

Radiology of cerebral hemispheres

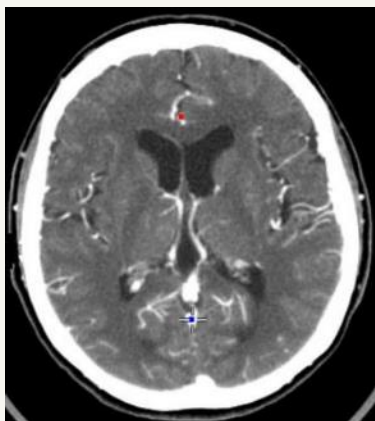
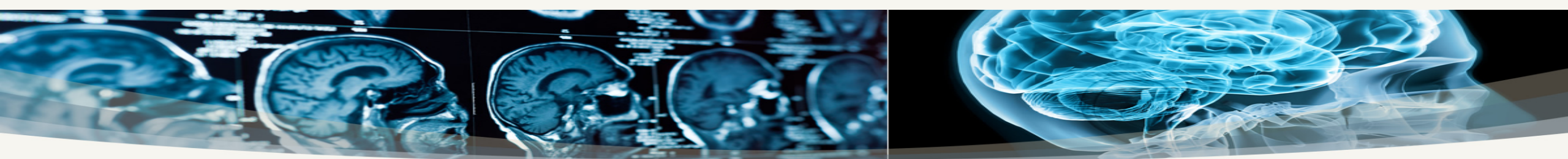
Note
important



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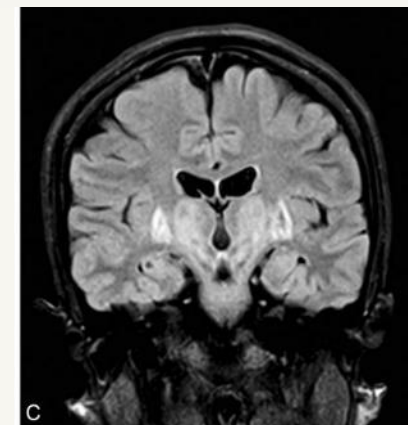
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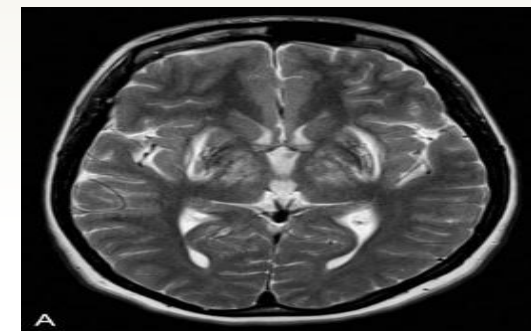


In CT = bone is white and the small black area above the bone called *subcutaneous fat*

Computed Tomography (CT)	Magnetic Resonance Imaging (MRI)
Ionizing Radiation	No ionizing radiation
Quick (2-3min)	Lengthy (15-20min)
Low resolution	High resolution
Single plane	Multiple planes



In MRI = bone is black



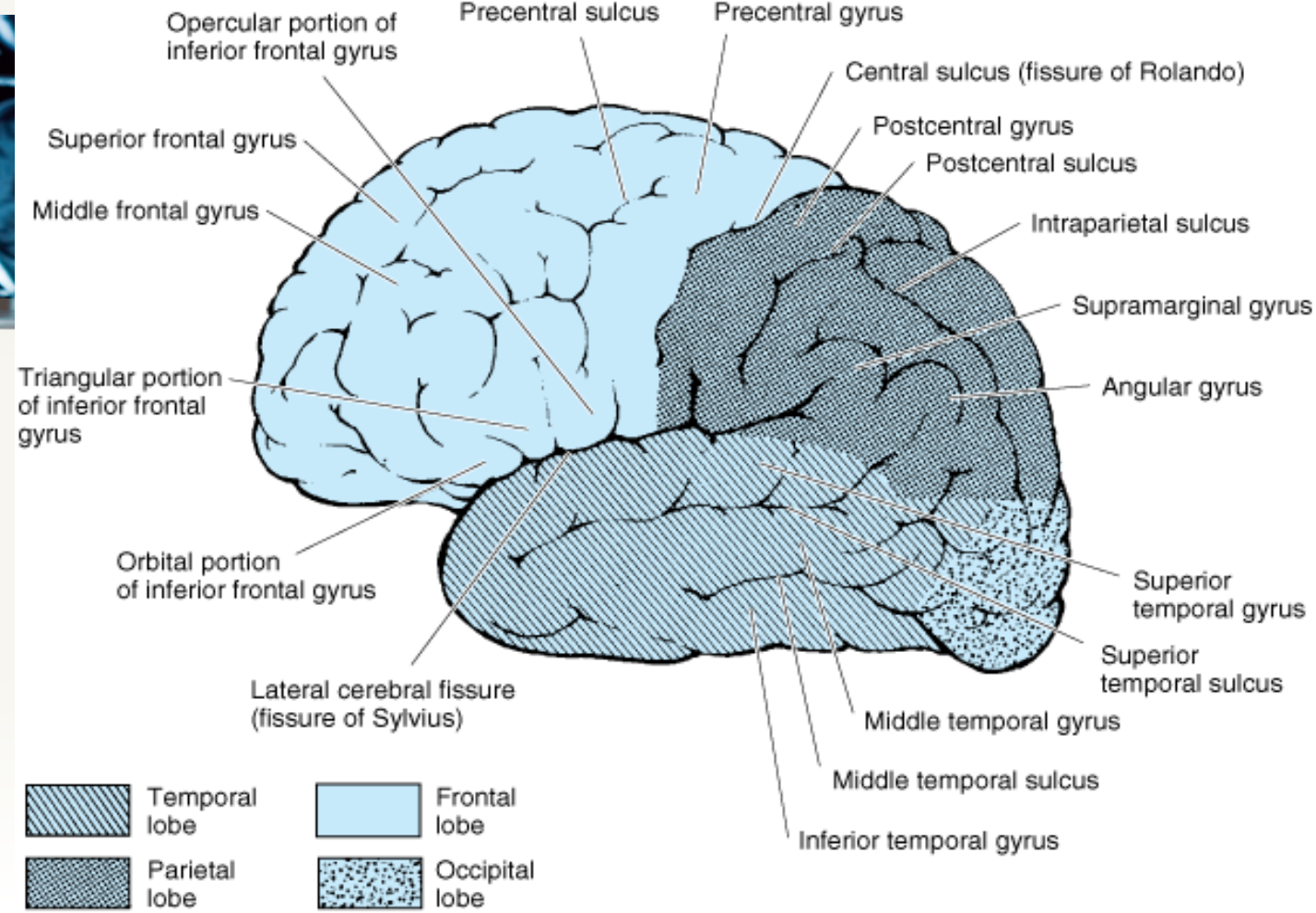
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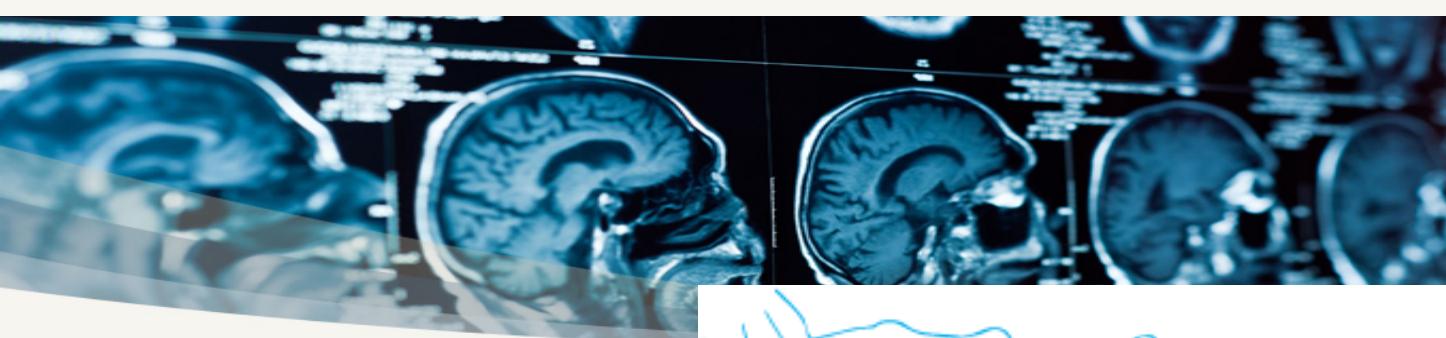


- Precentral gyrus= in Frontal lobe
- Postcentral gyrus= in parietal lobe
- Sylvian fissure = separated frontal lobe from temporal lobe
- Central sulcus = separated frontal lobe from parietal lobe

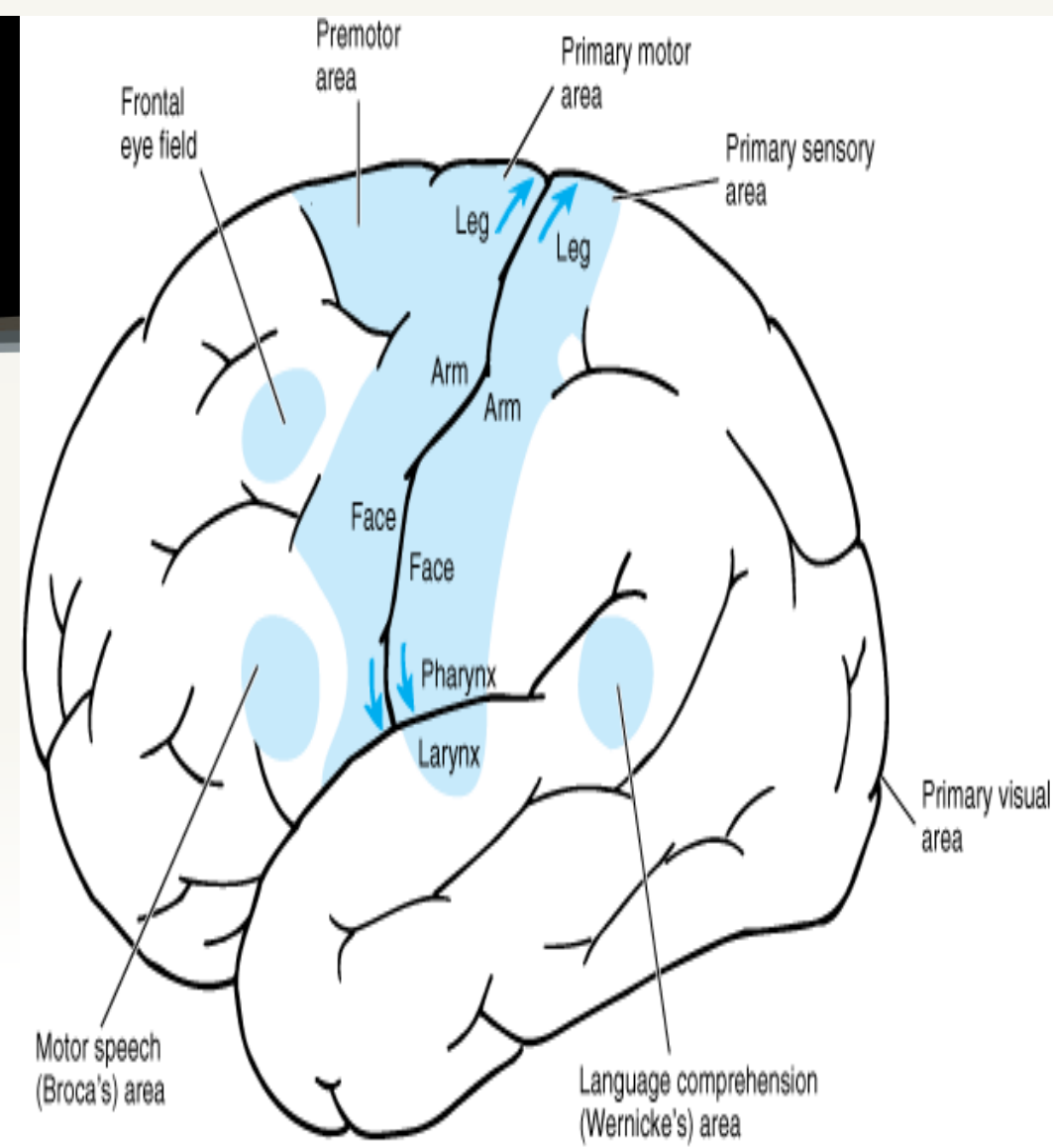
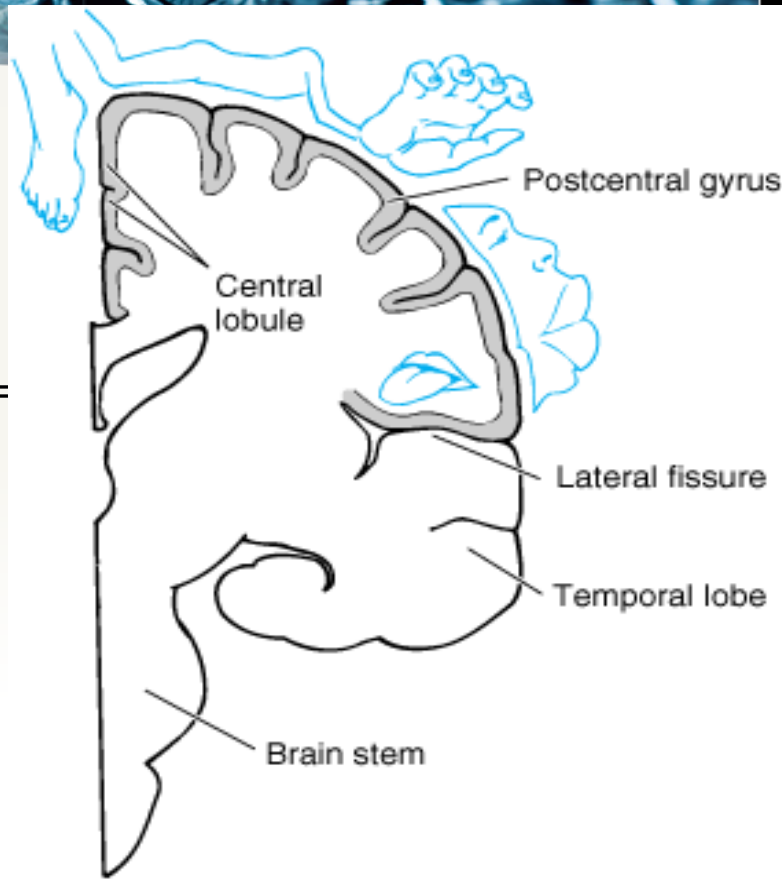


