HANDWRITTEN NOTES

DAMS

RADIOLOGY

CRISP, CONCISE, CONCEPTUAL

Integrated Edition

Student first @DAMS

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HOW TO MAKE BEST USE OF NOTES?

A Message by Mentor Duo Specially for you,

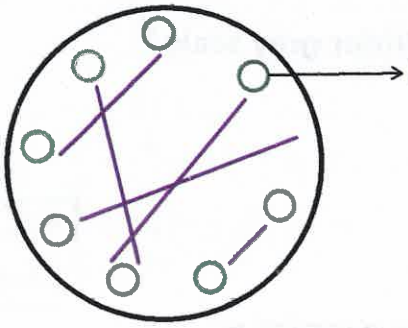
- *Read the notes thoroughly, they are absolutely concise, crisp & conceptual and hence it is best advised not to add a lot of extra information to them as that will dilute the quality.*
- *Images have been provided alongside to aid in better understanding and also help you solve image-based questions, these images have been specially picked by the faculty so have a high probability of being asked in exams.*
- *Notes are handwritten in a way to help make them easier to retain, a lot of tables, graphs and algorithms have been used to simplify the learning.*
- *While reading notes try and use the CFAQ technique —*
  - *A. Use the C to denote concept part in the notes and ensure you are clear with this part in the first go if not then it's advisable to listen to this part of the video from your course.*
  - *B. Use the F To denotes facts in your notes, it is okay if you can't remember them in first go but will need repeat reading. But these facts are important for exams as they could be integrated to clinical questions.*
  - *C. Use A to denote applied parts, this is how concepts and facts are asked indirectly in exams. This will also help you develop MCQ solving skill.*
  - *D. Use Q to denote areas where faculty has said it's a direct question or a PYQ or a potential question.*
- *This technique will help you summarize your notes In way that your second reading will become easy and faster.*
- *Active space has been provided with these notes to make your own annotations alongside and this will help you maintain one single notebook for one subject.*
- *Try and solve MCQs with every topic from DQB. Your goal should be to start with at least 30 MCQs every day and then increase to at least 50 MCQs every day. Also, when you do a topic wrong write it alongside the notes that this topic needs to be read again but mark only the specific area that you have done wrong not the whole topic.*
- *After the topic is covered then in the active space try and summarize the topic in the form of mind map. This will help in active recall and make your revision easier.*

Best Wishes & Happy Learning!!!!!

INDEX

RADIOLOGY

CT SCAN



X Rays enter the body at different angles through a rotating machine to form a CT image

NEET

(Q). Young lady needs to undergo a CT Head. What will you ask her before the CT Scan ?

Ans : LMP - Need to know if she is overdue or not

NEET

(Q). Is CT Scan a image or 3D image?

Ans : 3D image

NEET , FMGE

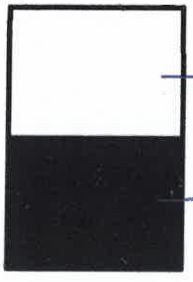
(Q). What is the absolute C/I to MRI ?

(i). Pregnancy (ii). Intraocular Foreign Body Metal

Ans : Option 2

Because MRI is not based on X-ray it's based on magnetism

X-RAY :



White : Opaque X Rays are being attenuated by the bone & hence as a result it is appearing white : Opaque

Black : Luscent Air is not stopping the light, so as a result it is appearing Lucent

CT Stands for Computed Tomography

It means that we are using a computer to create the image & a computer screen has a grey scale

So, it will have Black, White & shades of gray

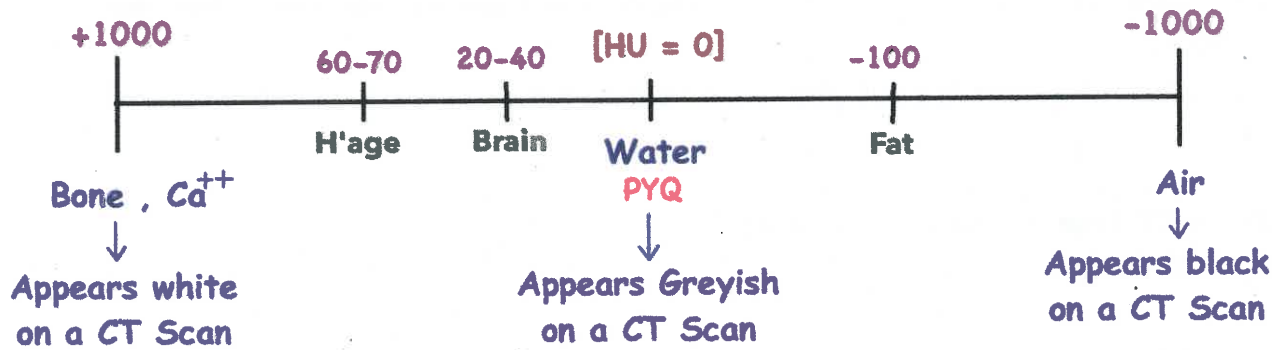
Wider gray scale

Tissue attenuation :
Stopping power of a tissue

How does it work ?

