

RADIOLOGY

NEUROPSYCHIATRY BLOCK

TEAM 438

Editing File

Color index:

Black: main text

Gray: Extra info

Pink : girls slides

Blue: boys slides

Red: important



Radiology of cerebral hemispheres



Objectives

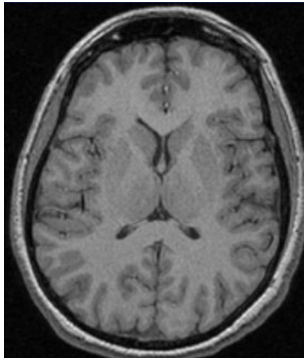
By the end of this lecture you should know:

1. Understand the imaging planes of the brain
2. Identify the anatomical structure of cerebral hemispheres on radiological images on different planes
3. Identify the location of different cerebral functions (motor / sensory/ language) on radiological images on different planes
4. **Select the best plane for a particular cerebral anatomical structure**

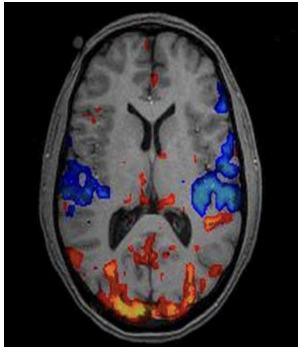
Radiology of cerebral hemispheres

What we image?

Morphology



Function



Radiology of cerebral hemispheres

Computed Tomography (CT)

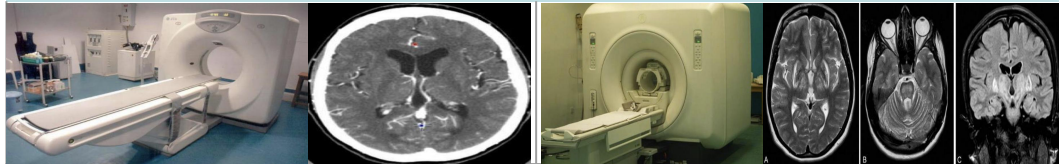
Magnetic Resonance Imaging (MRI)

Ionizing Radiation, Quick (2-3 min)

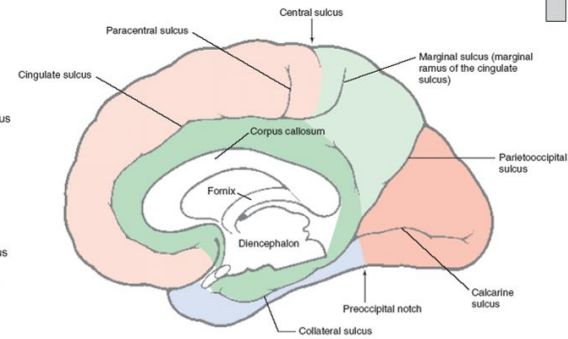
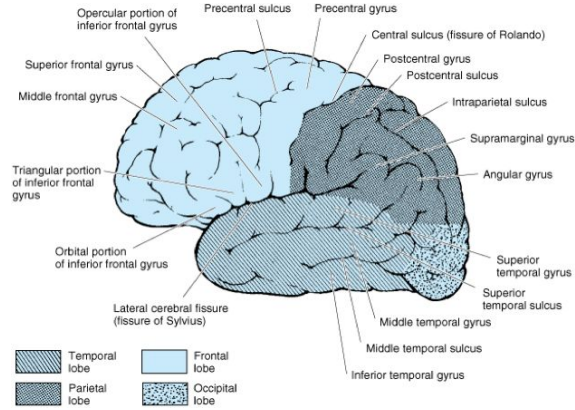
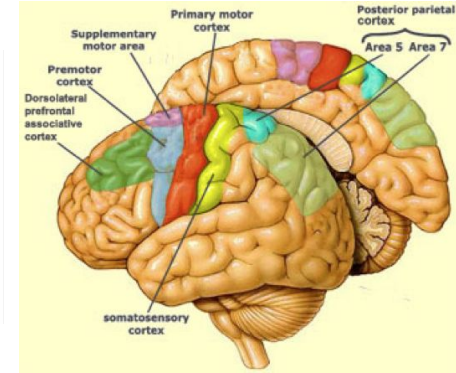
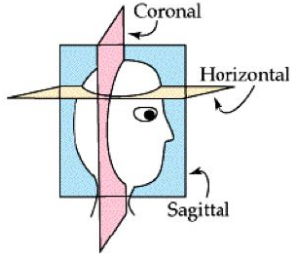
No ionizing radiation, Lengthy (15-20 min)