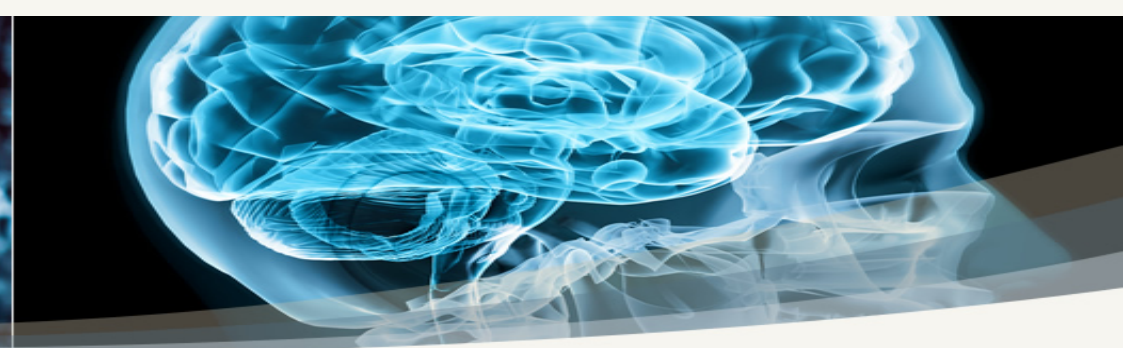
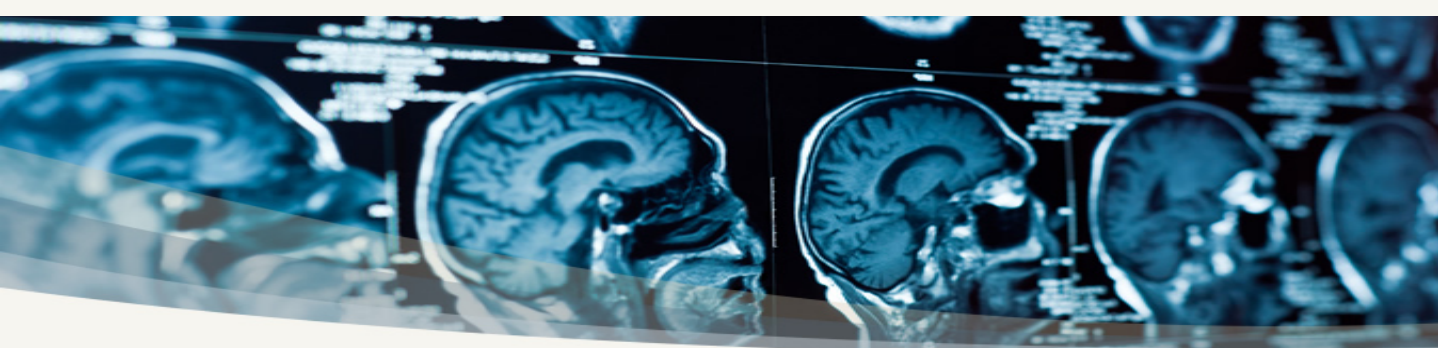
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- Medial surface of cerebral cortex = represent lower limb (legs)
 so any infarction in it will affect legs
- lateral surface of cerebral cortex = represent hand and face
 *so any infection in it will affect hand and face *
- Medial cerebral artery pass through sylvian fissure so its supply frontal lobe and temporal lobe
- Frontal operculum has speech area (Broca's & Wernicke's)

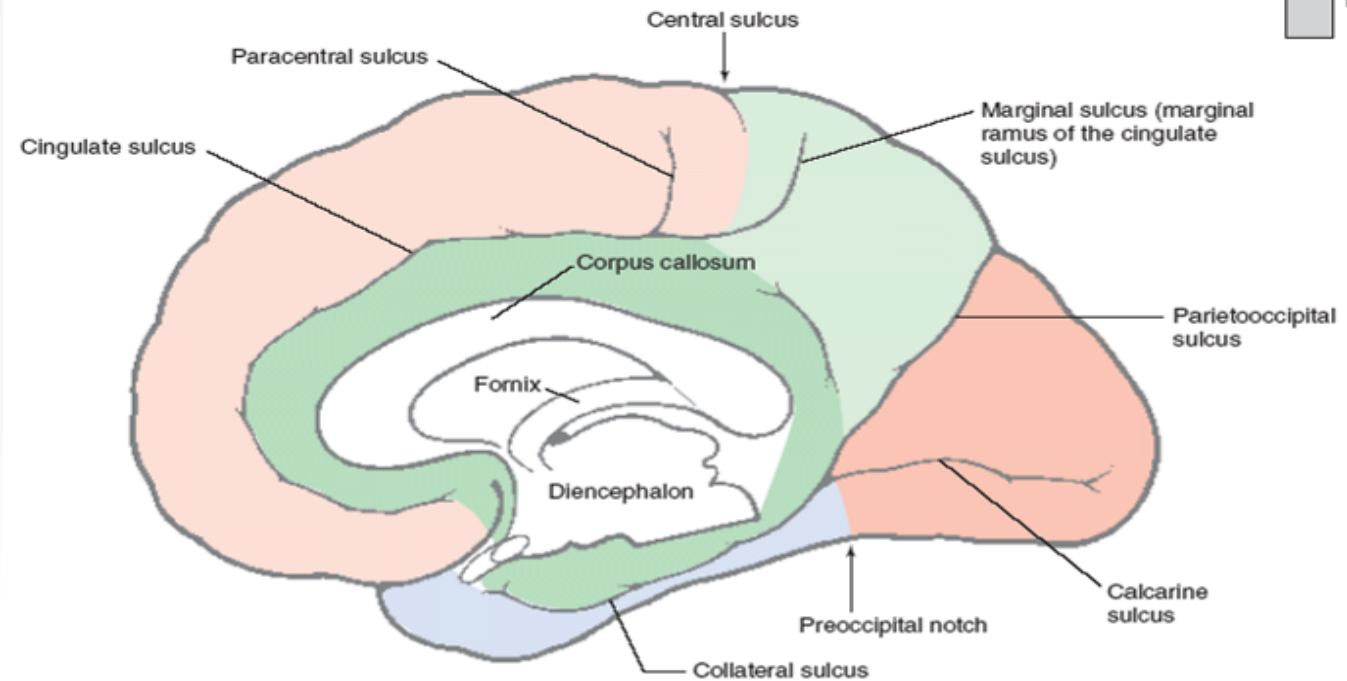




• In medial surface parietal lobe separated from occipital by parieto-occipital sulcus

• Cingulate sulcus = separated cingulate gyrus from rest of frontal lobe

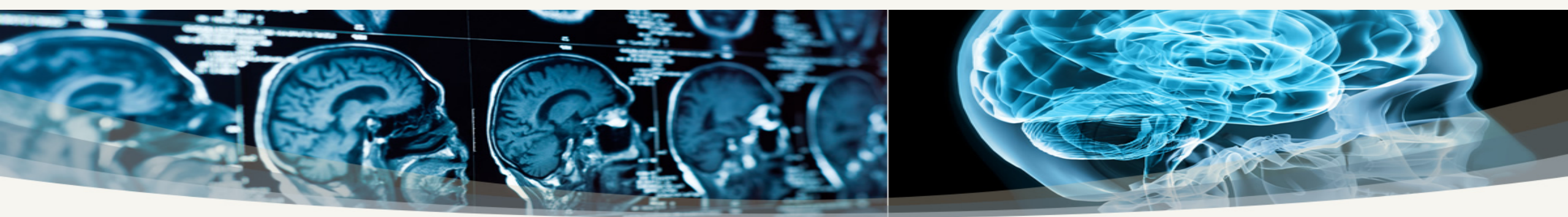
• Cingulate sulcus gives 2 branches = precentral sulcus and marginal sulcus between them medial aspect of central sulcus



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Notes that will help you in the next pictures:

From 433

- **(T1)** gray matter is dark , white matter is white , Fluid[CSF] is dark .
- **(T2)** gray matter is bright , white matter is dark , Fluid[CSF] is bright.
- **(T1)** usually in sagital section
- **(T2)** usually in axial and coronal sections.
- **Central black line** falx cerebri

- **Rupture of vessels** present in dark.
- **Internal capsule** has anterior and posteroir parts : anterior part for motor , posterior part for sensory.
- **External capsule** located between insula & lentiform nucleus.
- **Septum lucidum** is saperated from 2 lateral ventricles
 - **Anterior cerebral artery** gives anterior communicating artery.
 - **Pituitary gland** present in white colour because it contains fat.