CT scan was invented by a man HOUNSFIELD

He calculated tissue attenuation of various tissues presented them on a logarithmic scale PYQ



Grey matter : Cell bodies

White matter : Axons (covered with myelin) - which has some fat & hence white matter appears darker than the grey matter

If in the CT of Brain , The disease is :

More white : Hyperdense

Less white : Hypodense

FMGE

(Q). Brain H'ge on CT appears

Ans. : Hyperdense

Vertical Integration of Radiology & Anatomy

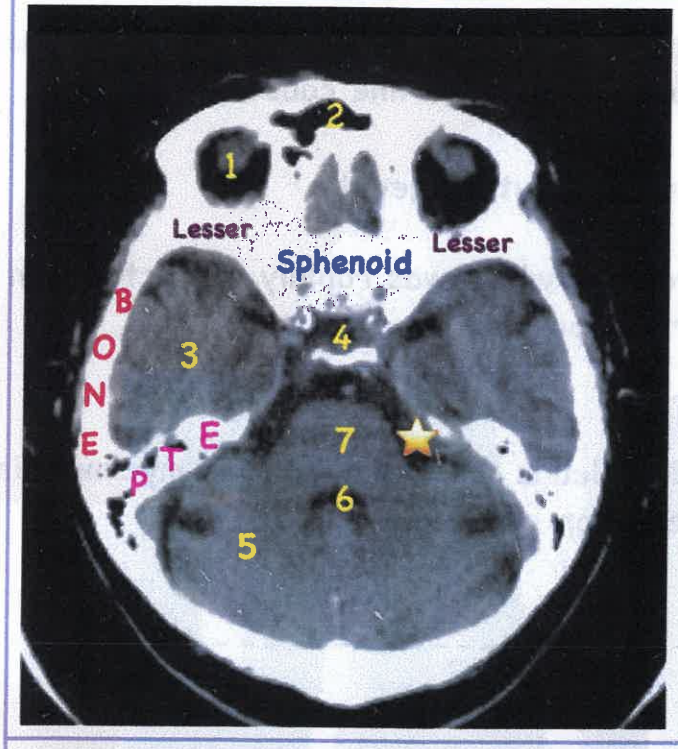


Image Notes

CT Scan of the Brain (Axial section)

1 : Orbit
2 : Frontal sinus
3 : Temporal Lobe
4 : Sella tursica
5 : Cerebellum
6 : 4th Ventricle
7 : Pons
★ : CP Angle

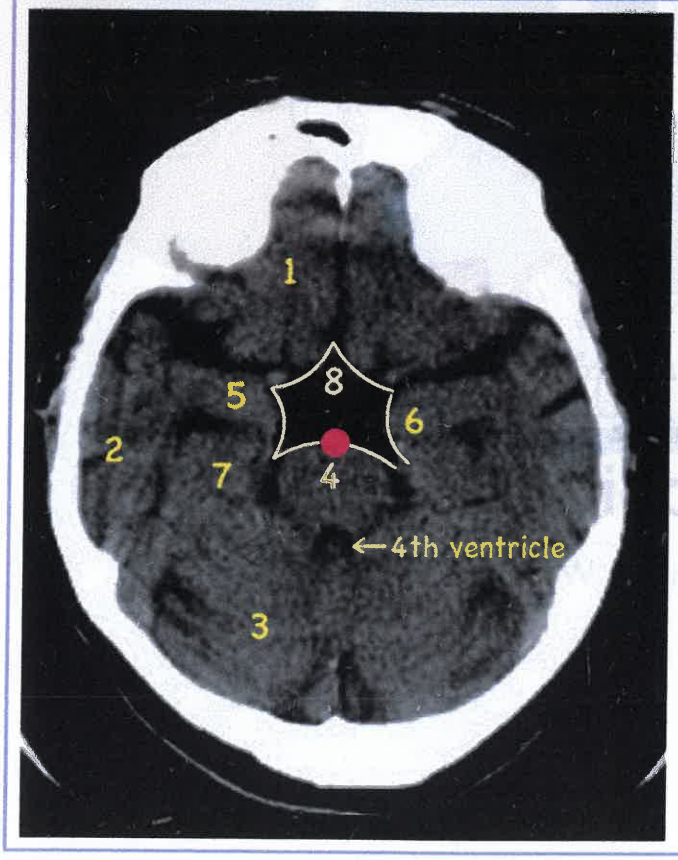


Image Notes

1 : Frontal lobe
2 : Temporal lobe
3 : Cerebellum
4 : Pons

Inferior horn of Lateral ventricle is always the first to dilate in hydrocephalus