Low resolution , Single plane

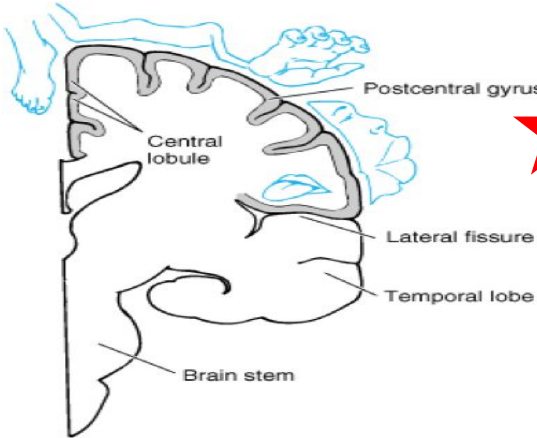
High resolution , Multiple planes



Anatomy recap

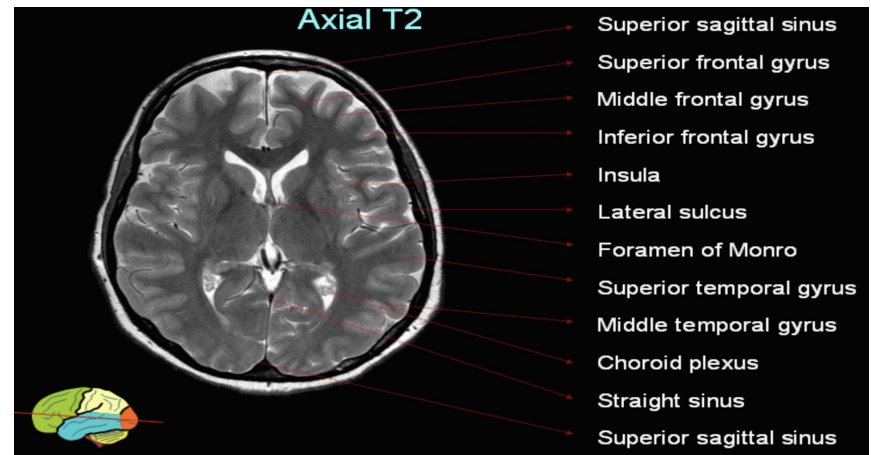
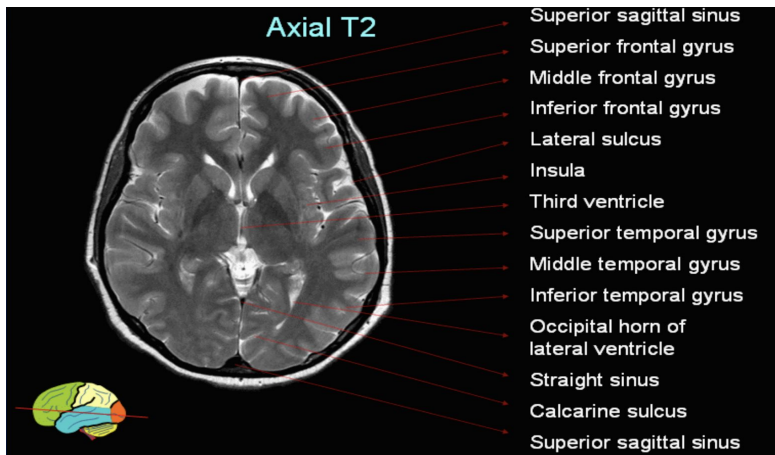
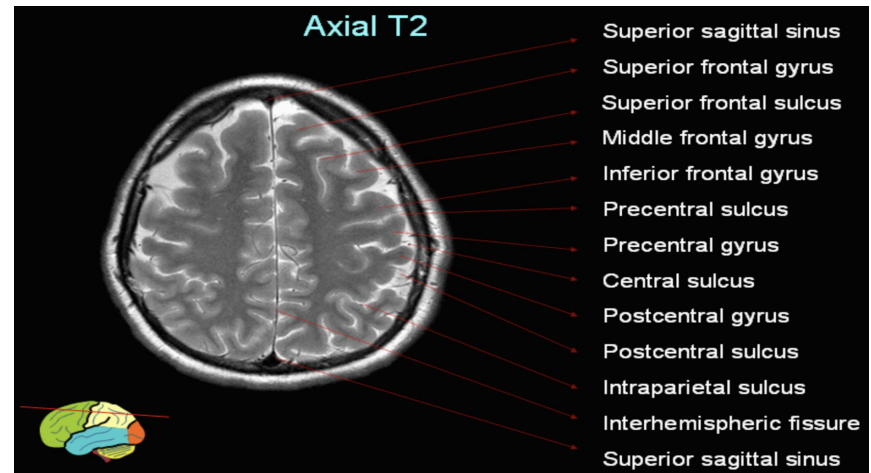
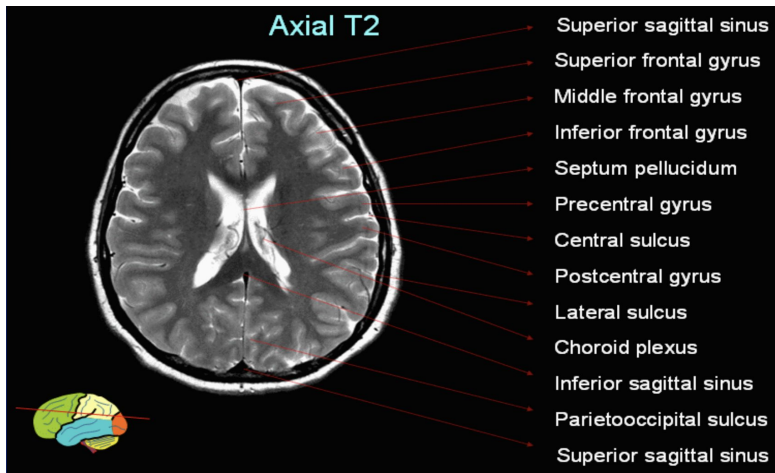


To see structures we need to take images perpendicular to it.

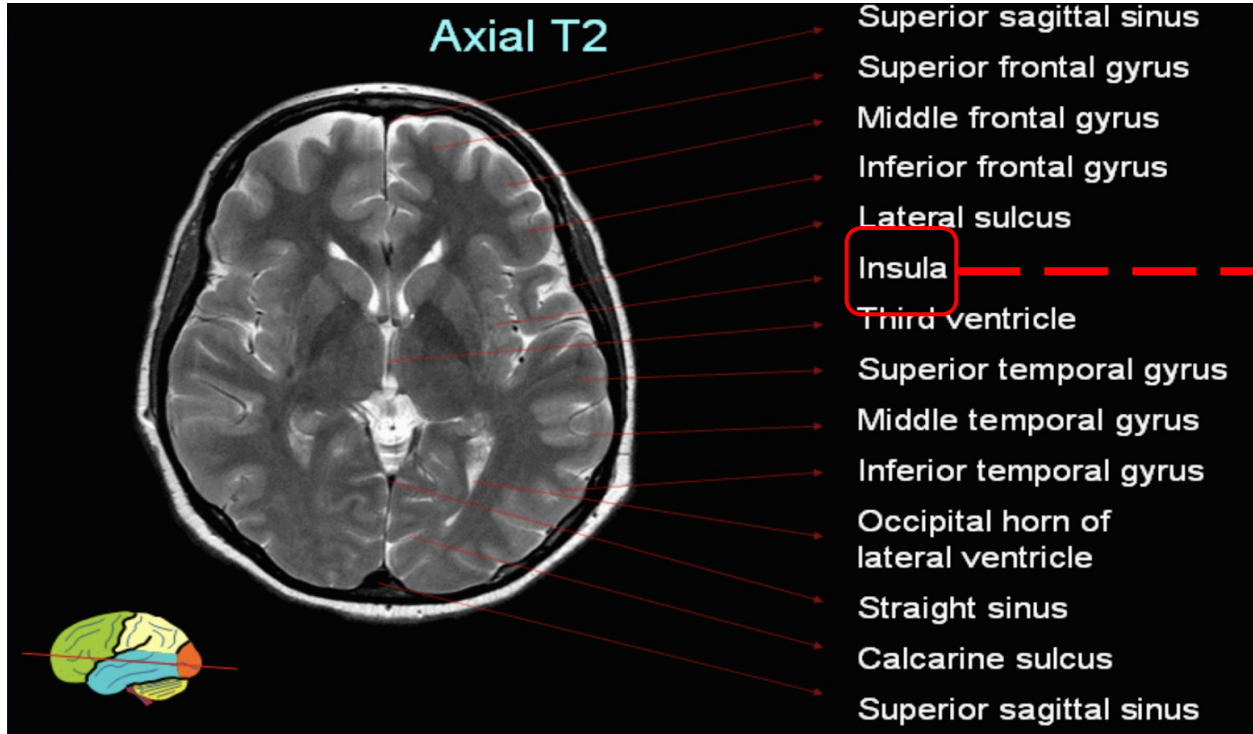


- Damage to the cerebral hemisphere will cause :
 - contralateral
 - If medially ---> legs affected
 - If laterally ----> face affected
 - If in between (middle of hemisphere) ---> hands affected