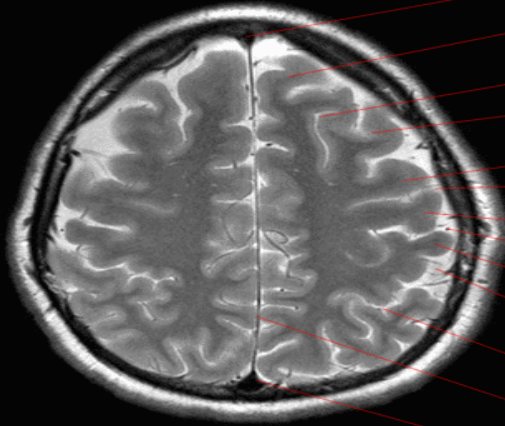
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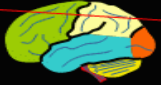


A

Brain
Axial T2

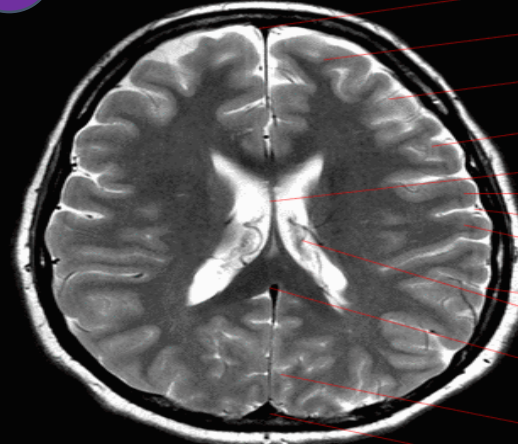


- Superior sagittal sinus
- Superior frontal gyrus
- Superior frontal sulcus
- Middle frontal gyrus
- Inferior frontal gyrus
- Precentral sulcus
- Precentral gyrus
- Central sulcus
- Postcentral gyrus
- Postcentral sulcus
- Intraparietal sulcus
- Interhemispheric fissure
- Superior sagittal sinus

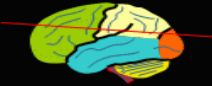


B

Brain
Axial T2

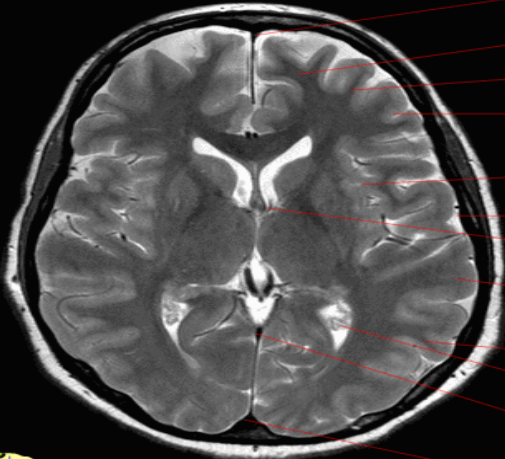


- Superior sagittal sinus
- Superior frontal gyrus
- Middle frontal gyrus
- Inferior frontal gyrus
- Septum pellucidum
- Precentral gyrus
- Central sulcus
- Postcentral gyrus
- Lateral sulcus
- Choroid plexus
- Inferior sagittal sinus
- Parietooccipital sulcus
- Superior sagittal sinus

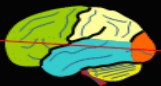


C

Brain
Axial T2

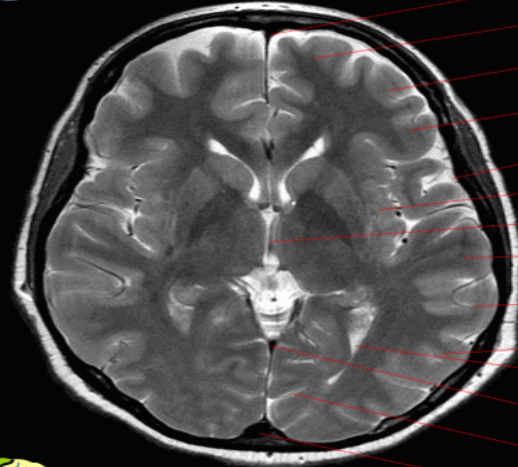


- Superior sagittal sinus
- Superior frontal gyrus
- Middle frontal gyrus
- Inferior frontal gyrus
- Insula
- Lateral sulcus
- Foramen of Monro
- Superior temporal gyrus
- Middle temporal gyrus
- Choroid plexus
- Straight sinus
- Superior sagittal sinus

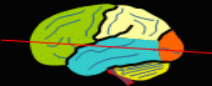


D

Brain
Axial T2

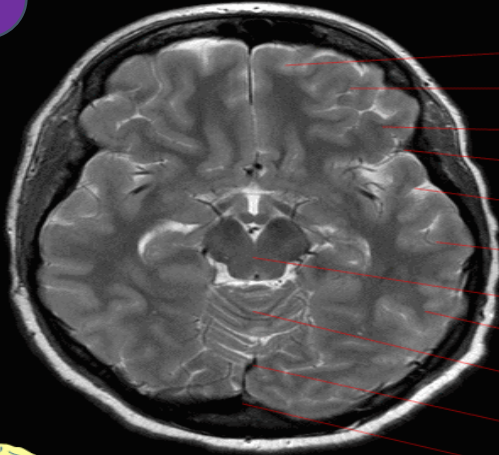


- Superior sagittal sinus
- Superior frontal gyrus
- Middle frontal gyrus
- Inferior frontal gyrus
- Lateral sulcus
- Insula
- Third ventricle
- Superior temporal gyrus
- Middle temporal gyrus
- Inferior temporal gyrus
- Occipital horn of lateral ventricle
- Straight sinus
- Calcarine sulcus
- Superior sagittal sinus



F

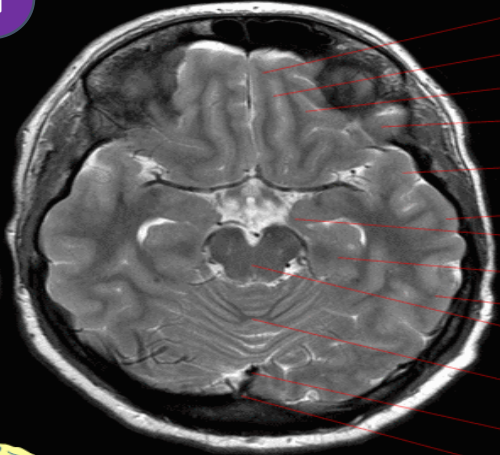
Brain
Axial T2



- Superior frontal gyrus
- Middle frontal gyrus
- Inferior frontal gyrus
- Lateral sulcus
- Superior temporal gyrus
- Middle temporal gyrus
- Midbrain
- Inferior temporal gyrus
- Vermis
- Straight sinus
- Superior sagittal sinus

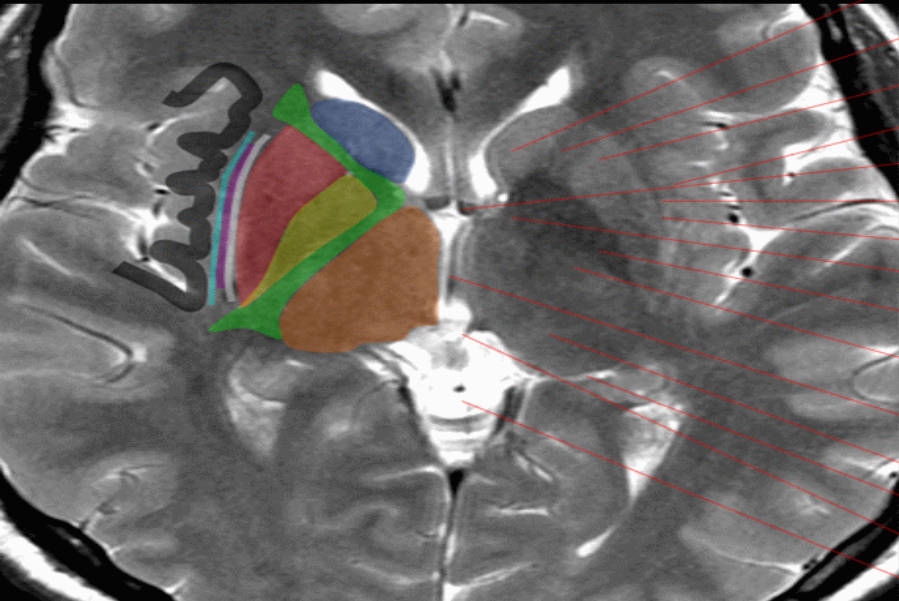
G

Brain
Axial T2



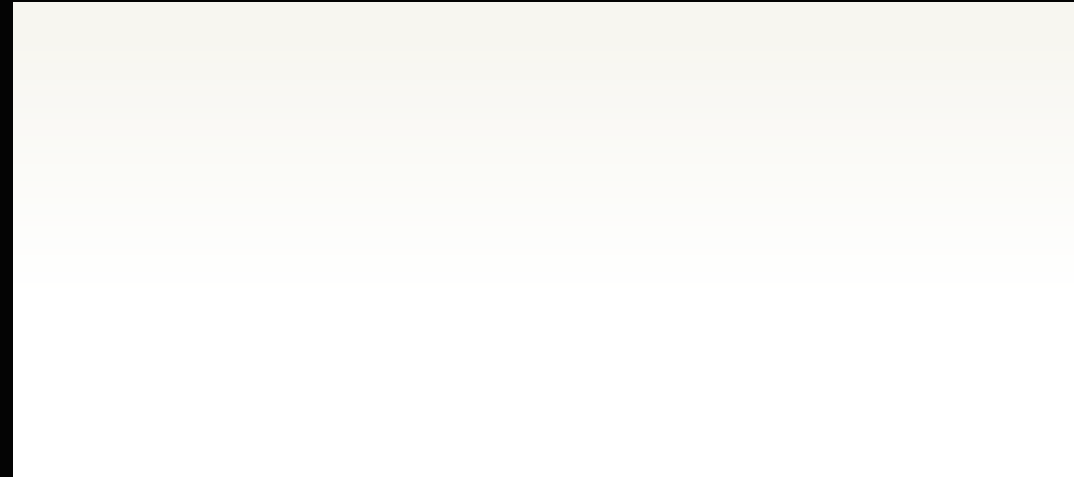
- Gyrus rectus
- Olfactory sulcus
- Orbital gyrus
- Inferior frontal gyrus
- Superior temporal gyrus
- Middle temporal gyrus
- Uncus
- Parahippocampal gyrus
- Inferior temporal gyrus
- Midbrain
- Vermis
- Straight sinus
- Superior sagittal sinus

Brain
Axial T2



- Caudate nucleus
- Internal capsule (anterior limb)
- Putamen
- Extreme capsule
- Column of fornix
- Clastrum
- External capsule
- Internal capsule (genu)
- Globus pallidus
- Internal capsule (posterior limb)
- Third ventricle
- Thalamus
- Retropulvinar cistern
- Posterior commissure
- Quadrigeminal cistern

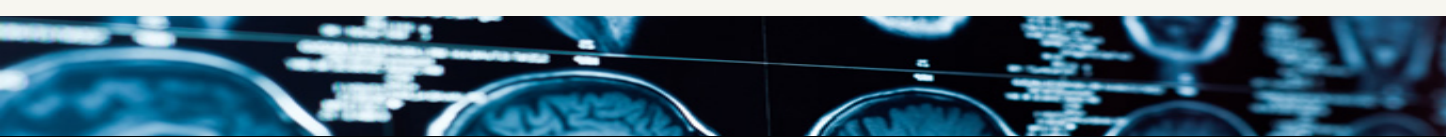
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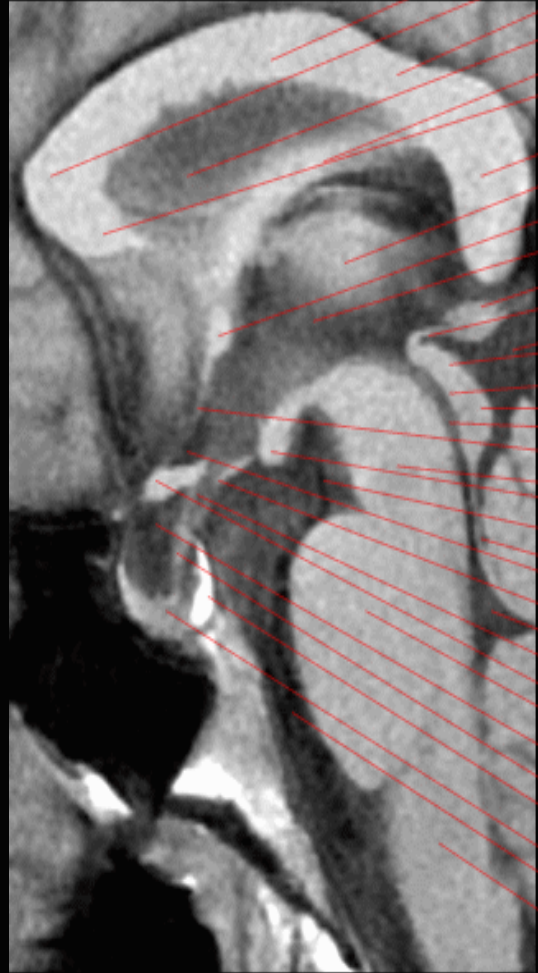