5 : Fear / Amygdala
6 : Uncus
7 : Hippocampus
8 : Suprasellar cistern (CSF filled)

(Q). A patient with HSV-1 Encephalitis undergoes a CT Scan of the brain. Which number will you look at the disease ?

Ans : Temporal bone (Number 3)

→ Herpes encephalitis predominantly involves the limbic system

(Q). A patient has bilateral tumours in the star marked areas (CP Angle). He probably has deafness also. What could be the underline cause?

Ans : NF-2

→ Because if there is bilateral tumour, it will it be genetic

(Q). A chronic alcoholic had hyponatraemia, which was rapidly corrected. On the CT image, where will you look for the problem?

Ans : 7

If hyponatraemia is rapidly corrected, it leads to central pontine myelinolysis, which is also known as osmotic demyleination syndrome

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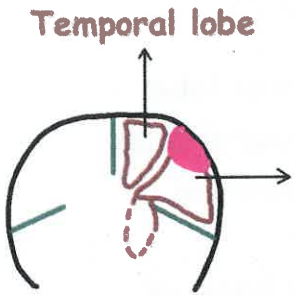


In case of a hematoma it will push uncus below the temporal lobe. This is called as the Trans Tentorial herniation

(Q). Which part of the brain will heniate in Trans Tentorial herniation ?

Ans : Number 6 - Uncus

(Q). A patient has Alzheimer's dementia. Where Will you look for the structural problem ?

Ans : Number 7 - Hippocampus

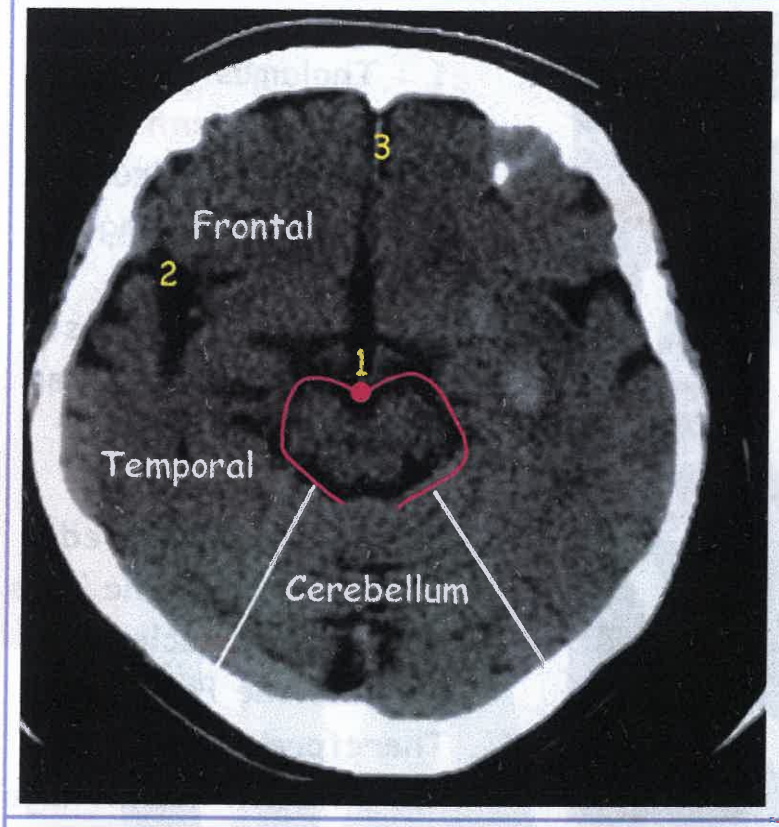


Image Notes

1 : Interpeduncular fossa
Anteriorly : Optic tracts
Posteriorly : Mid brain
2 : Lateral sulcus / Sylvian fissure
3 : Falx

The CSF filled fluid space at the level of midbrain is Inter peduncular fossa cistern

Basilar artery ends, hooks around the midbrain & gives two terminal branches : Posterior Cerebellar Artery