Axial

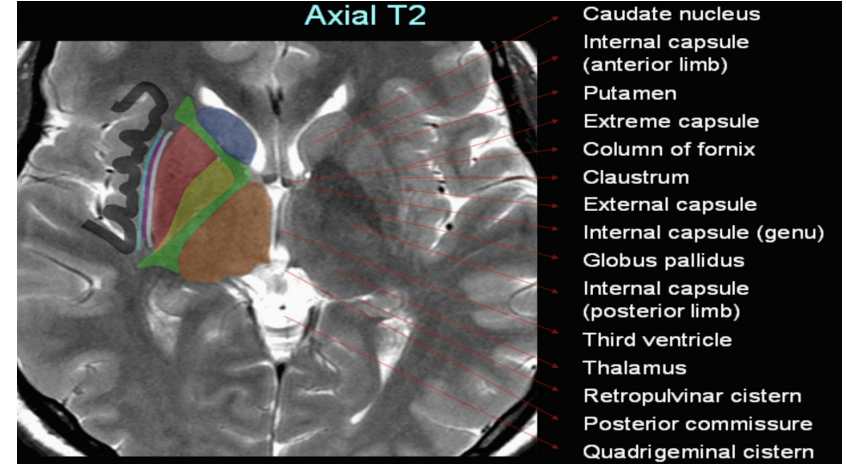
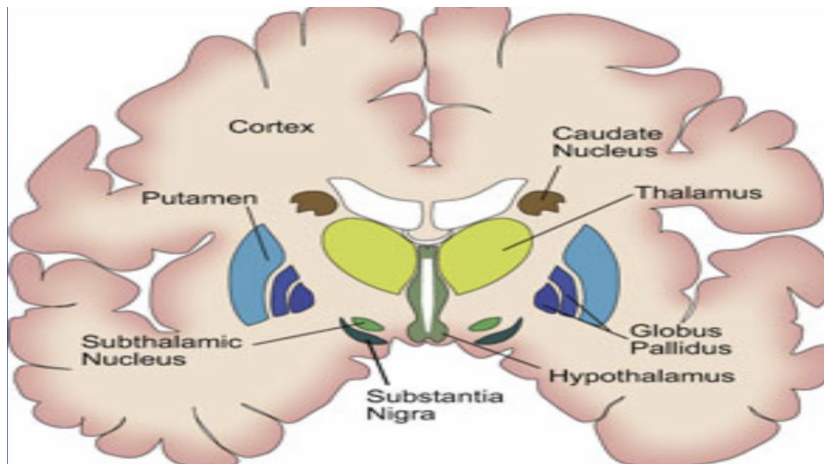
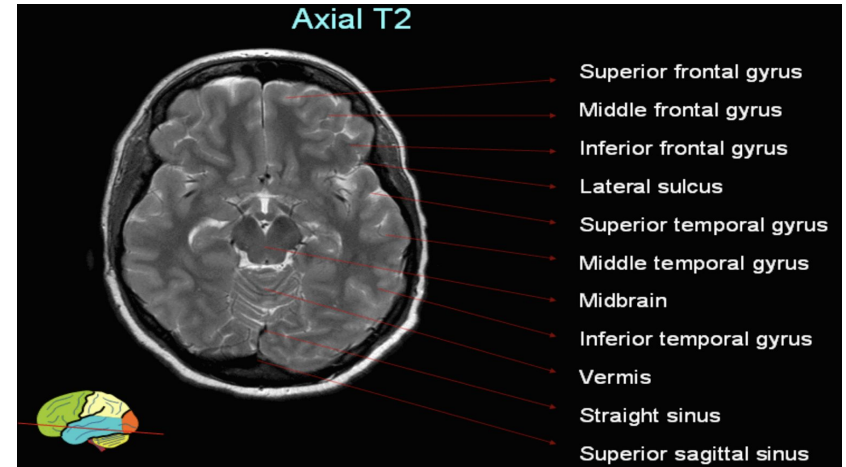
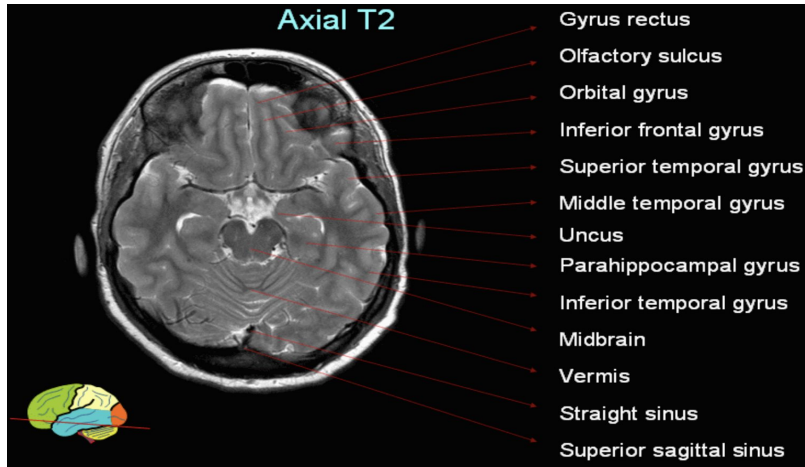


Axial

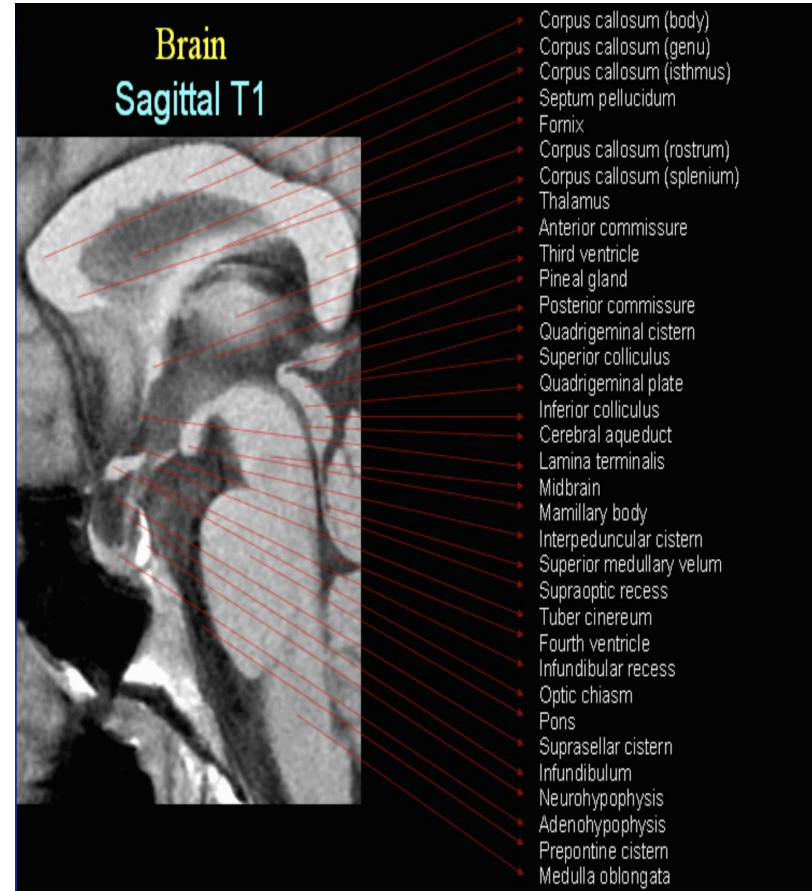
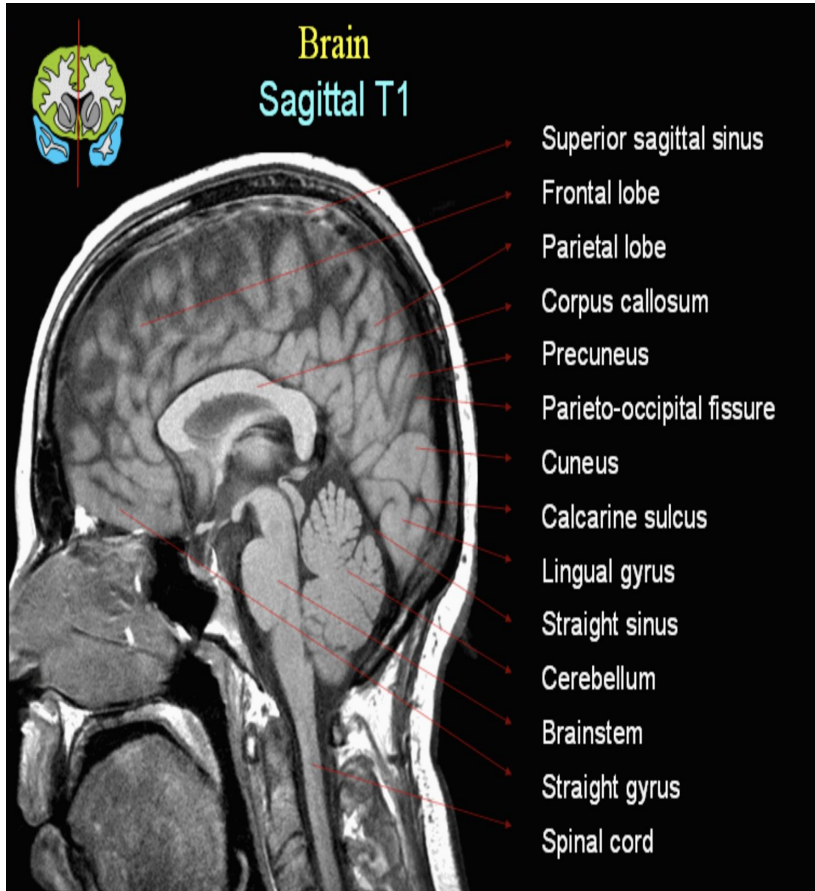