Brain Sagittal T1



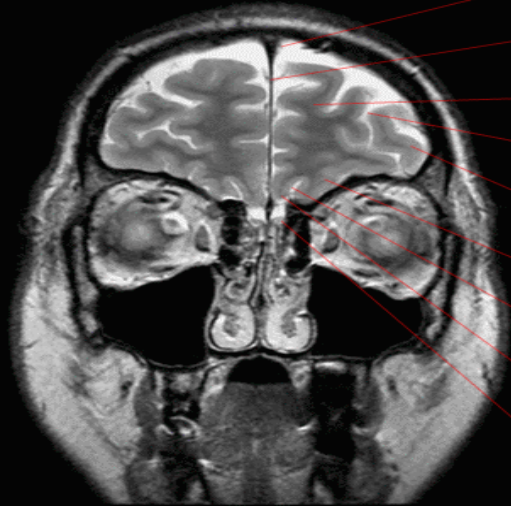
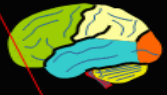
- Superior sagittal sinus
- Frontal lobe
- Parietal lobe
- Corpus callosum
- Precuneus
- Parieto-occipital fissure
- Cuneus
- Calcarine sulcus
- Lingual gyrus
- Straight sinus
- Cerebellum
- Brainstem
- Straight gyrus
- Spinal cord

Brain Sagittal T1



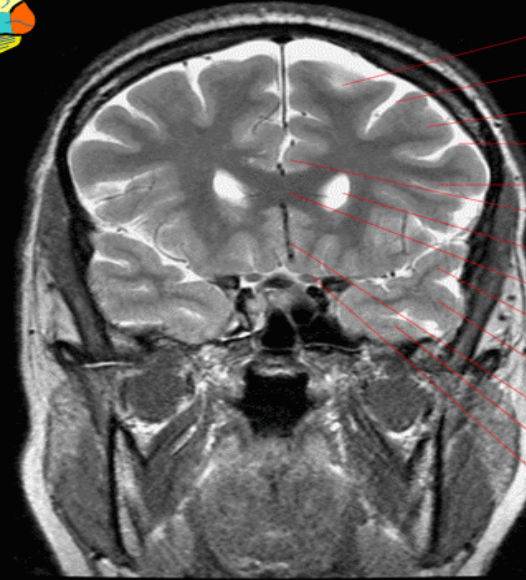
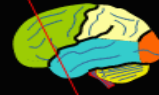
- Corpus callosum (body)
- Corpus callosum (genu)
- Corpus callosum (isthmus)
- Septum pellucidum
- Fornix
- Corpus callosum (rostrum)
- Corpus callosum (splenium)
- Thalamus
- Anterior commissure
- Third ventricle
- Pineal gland
- Posterior commissure
- Quadrigenal cistern
- Superior colliculus
- Quadrigenal plate
- Inferior colliculus
- Cerebral aqueduct
- Lamina terminalis
- Midbrain
- Mamillary body
- Interpeduncular cistern
- Superior medullary velum
- Supraoptic recess
- Tuber cinereum
- Fourth ventricle
- Infundibular recess
- Optic chiasm
- Pons
- Suprasellar cistern
- Infundibulum
- Neurohypophysis
- Adenohypophysis
- Prepontine cistern
- Medulla oblongata

Brain
Coronal T2



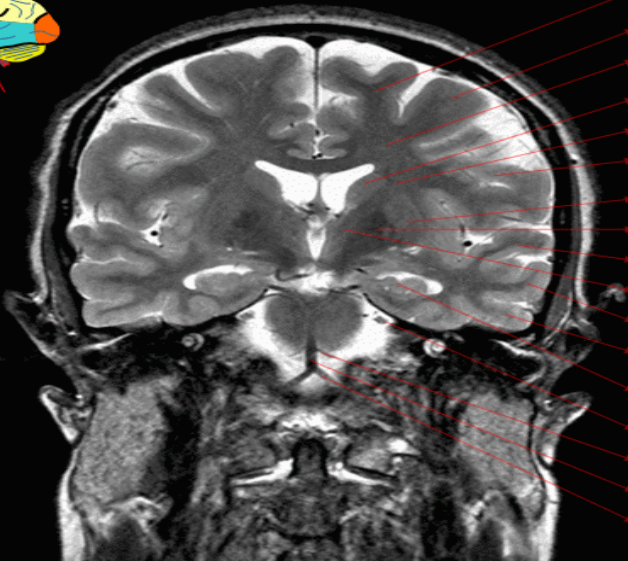
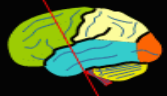
- Superior sagittal sinus
- Interhemispheric fissure
- Superior frontal gyrus
- Superior frontal sulcus
- Middle frontal gyrus
- Medial orbital gyrus
- Olfactory sulcus
- Gyrus rectus
- Olfactory bulb

Brain
Coronal T2



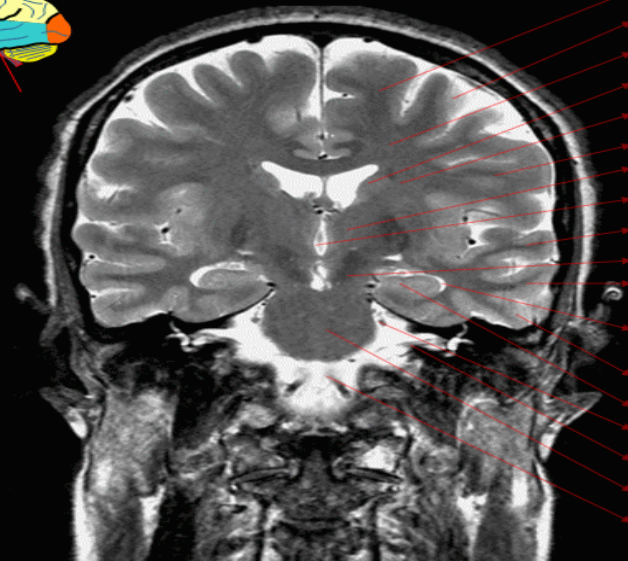
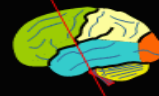
- Superior frontal gyrus
- Superior frontal sulcus
- Middle frontal gyrus
- Inferior frontal sulcus
- Inferior frontal gyrus
- Cingulate gyrus
- Lateral ventricle (frontal horn)
- Corpus callosum (genu)
- Superior temporal gyrus
- Middle temporal gyrus
- Anterior cerebral artery
- Inferior temporal gyrus
- Pre-chiasmatic optic nerve

Brain
Coronal T2



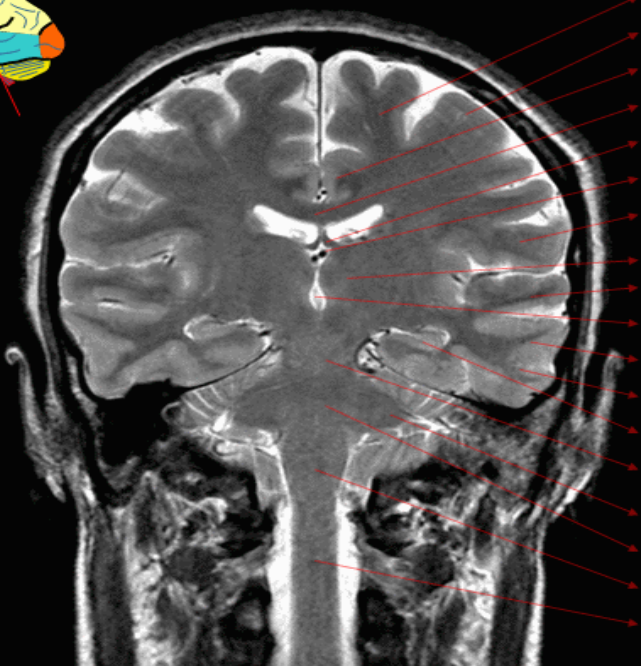
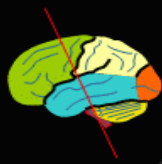
- Superior frontal gyrus
- Middle frontal gyrus
- Centrum semiovale
- Caudate nucleus
- Corona radiata
- Inferior frontal gyrus
- Putamen
- Globus pallidus
- Superior temporal gyrus
- Internal capsule
- Middle temporal gyrus
- Inferior temporal gyrus
- Hippocampus
- Trigeminal nerve (V)
- Superior cerebellar artery
- Basilar artery
- Vertebral artery

Brain
Coronal T2



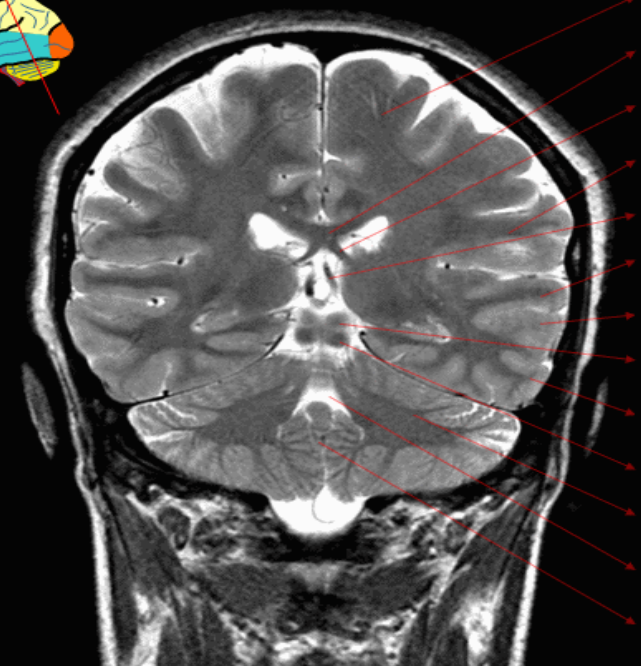
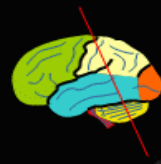
- Superior frontal gyrus
- Middle frontal gyrus
- Centrum semiovale
- Caudate nucleus
- Corona radiata
- Inferior frontal gyrus
- Thalamus
- Third ventricle
- Superior temporal gyrus
- Mid brain
- Middle temporal gyrus
- Lateral ventricle (temporal horn)
- Inferior temporal gyrus
- Hippocampus
- Trigeminal nerve (V)
- CN VII and VIII
- Pons
- Vertebral artery

Brain
Coronal T2



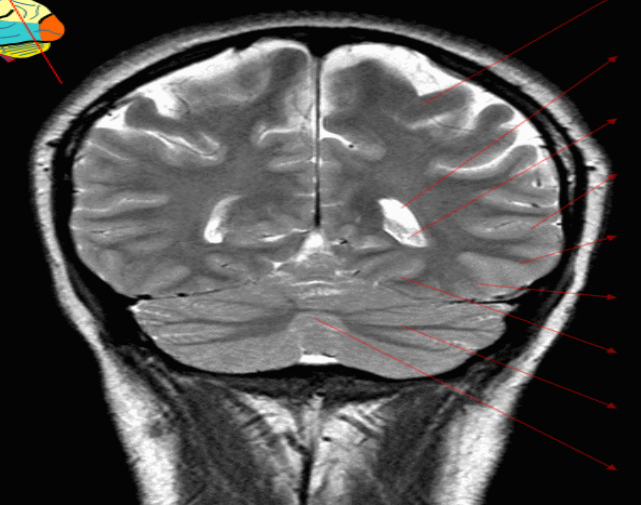
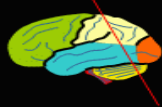
- Superior frontal gyrus
- Middle frontal gyrus
- Cingulate gyrus
- Corpus callosum (body)
- Fornix
- Internal cerebral vein
- Precentral gyrus
- Thalamus
- Superior temporal gyrus
- Third ventricle
- Middle temporal gyrus
- Inferior temporal gyrus
- Hippocampus
- Mid brain
- Middle cerebellar peduncle
- Pons
- Medulla oblongata
- Spinal cord