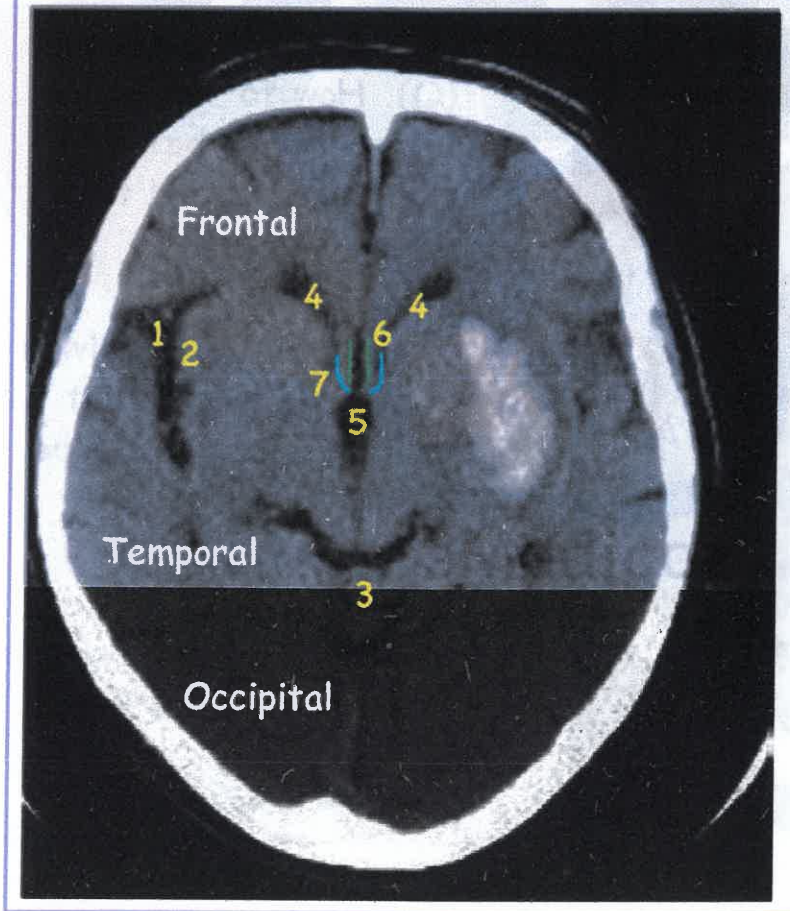


Image Notes

1 : Sylvian Fissure
2 : The structure that lies deep to the Sylvian fissure : Insula cortex PYQ
3 : Cerebellum
4 : Lateral Ventricle
5 : 3rd ventricle (Slit like CSF space)

6 :These are the two horns of fornix
7 :Behind the fornix are the two holes which connects the CSF of lateral ventricle to the third ventricle called Foramen of Monro

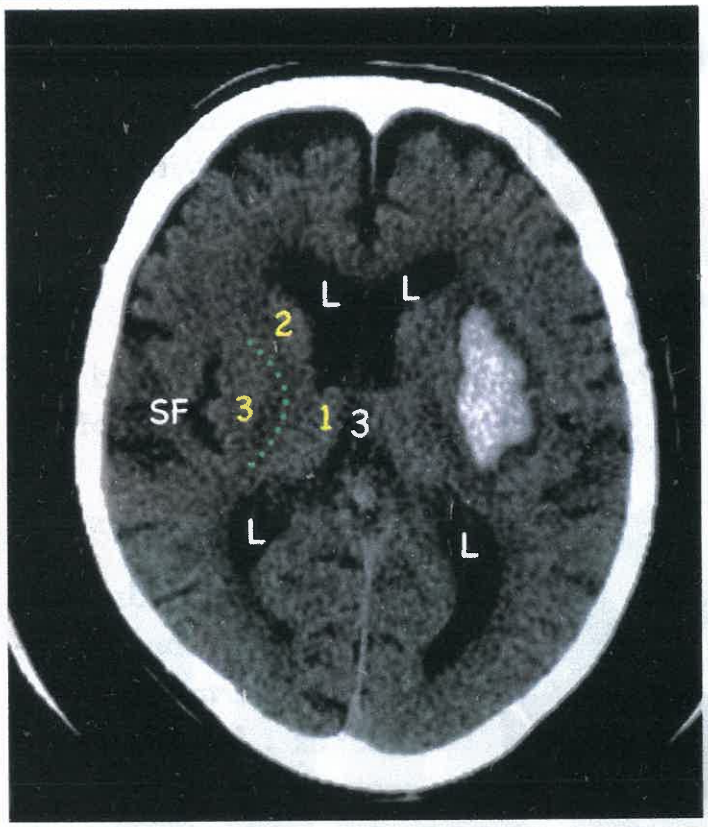


Image Notes

1 : Thalamus (Either side of 3rd ventricle)