★
Insula inside the lateral/sylvian fissure

Axial

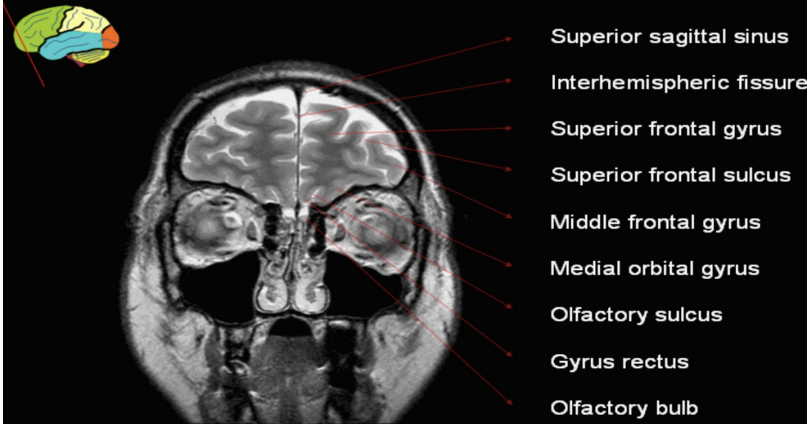


Sagittal

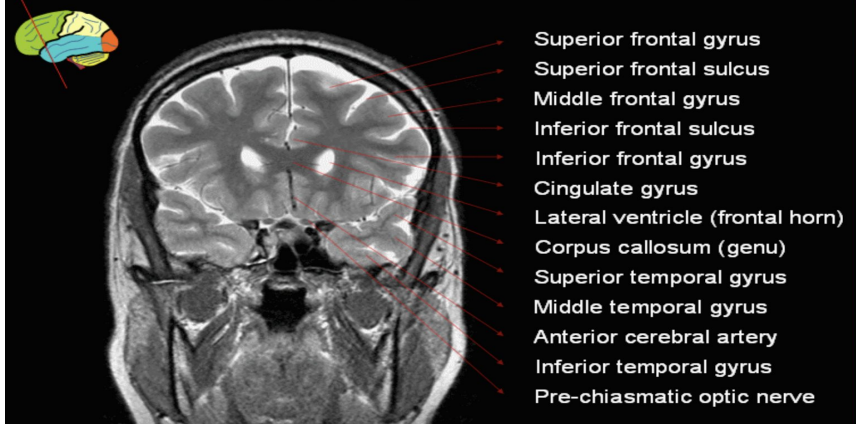


Coronal

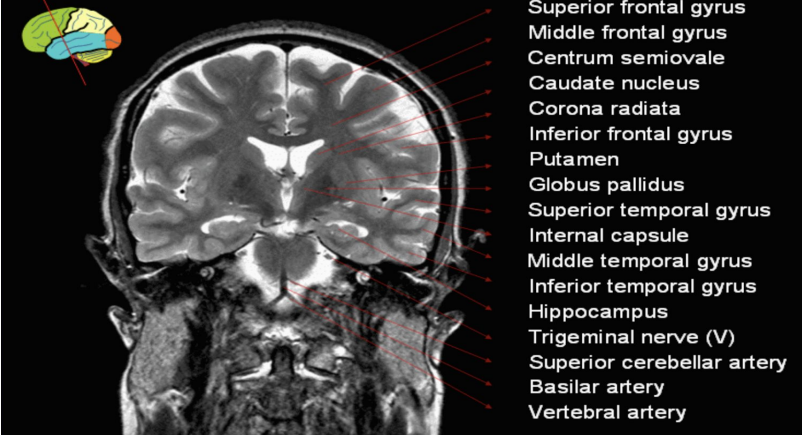
Coronal T2



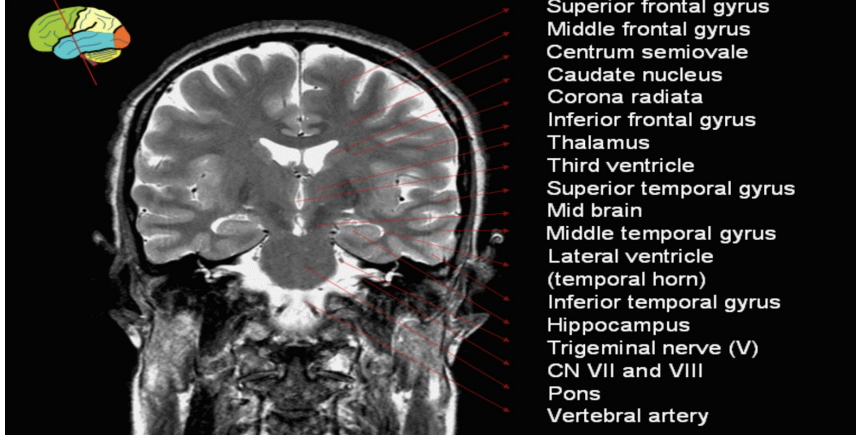
Coronal T2