Brain
Coronal T2



- Postcentral gyrus
- Corpus callosum (body)
- Fornix
- Supramarginal gyrus
- Internal cerebral vein
- Superior temporal gyrus
- Middle temporal gyrus
- Superior colliculus
- Inferior temporal gyrus
- Inferior colliculus
- Cerebellum
- Fourth ventricle
- Vermis

Brain
Coronal T2

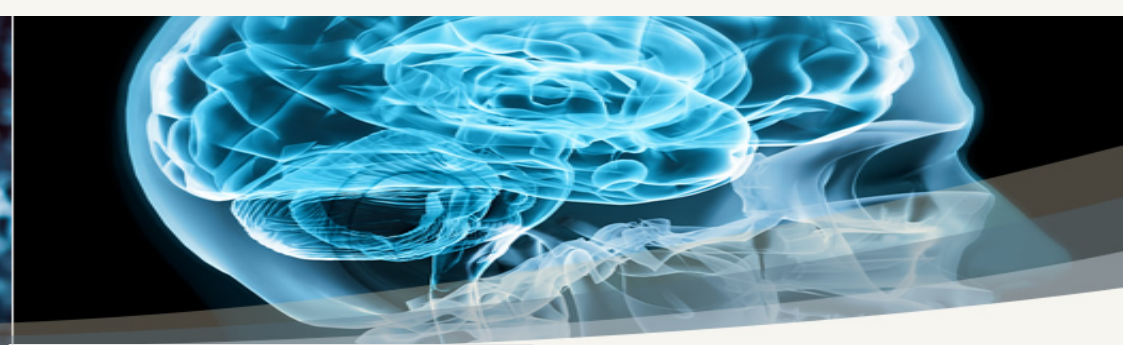
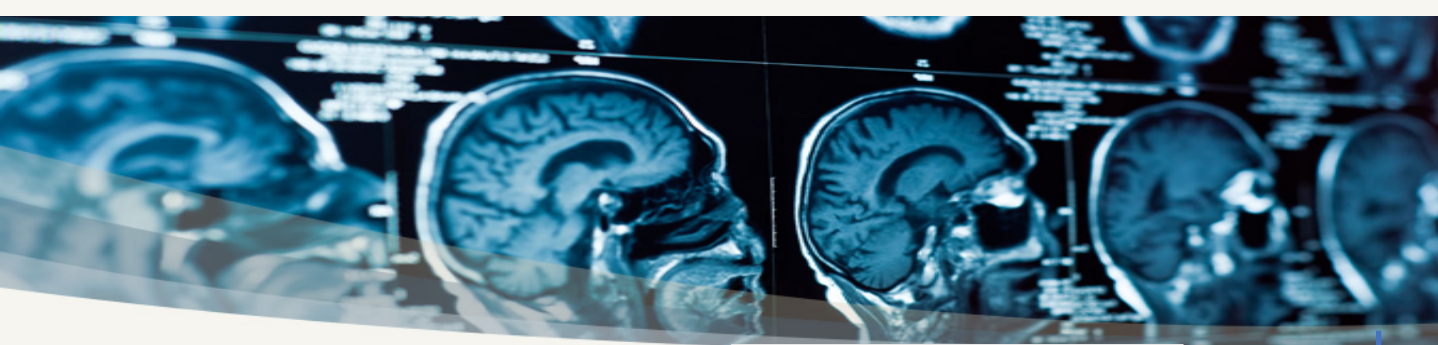


- Supramarginal gyrus
- Lateral ventricle (occipital horn)
- Choroid plexus
- Middle temporal gyrus
- Inferior temporal gyrus
- Fusiform gyrus
- Lingual gyrus
- Cerebellum
- Vermis

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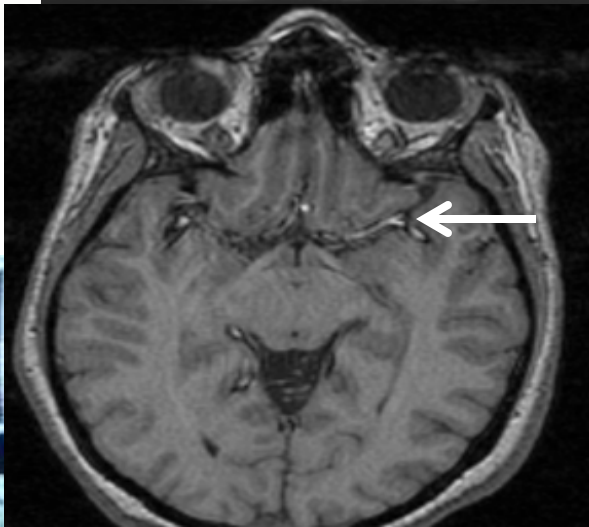
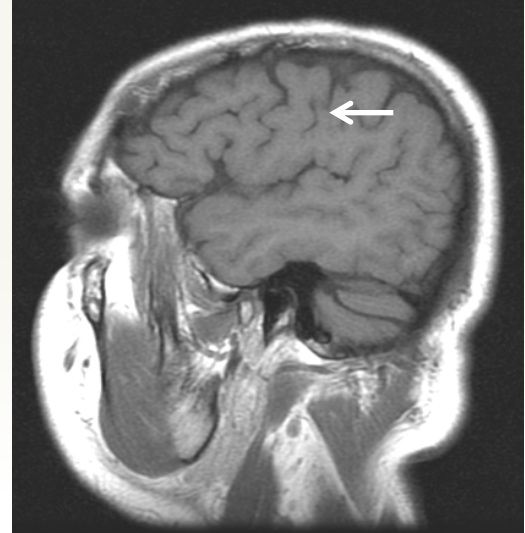
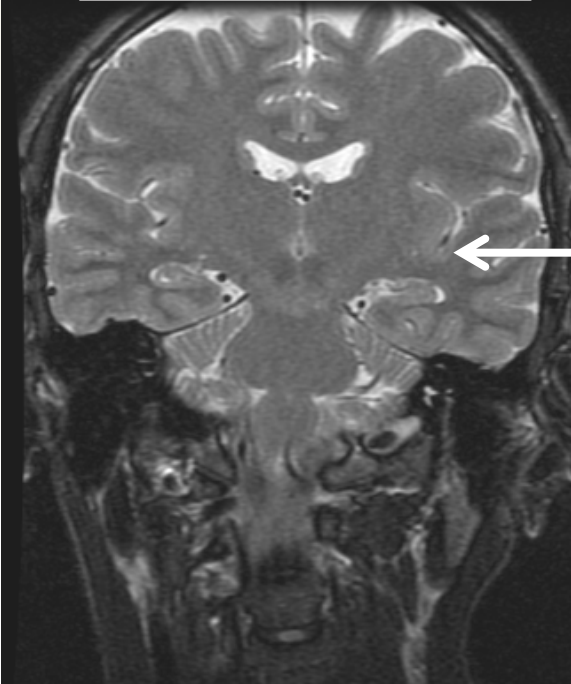
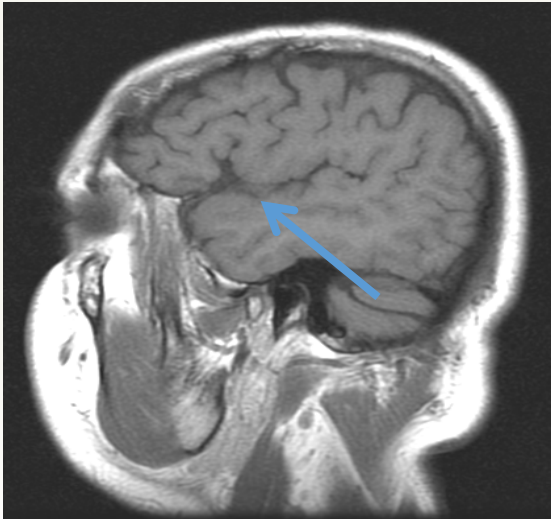
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Sylvian fissure

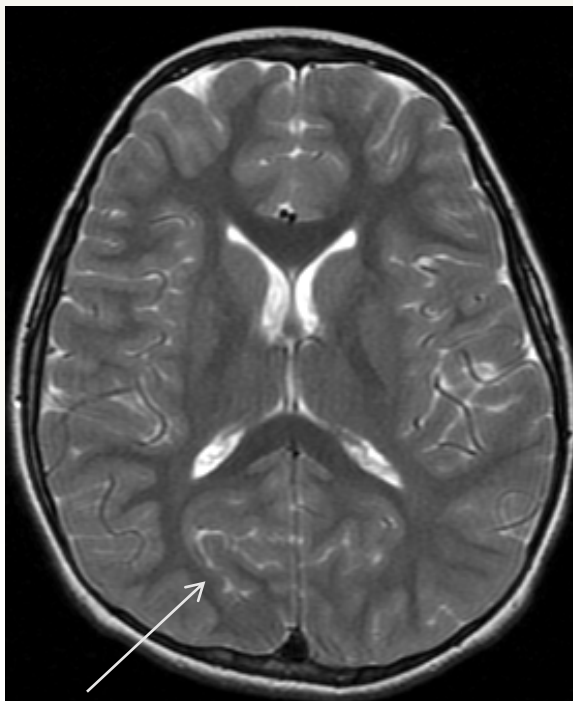
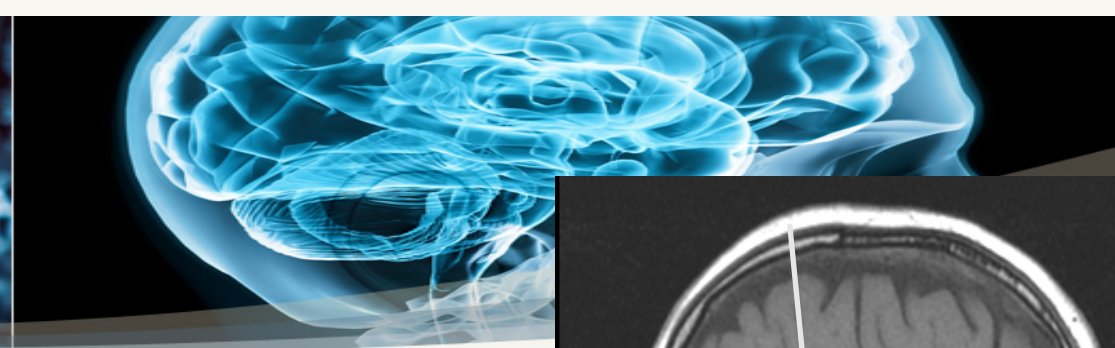
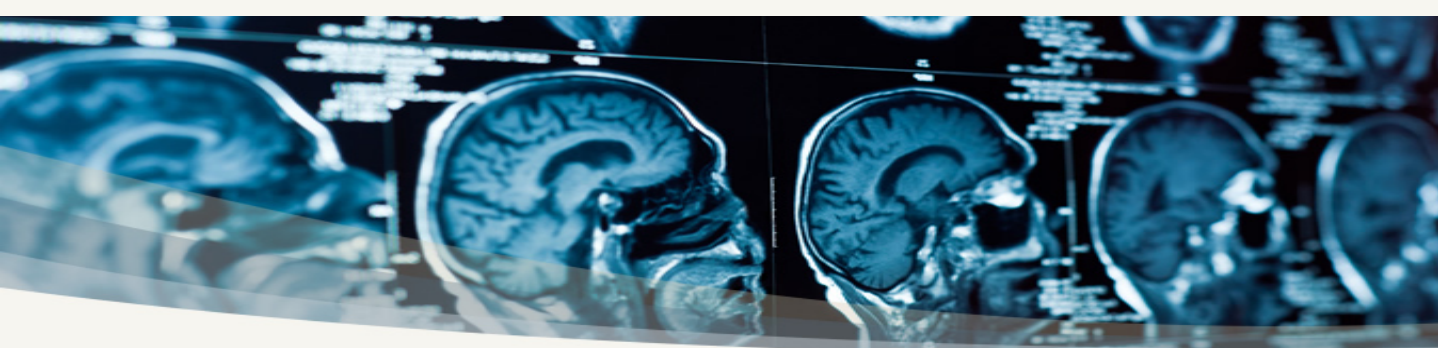
Central fissure