2 : Caudate nucleus (The part touching the lateral ventricle)

3 : Lentiform nucleus

PYQ : The area between 1,2 & 3 is Internal capsule

There is an elongated haemorrhage in the area of lentiform nucleus which is the Putamen. Therefore, this patient has putamen haemorhage

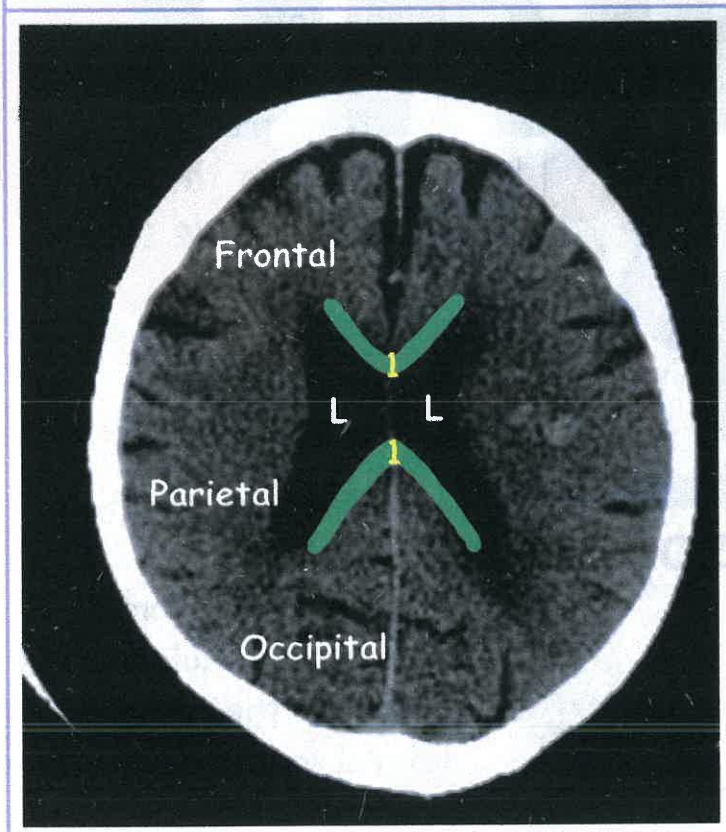


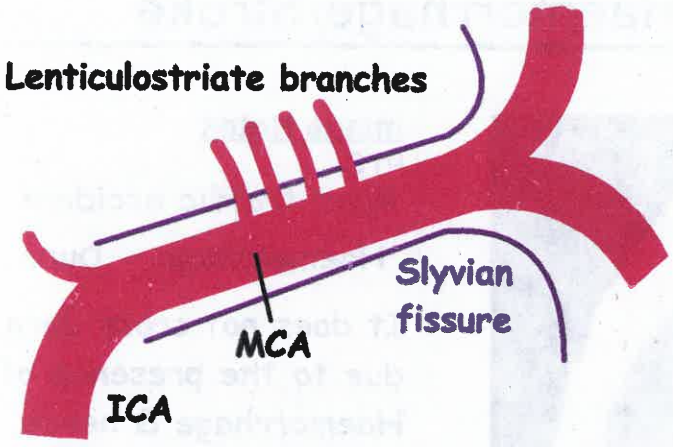
Image Notes

(Q). How to differentiate between the temporal and the parietal lobe ?

The presence of Sylvian fissure indicates that we are in temporal lobe & once it is not seen that means we are above the level of Slyvian fissure we say it is the parietal lobe

1 : Corpus Callosum

Reason for Haemorrhage in Putamen :



- The internal carotid artery, gives rise to the middle cerebral artery, which goes into the Sylvian Fissure and divides into the superior and inferior branches

- It then gives rise to some lenticulostriate branches, which supply the Putamen

- Now, when a patient has hypertension, the pressure in the internal carotid artery will be high ; the pressure goes into the Middle cerebral artery, and then to the lenticulostriate branches causing them to become weak and hence they might rupture