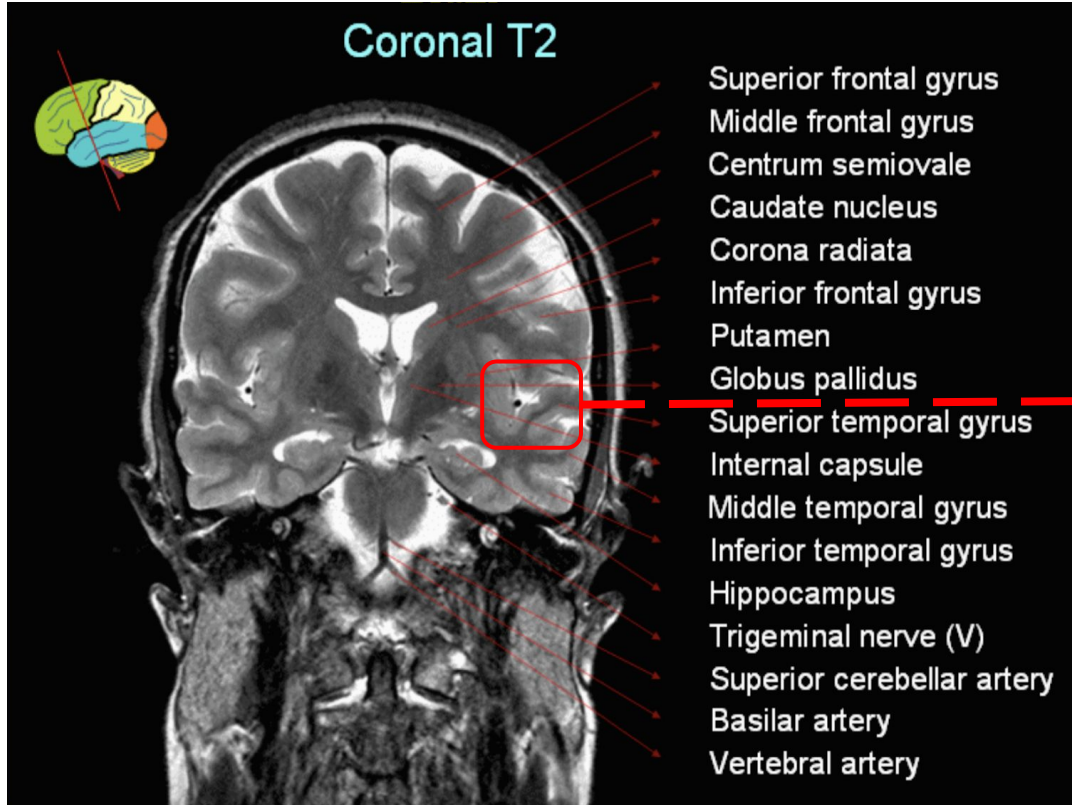
Coronal T2



Coronal T2

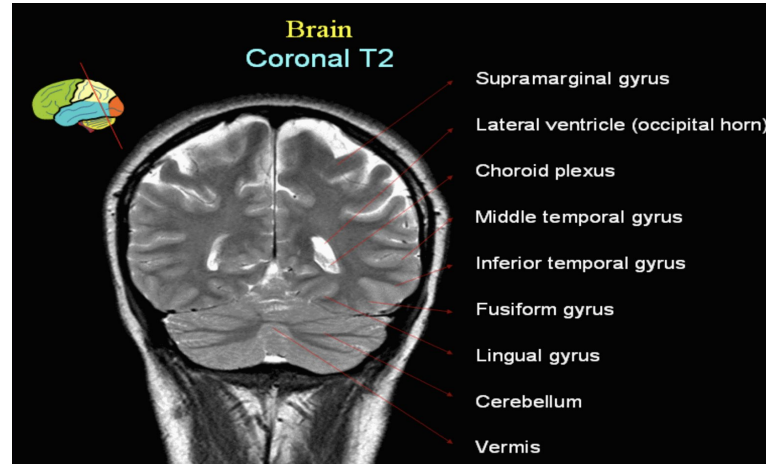
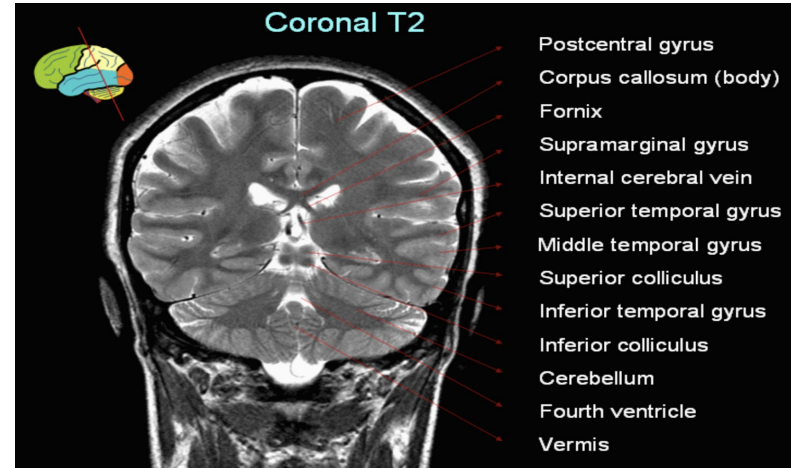
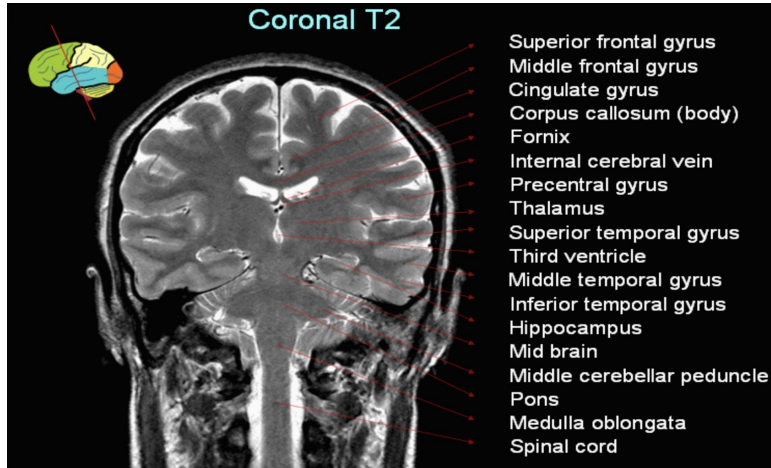


Coronal



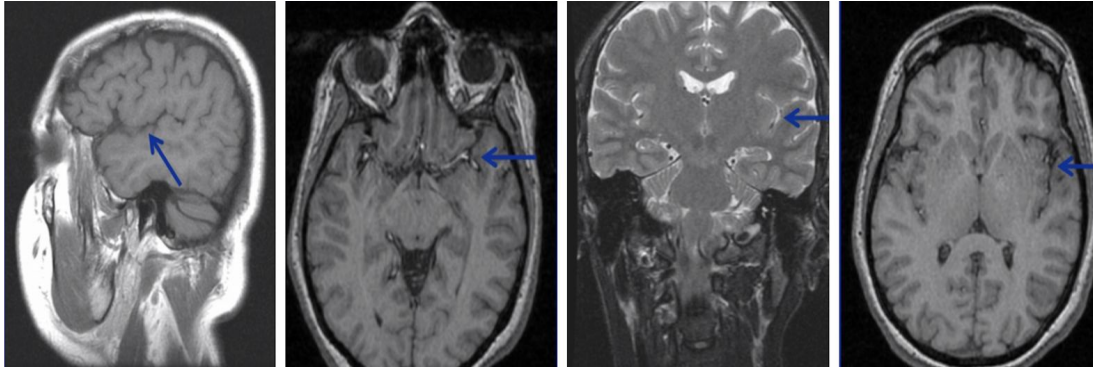
**MCA runs within
The lateral/sylvian
fissure**