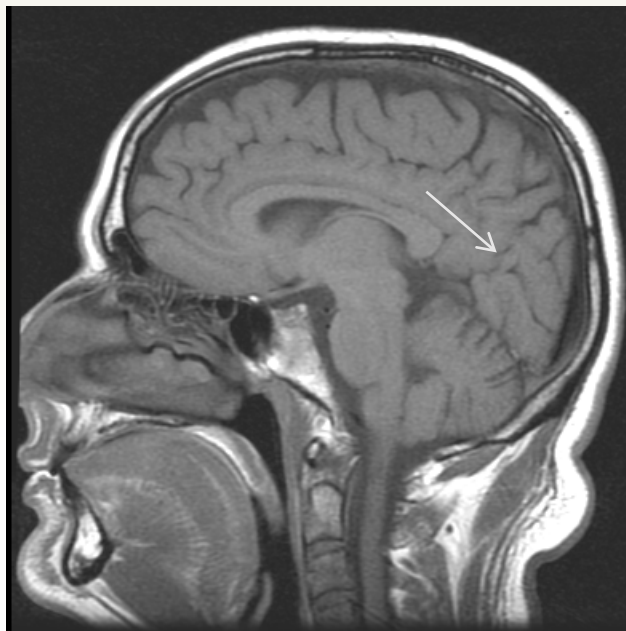
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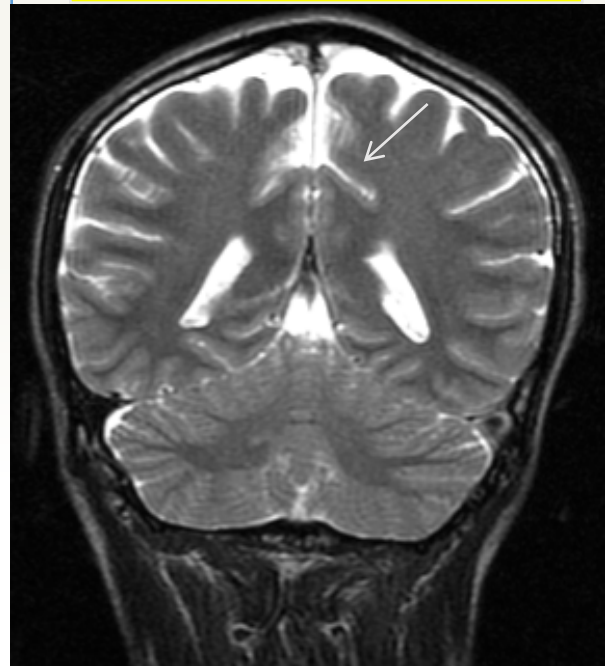




Parieto-occipital fissure



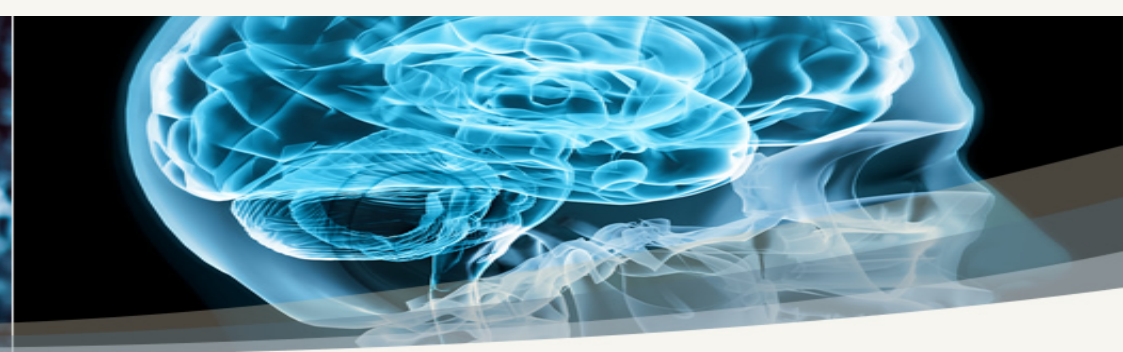
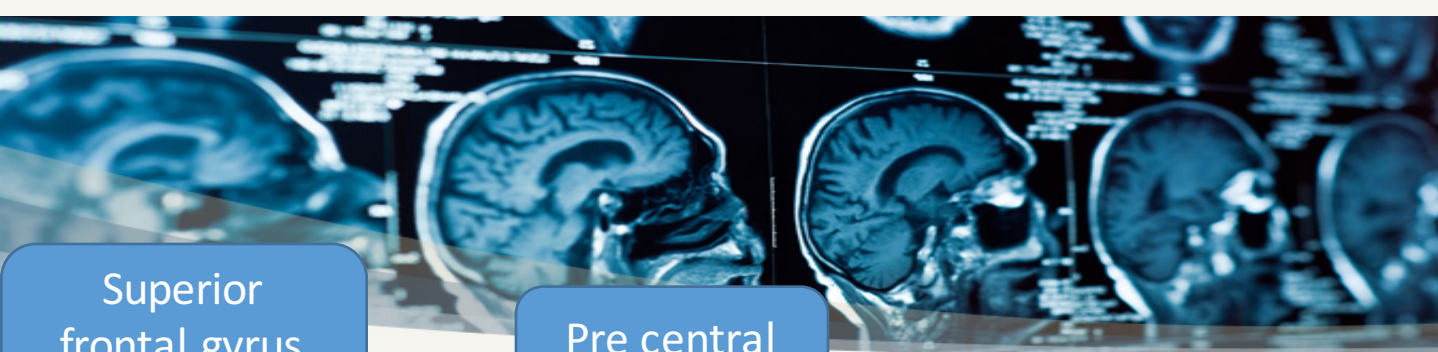
Cingulate fissure



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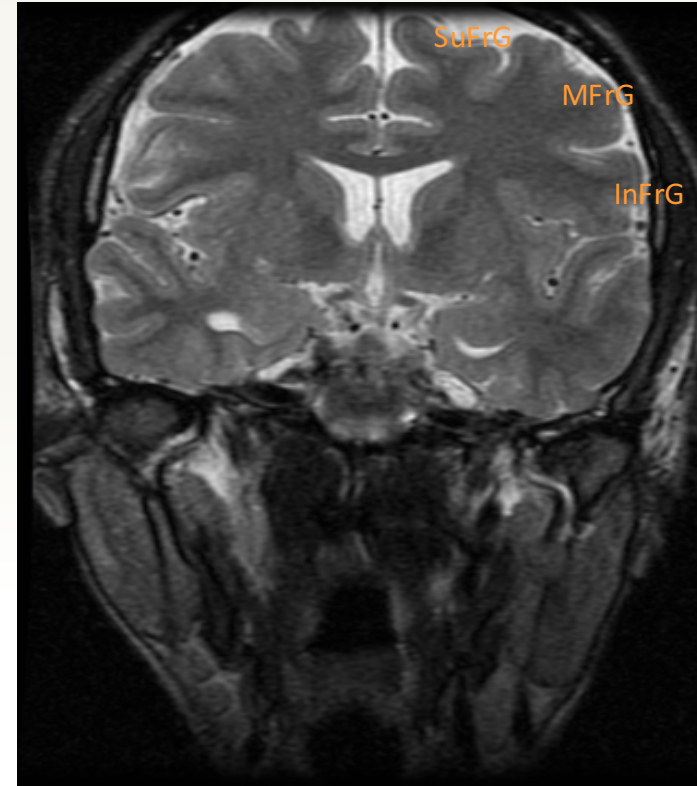
Superior frontal gyrus (SuFrG)

Pre central gyrus



suFrG

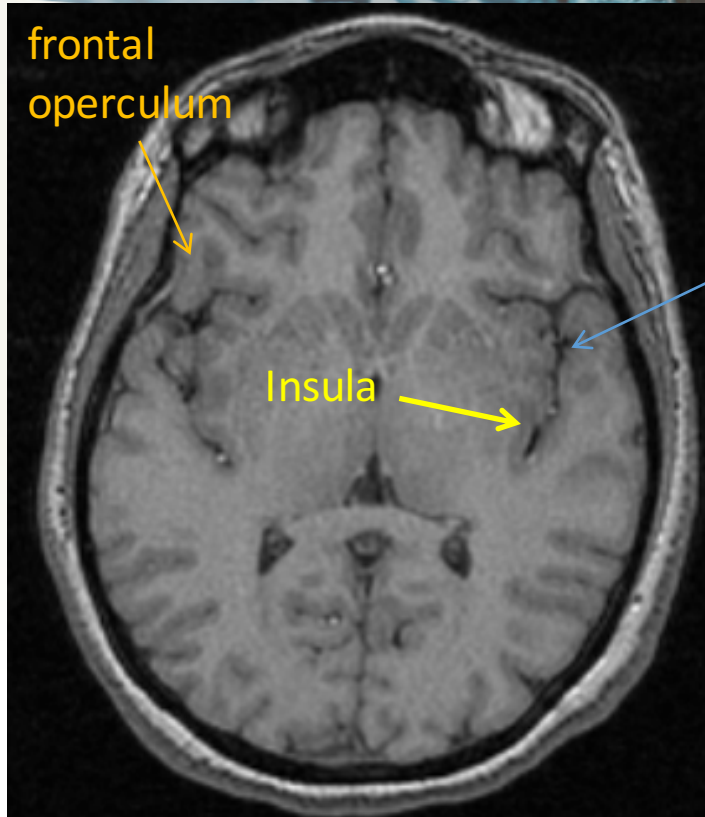
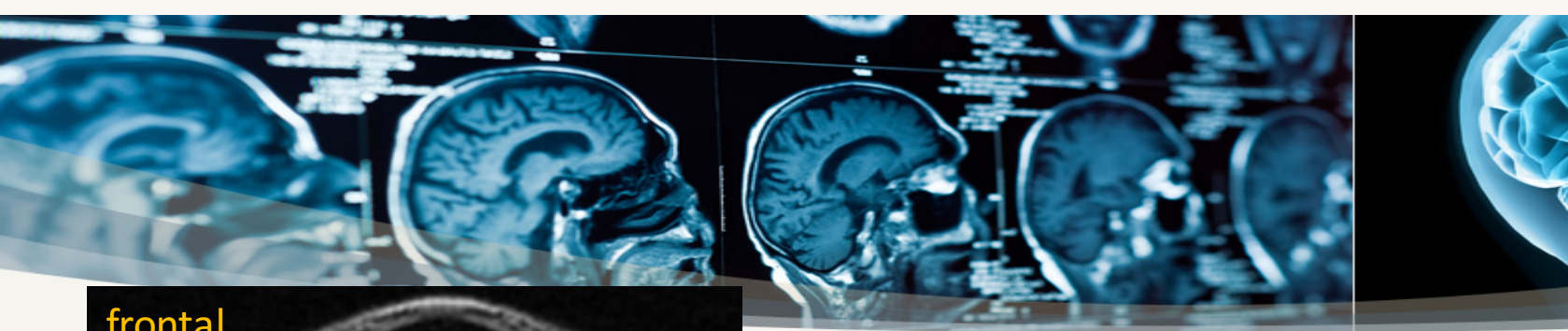
PrCG



