4th ventricle and connected to the pons on each side by middle cerebellar peduncle, it is bounded anteriorly by petrous temporal bone



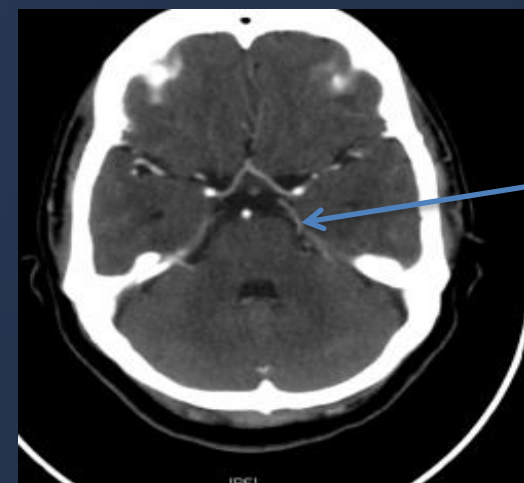
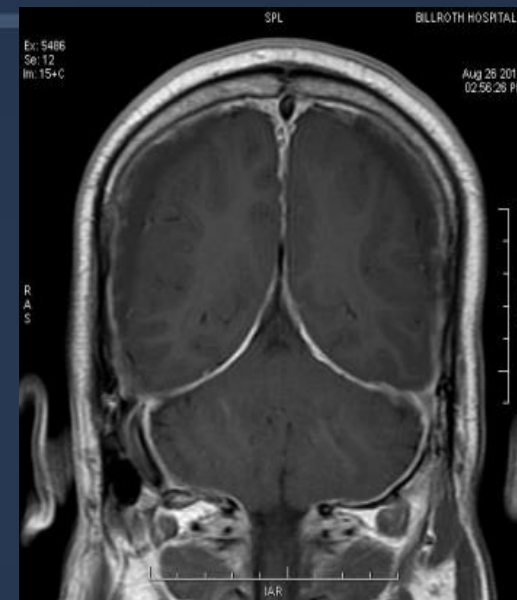
CT+

Petrous bone

cerebellum



Cerebellum..



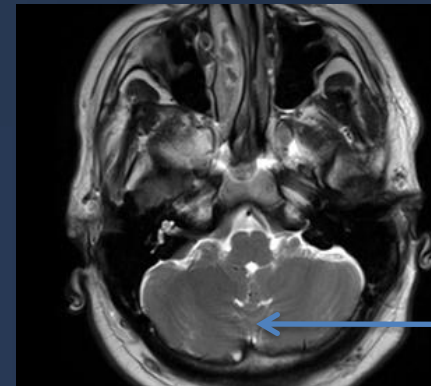
Cerebellum..



Radiological Features:

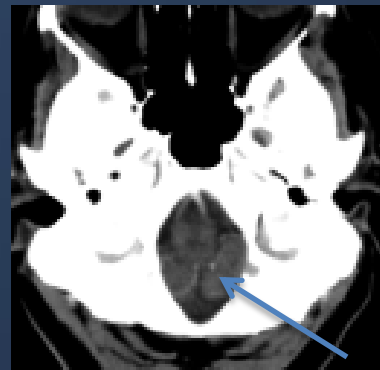
- Cerebellum is connected to the brainstem by three pairs of cerebellum peduncles:
Superior.....connected to the midbrain
Middle.....connected to the pons
inferior.....connected to medulla oblongata
- Two cerebellar hemisphere with midline vermis