Coronal

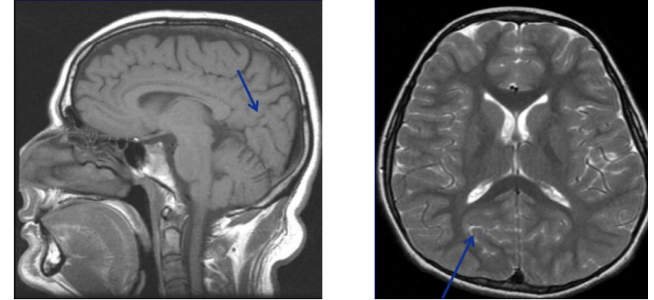


Multiplane Correlation

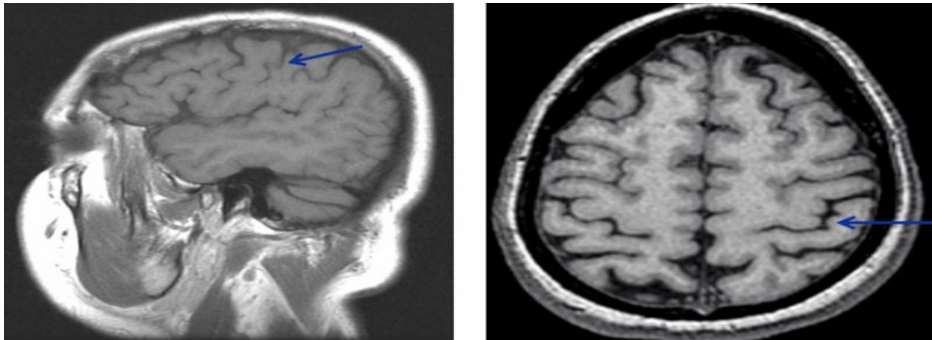
Sylvian Fissure



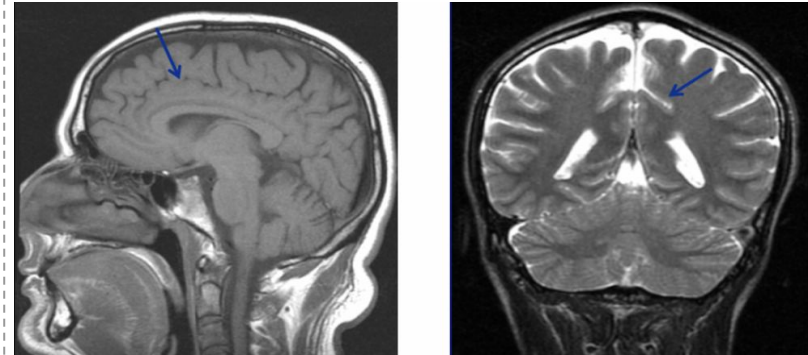
Parieto-occipital fissure



Central (Rolandic) fissure



Cingulate Sulcus



Note :

SuFrG: Superior frontal gyri

PrCG: Precentral gyri

InFrG: Inferior frontal gyri

MFrG: Middle frontal gyri

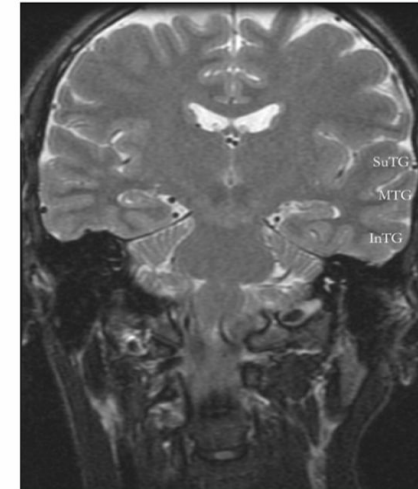
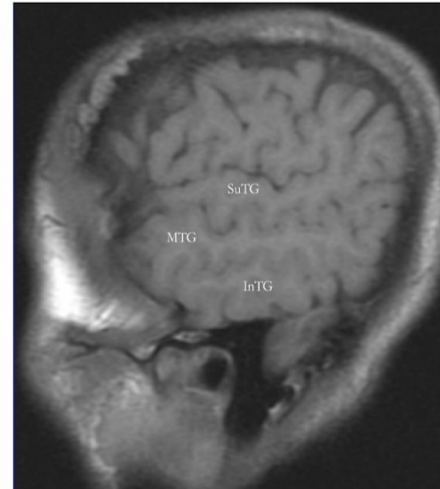
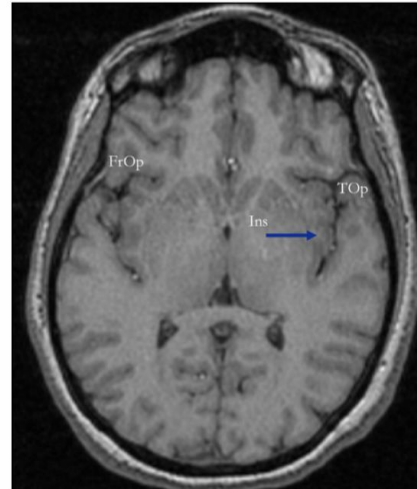
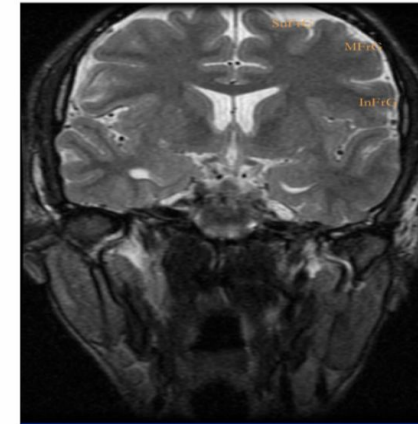
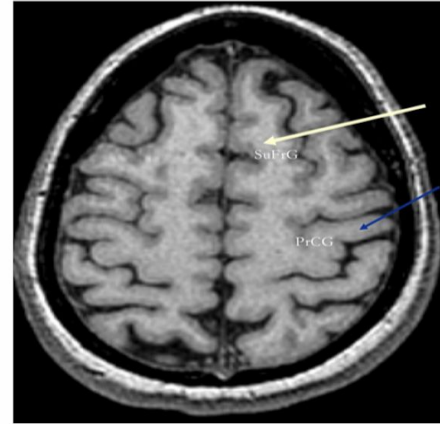
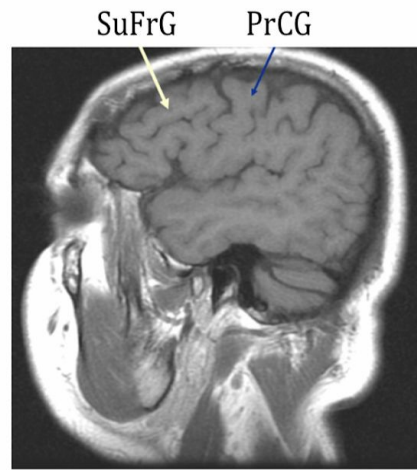
Ins: Insula