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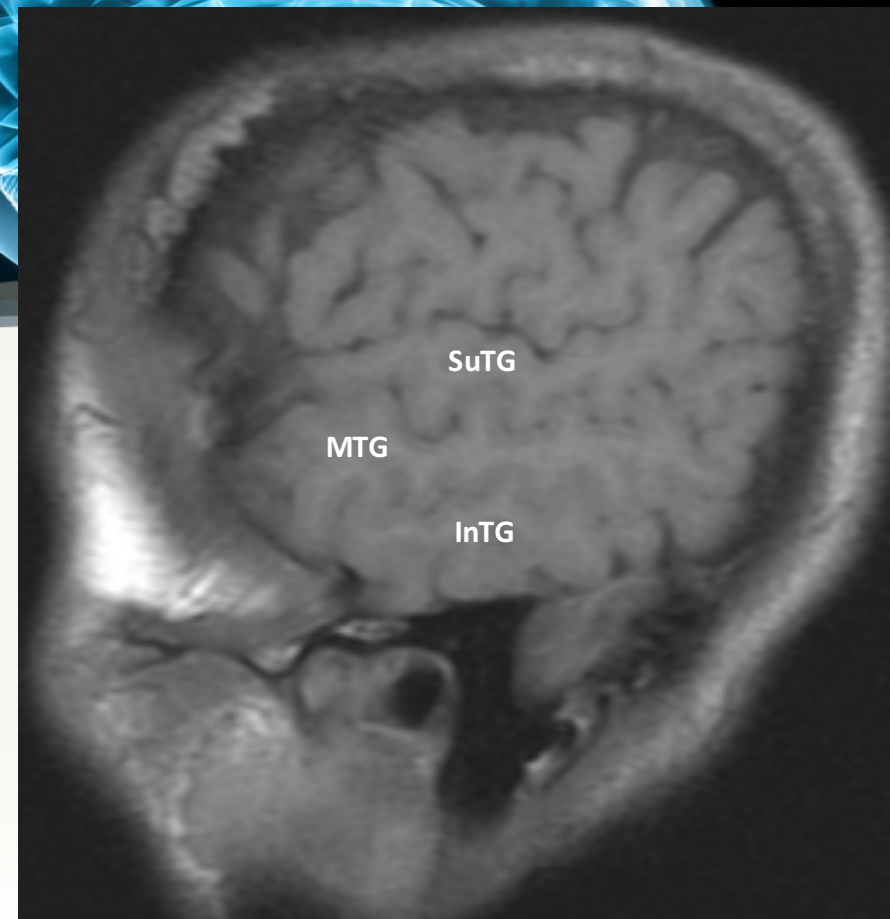
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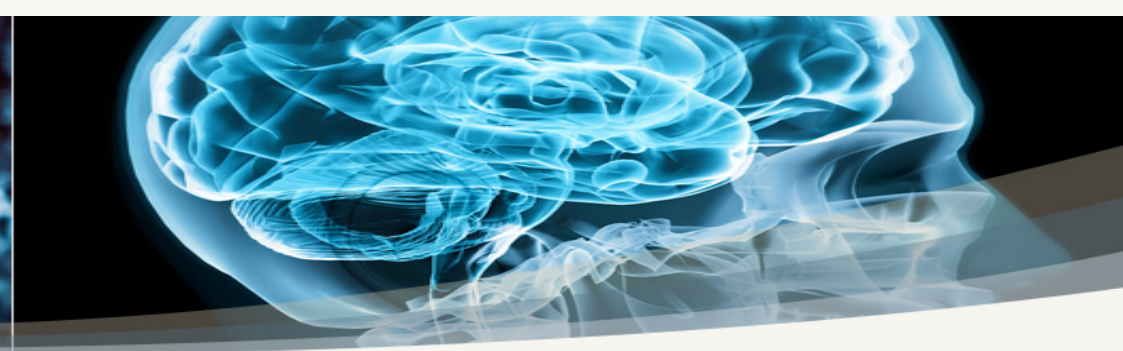
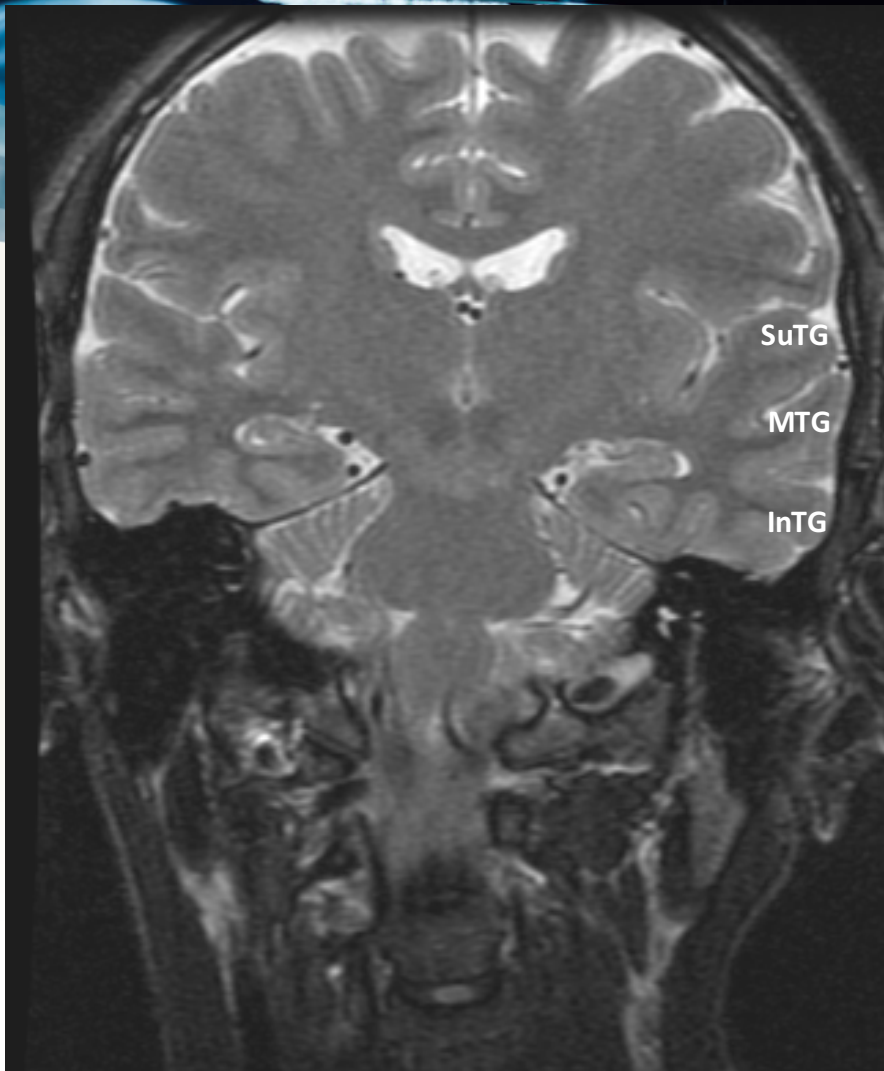




Temporal operculum

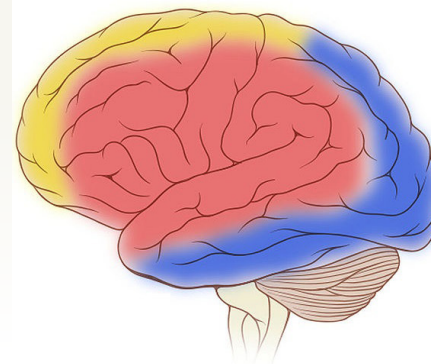
- SuTG : superior temporal gyrus
- MTG : middle temporal gyrus
- InTG: inferior temporal gyrus



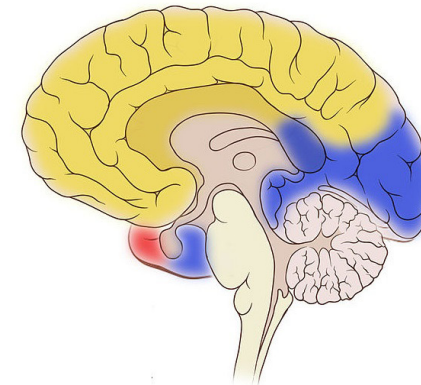





Cerebral hemispheres *supplies*

Lateral Brain



Medial Brain



-  Anterior Cerebral Artery
-  Middle Cerebral Artery
-  Posterior Cerebral Artery

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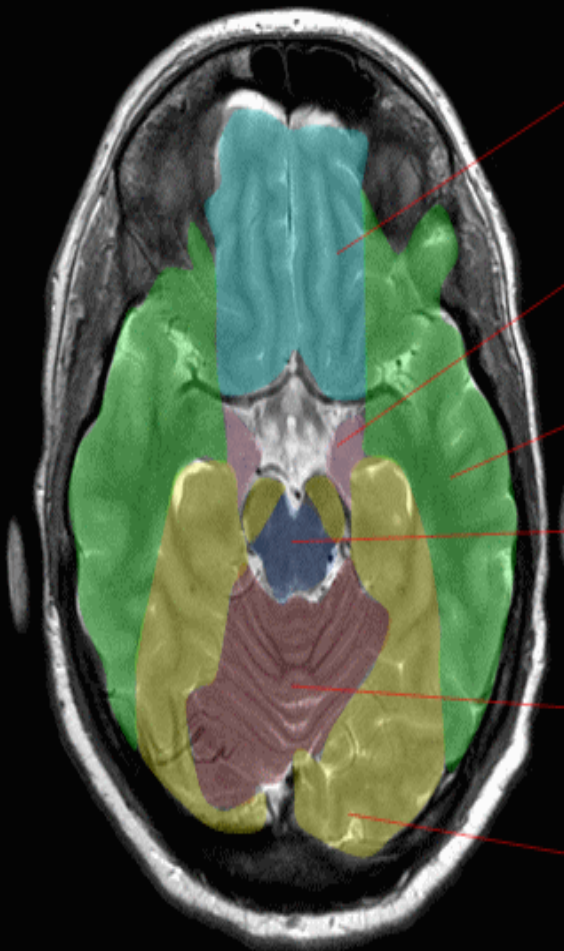
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Brain (Arterial territories)

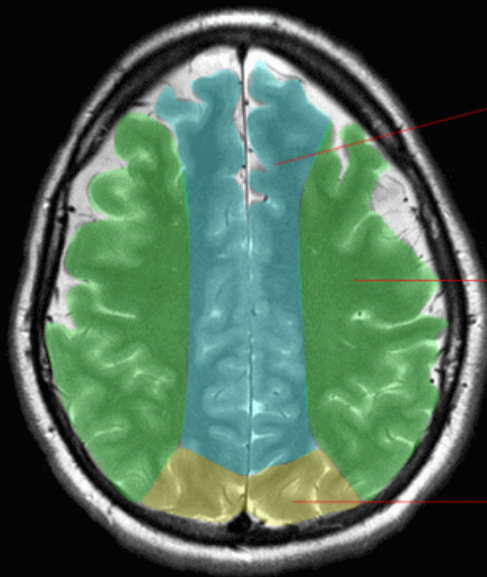
Axial T2



- Anterior cerebral artery
- Anterior choroidal artery
- Middle cerebral artery
- Basilar perforating arteries
- Superior cerebellar artery
- Posterior cerebral artery