MRI axial T2WI

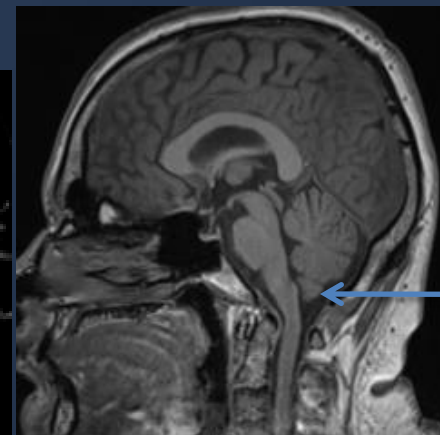


vermis

axial CT



tonsil



tonsil

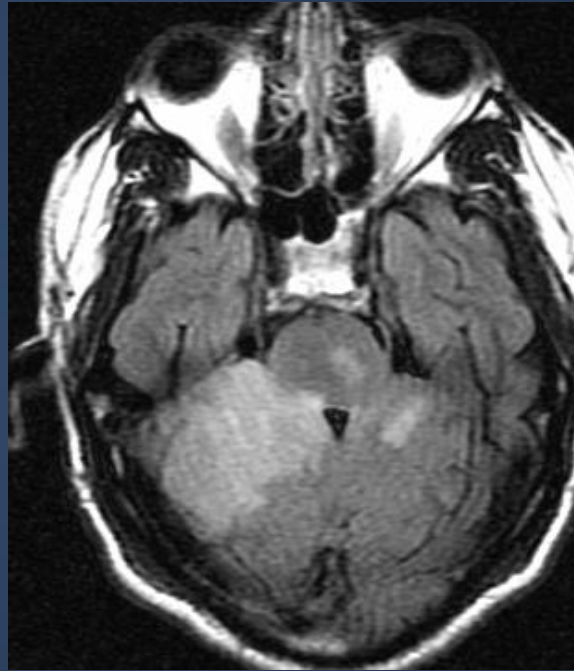
MRI sagittal T1WI

Common diseases of brainstem & cerebellum..

CT



MRI axial FLAIR



MRI axial T2WI

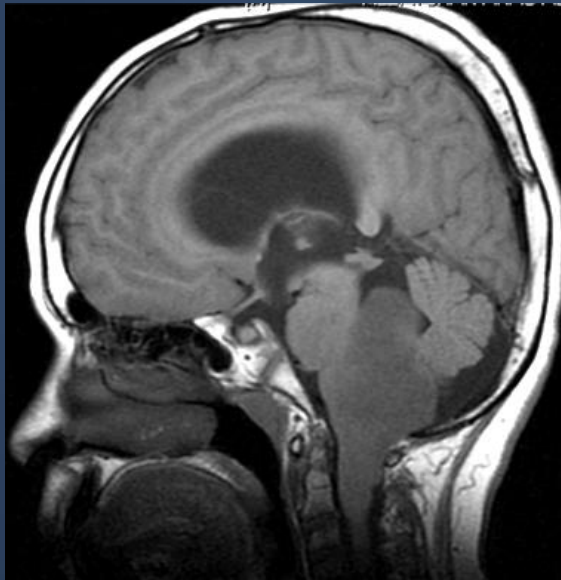


Acute infarction due to
basilar artery thrombosis

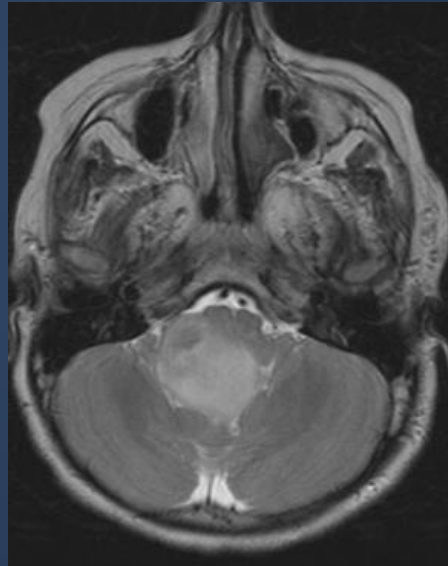
Common diseases of brainstem & cerebellum..