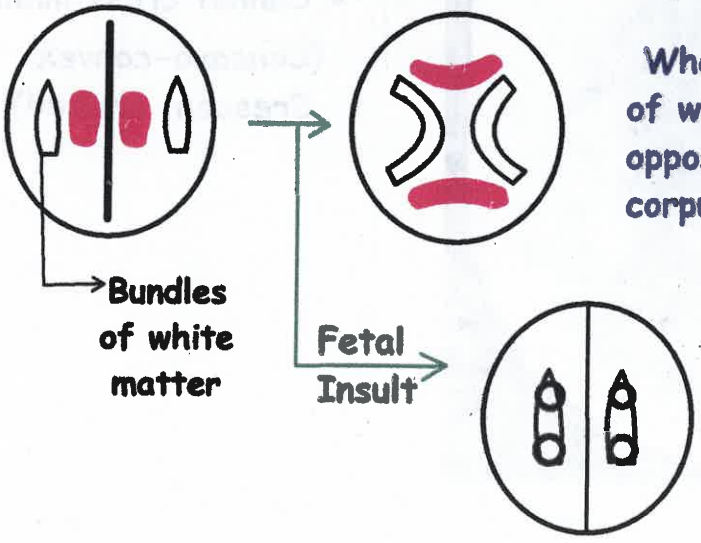
- This is what we say the Charcot Artery of Brain Haemorrhage

- Hence we can conclude that this patient was having Putamen Haemorrhage as he was hypertensive

(Q). MC site for hypertensive bleed in the brain is ?
Ans : Putamen

Other sites :
- Pons
- Thalamus
- Cerebellum

How does Corpus Callosum Form ?

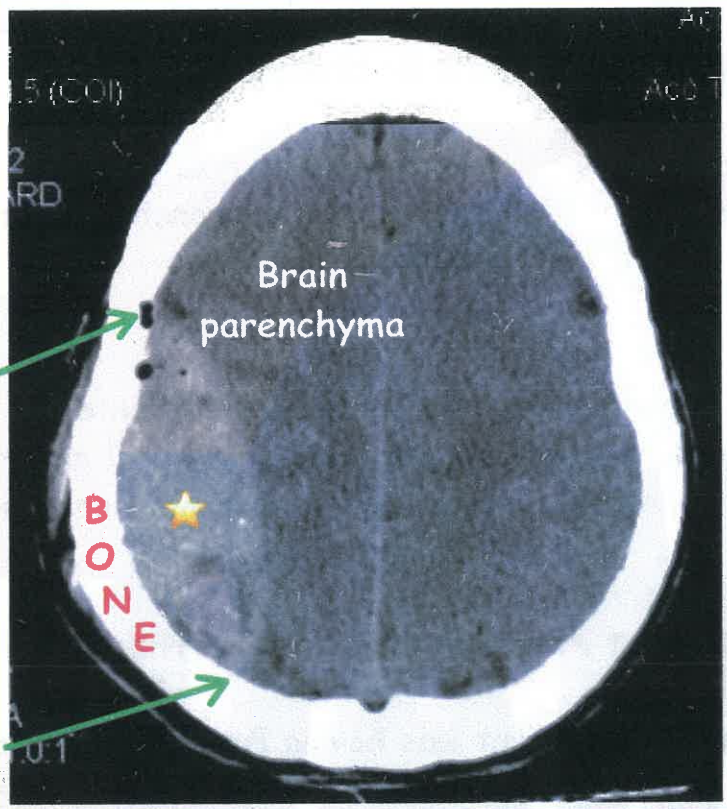


When the fetus grows, the bundles of white matter, migrate to the opposite side, and hence form the corpus callosum

The development stops & the lateral ventricle appears as the tyres of racing track

Racing car appearance seen in the agenesis of corpus callosum

Horizontal Integration with Medicine & Surgery Brain Haemorrhage/Stroke



Coronal suture

Lamboid suture

Image Notes

PYQ

Road traffic accident

Haemorrhage - Dura

It does not cross dura due to the presence of Haemorrhage & hence, it is called

Extra Dural Hematoma

(Bi-convex in shape)