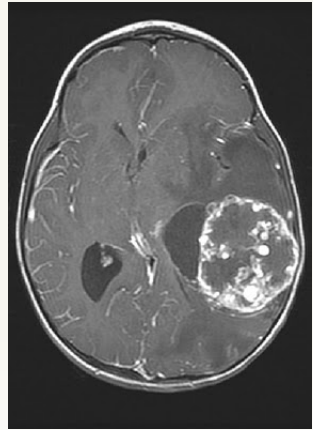
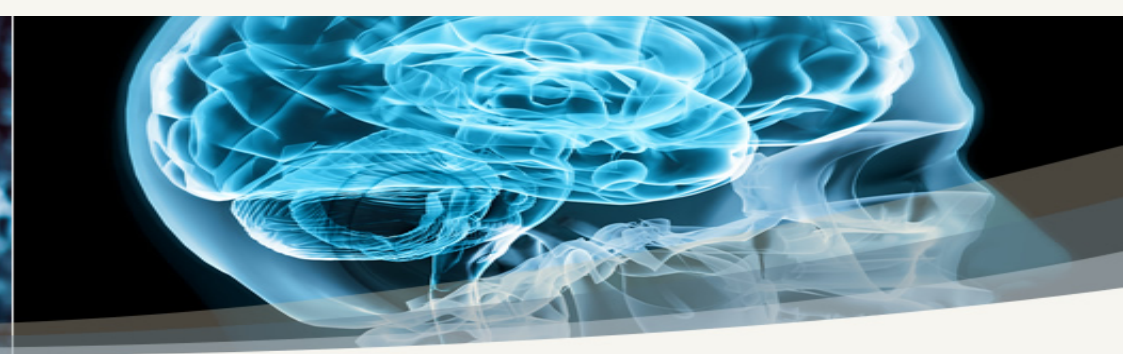
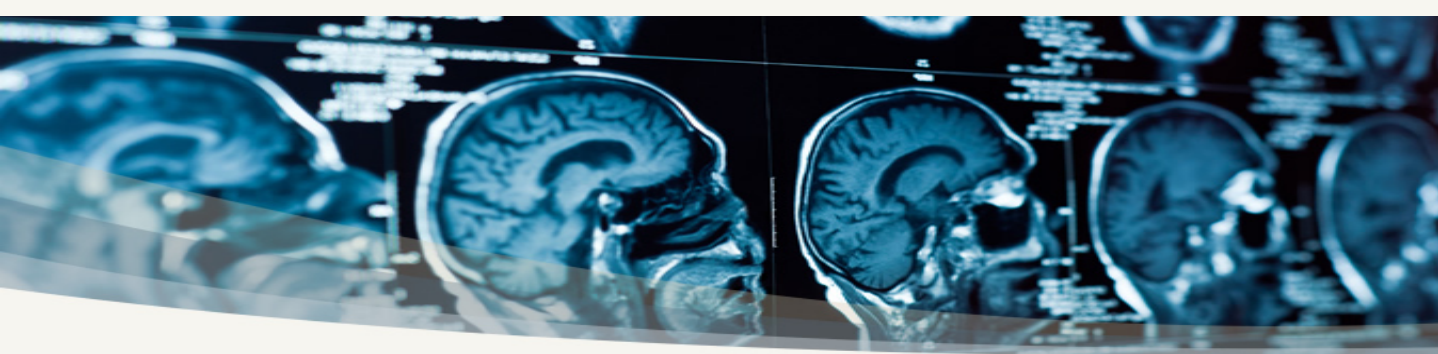
Brain (Arterial territories)

Axial T2

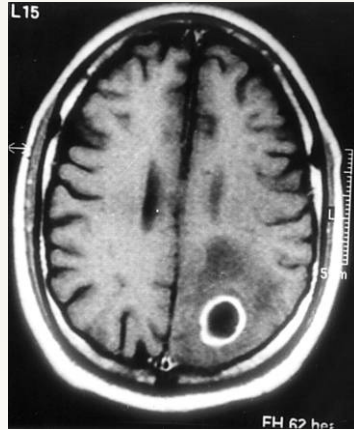


- Anterior cerebral artery
- Middle cerebral artery
- Posterior cerebral artery

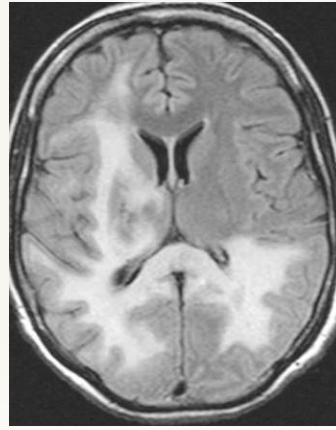
- If a person have an infarctions in **ACA** so he will have paralysis in one leg (**monoplegia**)
- If the infarctions in **MCA** so the upper limb and face will be paralyzed



Tumor



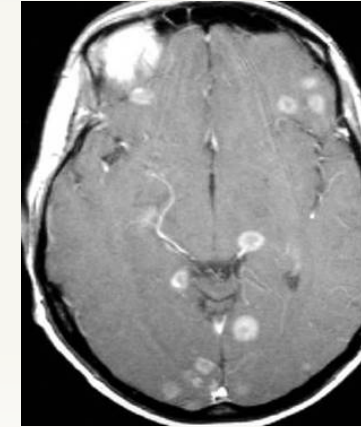
Abscess



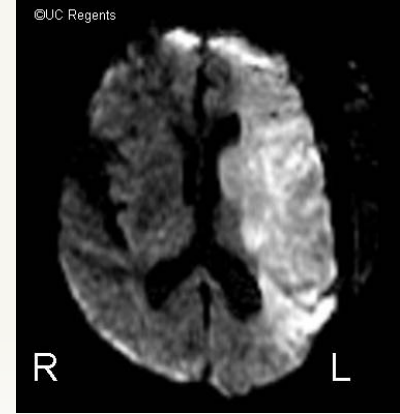
Infection



Malformation



Metastasis

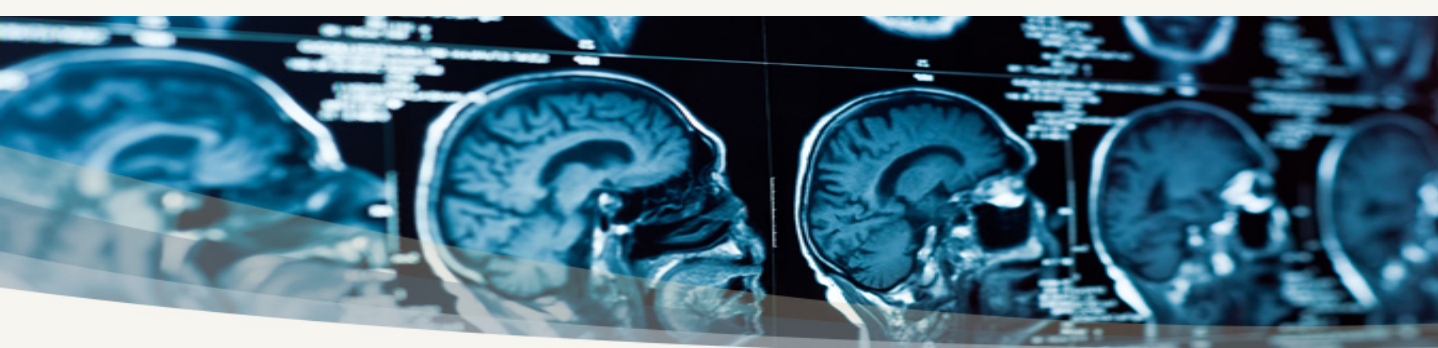


Infarction

RADIOLOGY

**434
TEAM**





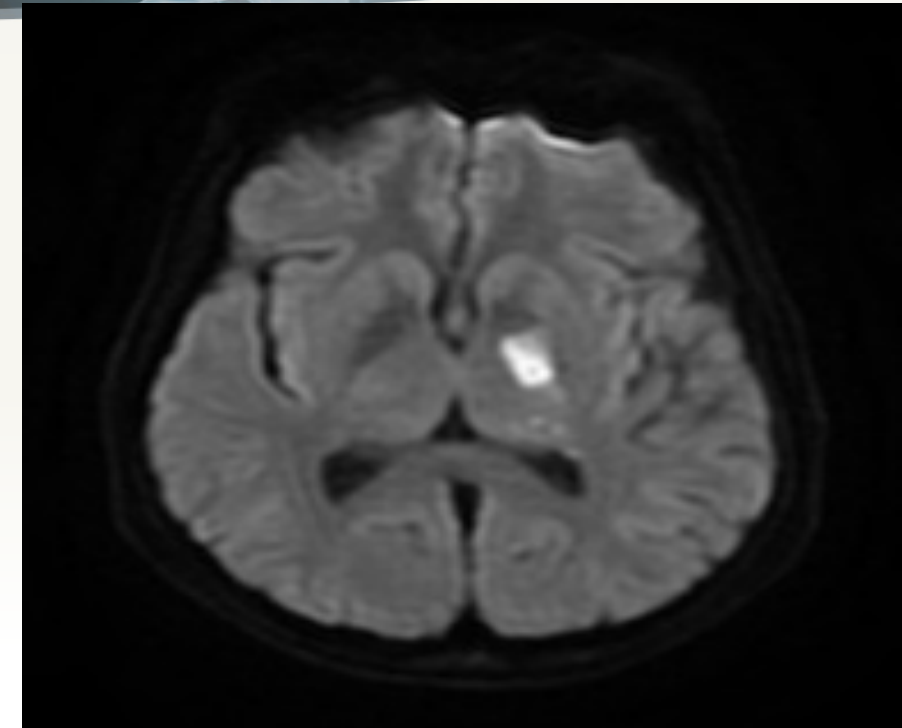
This MR image shows acute infarction. What is the artery involved?

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



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

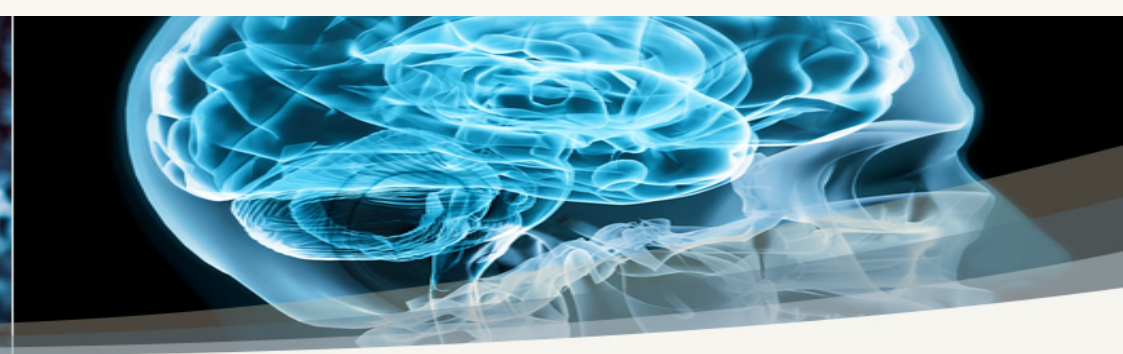
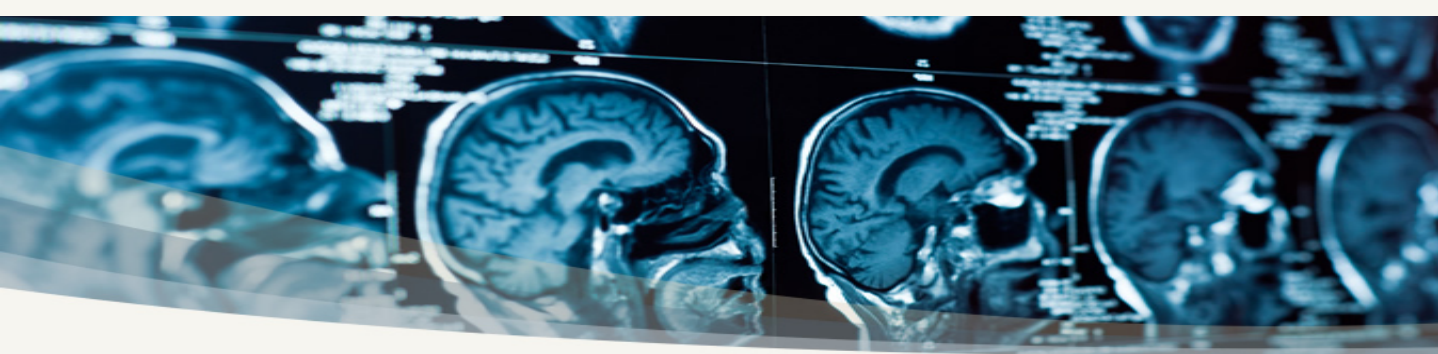
- A. Right leg weakness
- B. Right arm weakness
- C. Right body side weakness**
- D. Left leg weakness



RADIOLOGY

**434
TEAM**





Thank you for checking our
team

Done by :
Nada Alamri

I'm not telling
you it is going to
be easy, i'm
telling you it's going
to **be worth it..**