TOp: Temporal Lobe

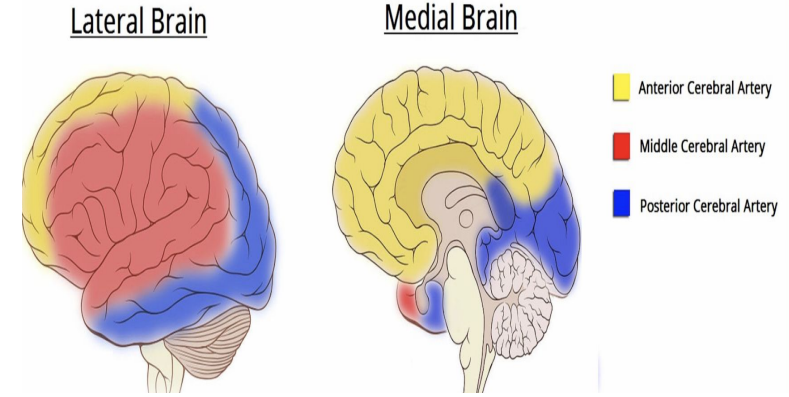
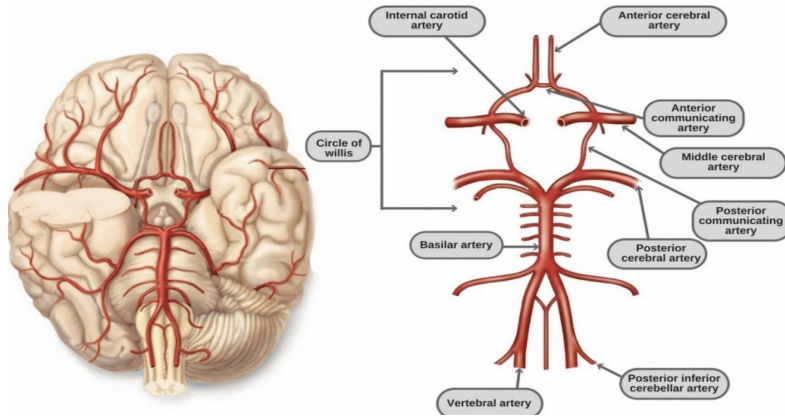
SuTG: Superior temporal gyri

MTG: Middle temporal gyri

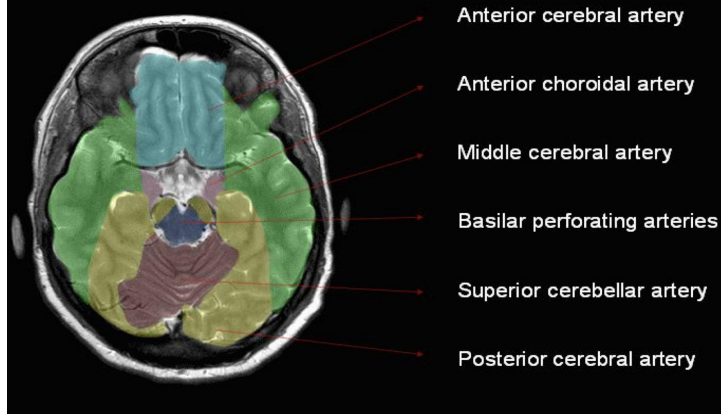
InTG: Inferior temporal gyri



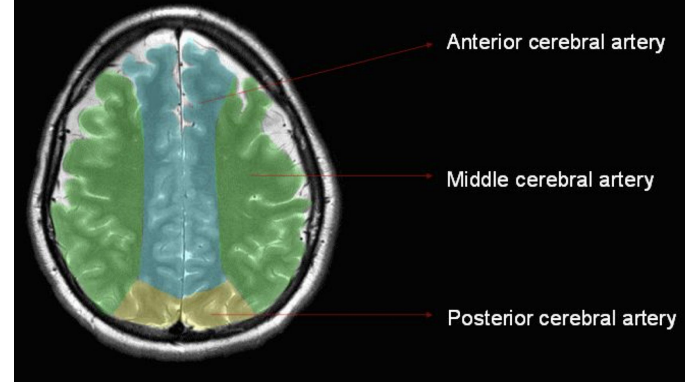
Cerebral blood supply



Brain (Arterial territories)
Axial T2



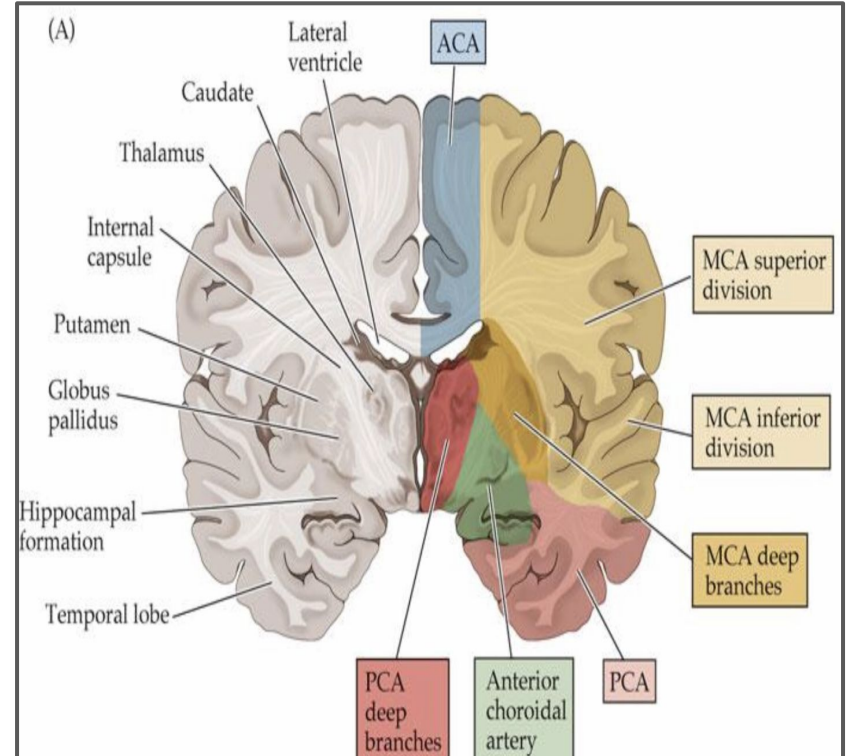
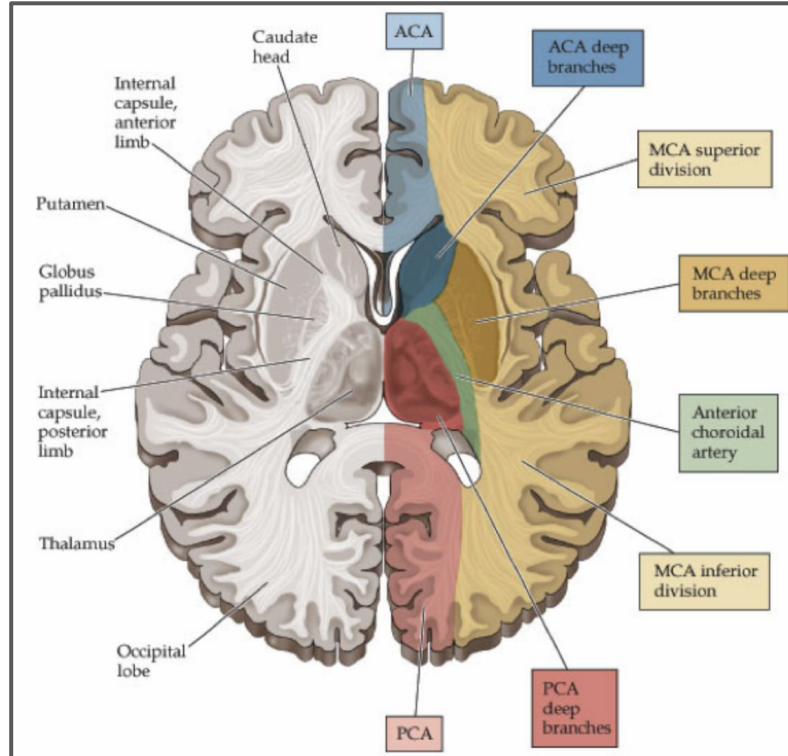
Brain (Arterial territories)
Axial T2