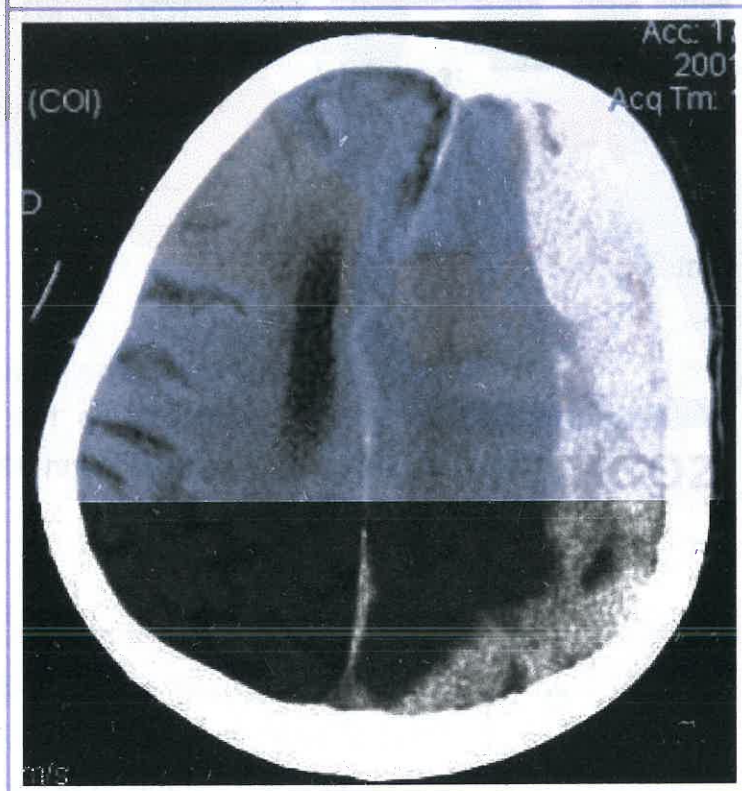


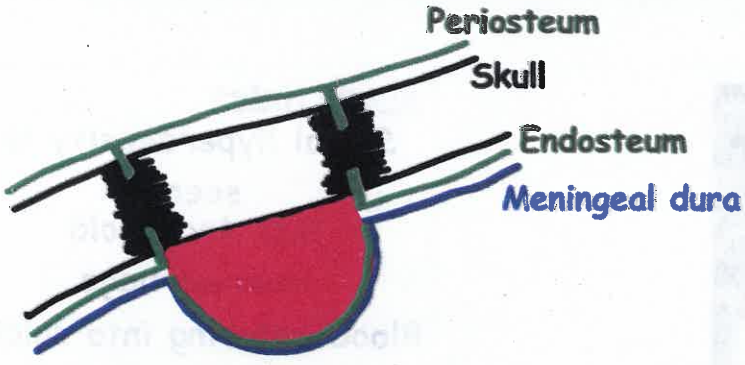
Image Notes

PYQ

Sub Dural Hematoma

Bridging veins cannot cross Dural Folds falx - Cannot cross midline

(Concavo-convex / Crescent shaped)



Cannot cross suture as periosteum & endosteum fuse with the sutures

Imp points :

- Due to rupture of middle meningeal artery
- It enters skull through Foramen spinosum
- It cannot enter sutures so expands towards the brain giving rise to a biconvex shape

- Lucid interval is seen

Initial impact of injury, resulting in concussion, causes loss of consciousness which is transient and the patient wakes up but later due to the development of the extradural haematoma, the compression of the brain parenchyma occurs which causes again loss in consciousness. The time period in which the patient is awake is called as a Lucid Interval

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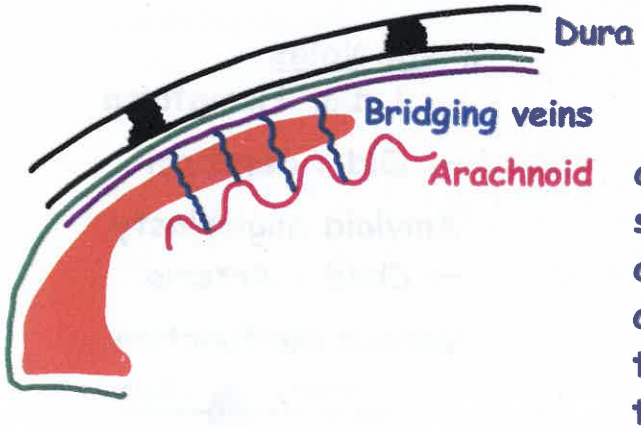


In Old person, alcoholic person or a child abuse baby, which has been shaken violently Atrophy of the brain occurs , the bridging veins pull and come under tension. So as a result, this bridging veins can rupture leading to a haemorrhage known as subdural haematoma.