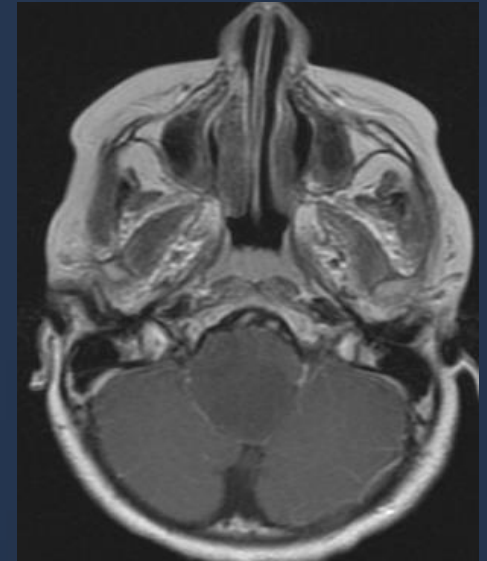
Sag MRI T1WI



axial MRI T2WI



axial MRI T1WI contrast

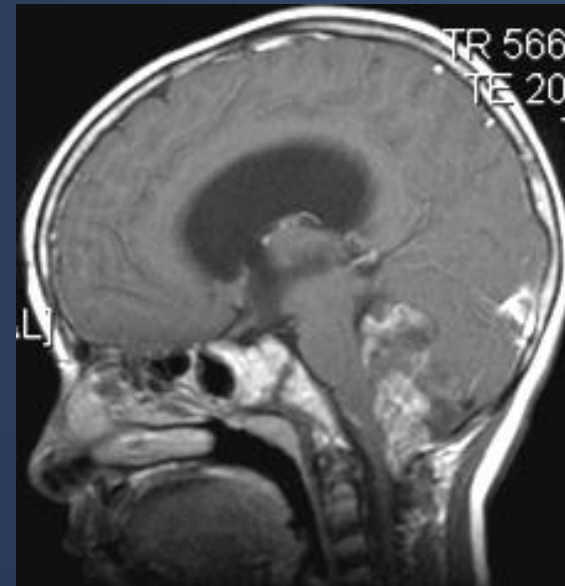


Brain stem glioma

Common diseases of brainstem & cerebellum..



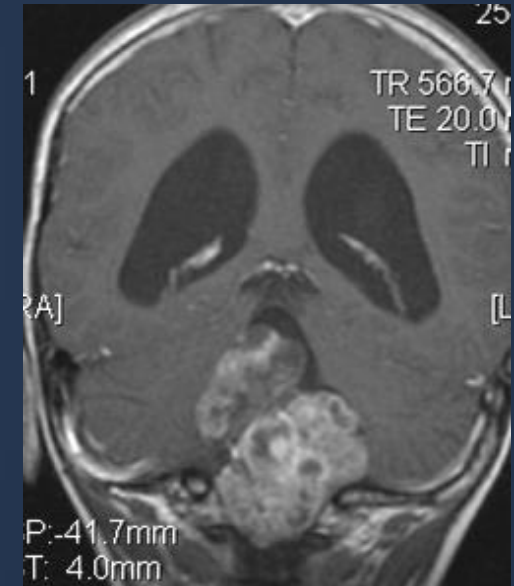
Sag MRI T1WI contrast



axial MRI T1WI contrast



Coronal MRI T1WI contrast

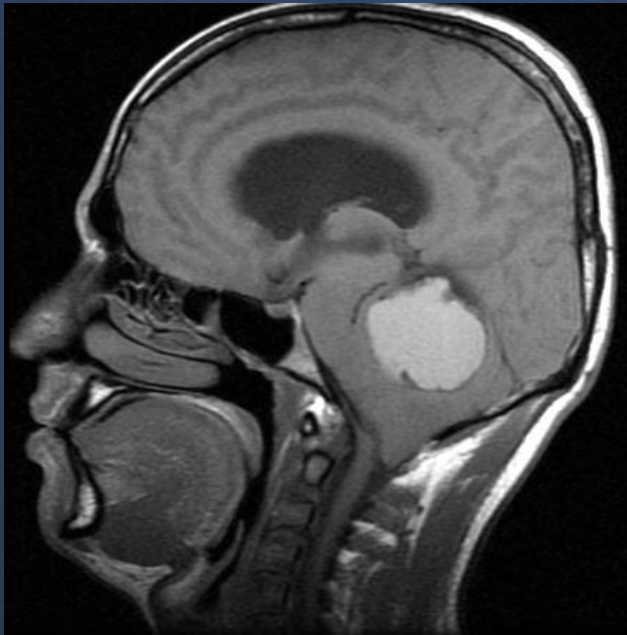


Ependymoma

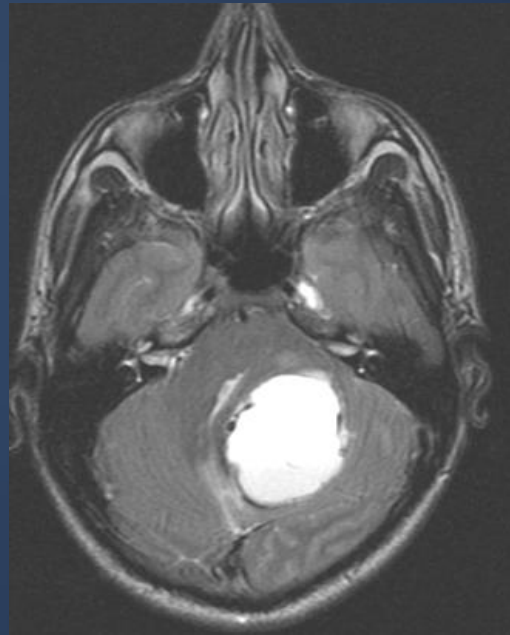
Common diseases of brainstem & cerebellum..