Axial



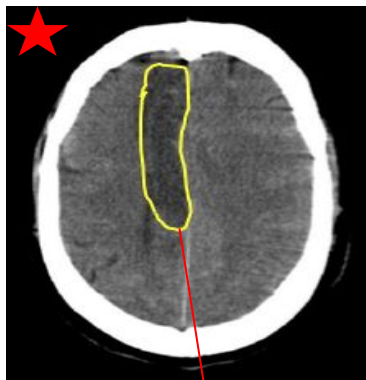
Coronal



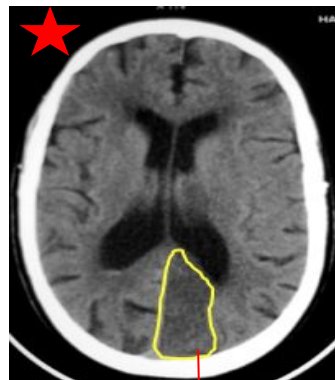
★ Cerebral blood supply recap

- Superior temporal or inferior frontal = MCA
- Most medial part of the frontal and the medial surface of the brain = ACA
- The occipital and part of the temporal lobe = PCA
- Temporal = MCA & PCA
- Frontal = ACA & MCA
- Occipital = PCA
- Thalamus is supplied by PCA
- anterior limb of internal capsule = branch of ACA
- Posterior limb of internal capsule = anterior choroidal artery
- ACA infarction = legs effects
- MCA= Hands, body and trunk
- If reaches the **internal capsule** will cause contralateral hemiparesis.

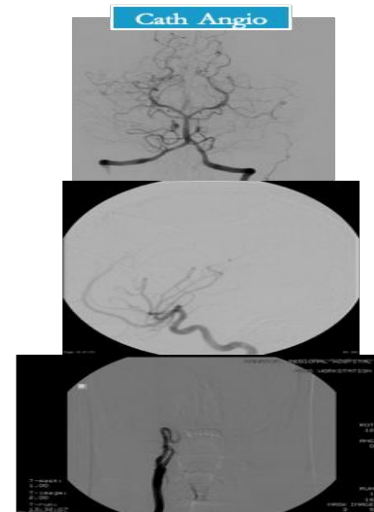
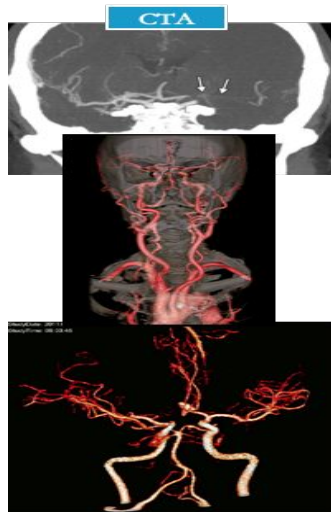
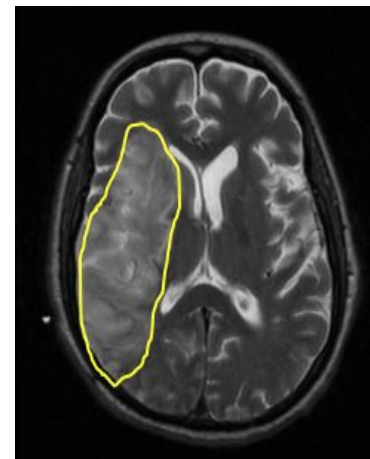
Males slides only



Medial part of hemisphere will affect the legs



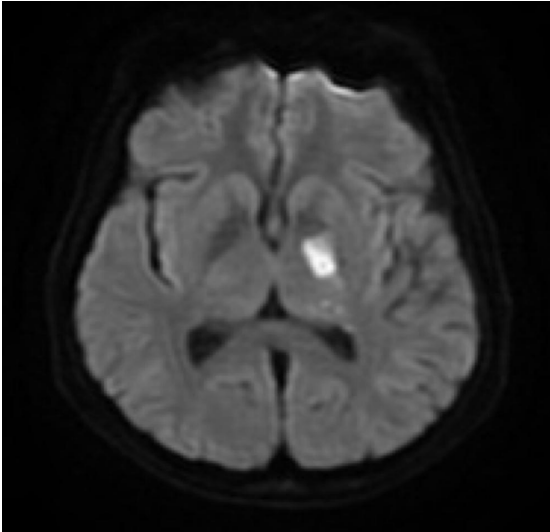
Will cause bilateral hemianopia



Doctor quiz

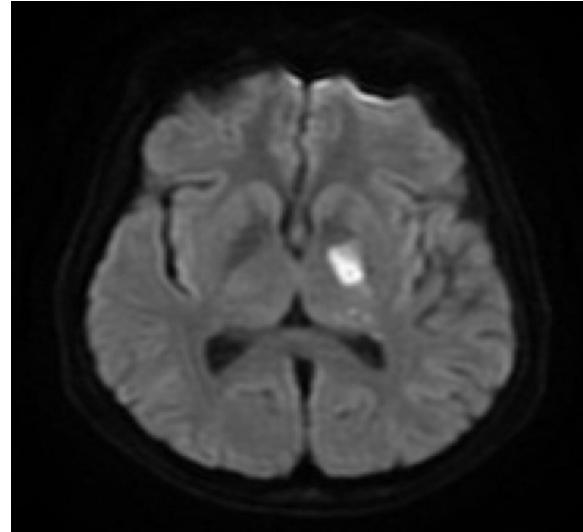
This MR image shows acute infarction. What is the artery involved?

- A. Anterior cerebral
- B. Anterior choroidal**
- C. Posterior cerebral
- D. Middle cerebral



This MR image shows acute infarction. What is the expected neurological deficit?

- A. Right leg weakness
- B. Right arm weakness
- C. Right body side weakness**
- D. Left leg weakness



Quiz :

1 - which of the following supplies the posterior limb of internal capsule ?

- A - Anterior cerebral
- B - Anterior choroidal
- C - Posterior cerebral
- D - Posterior choroidal

2 - what is the neurological deficit for left Anterior choroidal infarction ?

- A - Right leg weakness
- B - Left leg weakness
- C - Right body side weakness
- D - Left body side weakness

3 - Which of the following arteries supply the thalamus ?

- A - Anterior cerebral
- B - Anterior choroidal
- C - Posterior cerebral
- D - Middle cerebral

4 - Which of the following runs within The lateral/sylvian fissure

- A -MCA
- B -ACA
- C -PCA
- D -Anterior choroidal

5 - which of the following supplies the Anterior limb of internal capsule ?

- A - Anterior choroidal
- B - MCA
- C - PCA
- D - ACA

6 - Which of the following diagnostic modalities that provides a very detailed diagnostic pictures without the use of ionizing radiation?

- A - CT
- B - MRI
- C - X RAY
- D - Ultrasound

7 - Damage to the lateral side of the hemisphere will affect predominantly?

- A - Legs
- B - Arms
- C - Face
- D - Toes

8 - Which of the following supplies the frontal lobe?

- A - MCA
- B - PCA
- C - ACA
- D - A & C



Team leaders:



Nouran Arnous



Omar Aldosari

Team members:



Faisal Alqifari



Rawan Alzayed



Moh Al-Huqbani

إن الله يعطي أصعب المعارك لأقوى الجنود فاستمر