Sag MRI T1WI



axial MRI T2WI



Coronal MRI T1WI contrast



Hemangioblastoma

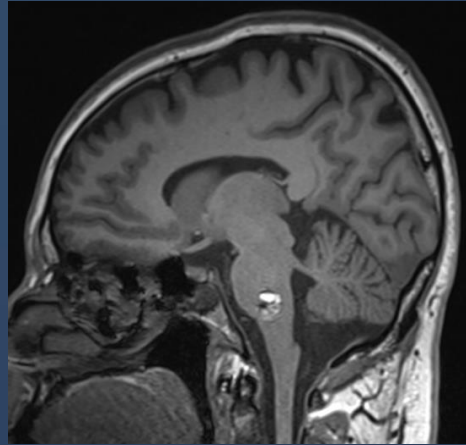
Common diseases of brainstem & cerebellum..



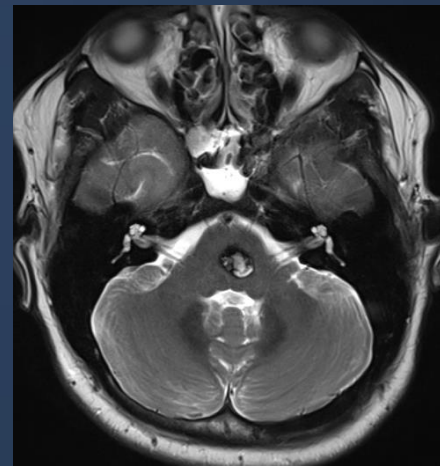
CT



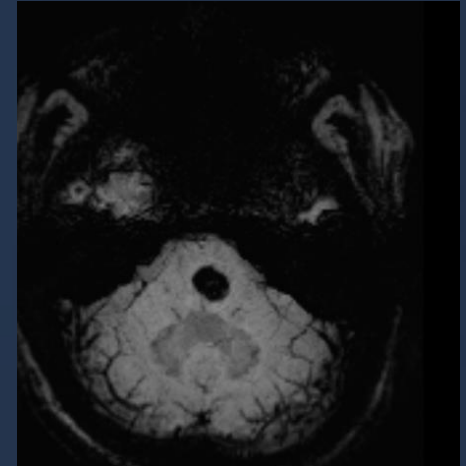
Sag MRI T1WI



axial MRI T2WI



axial MRI SWI

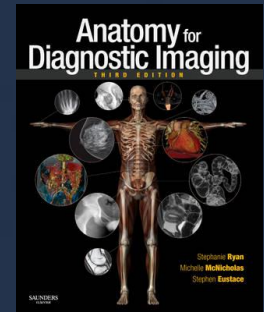


Cavernous angioma

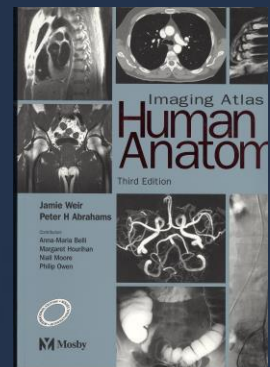
Reference book and the relevant page numbers..



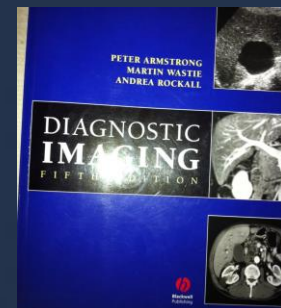
- Stephanie Ryan, “Anatomy for Diagnostic imaging”, 2nd Edition, Pages 61-66



- Jamie Weir, Peter Abraham, “Imaging Atlas of Human Anatomy” 3rd Edition, Pages 34-41



- Peter Armstrong, “diagnostic imaging”, 5th Edition, Pages (396-404)



Thank You 😊

(CNS Block, Radiology)