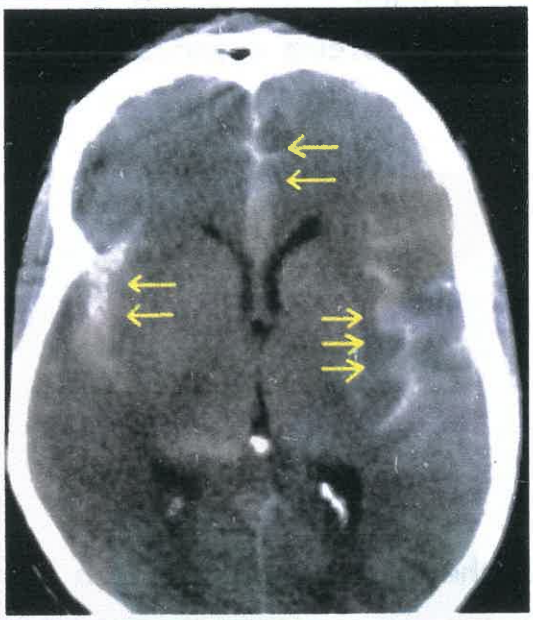


Image Notes

Sulcal hyperdensity is seen

Sub Arachnoid Haemorrhage

Blood entering into sulci

Happens due to rupture of berry aneurysm

Patient complains of worst headache of his life resembling THUNDER CLAP

Image Notes

CT Angiogram

Dilatation of the blood vessel seen

SAH - CAT + NCCT

Berry aneurysm is due to congenital weakness of the branch point

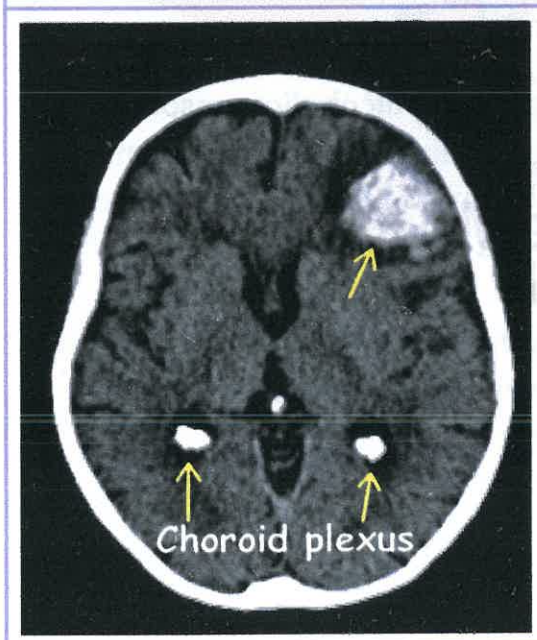


Image Notes

Lobar Hematoma

→ Old : Cerebral Amyloid angioplasty

→ Child : Arterio Venous Malfunction

When instead of capillaries artery is connected to other structure Nidus

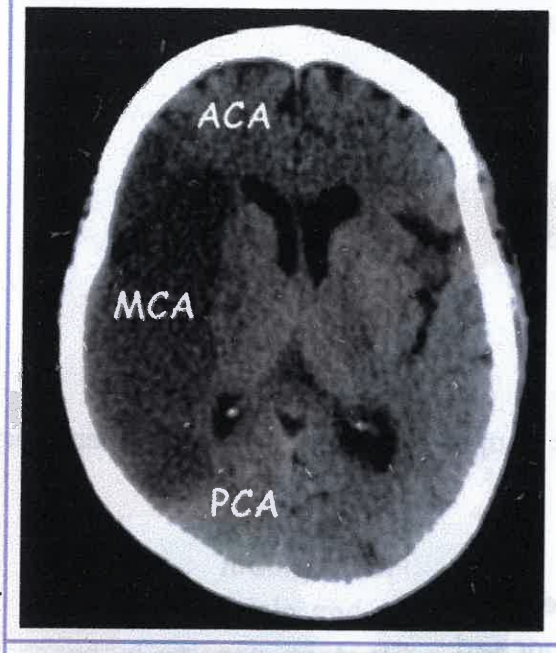


Image Notes

Wedge shaped hypodense area in the brain parenchyma is seen

MCA territory infarct

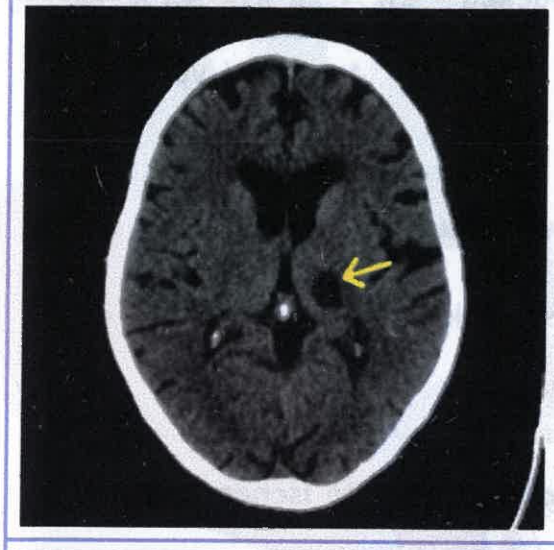


Image Notes

Lacunar infarct

< 1.5 cm in diameter

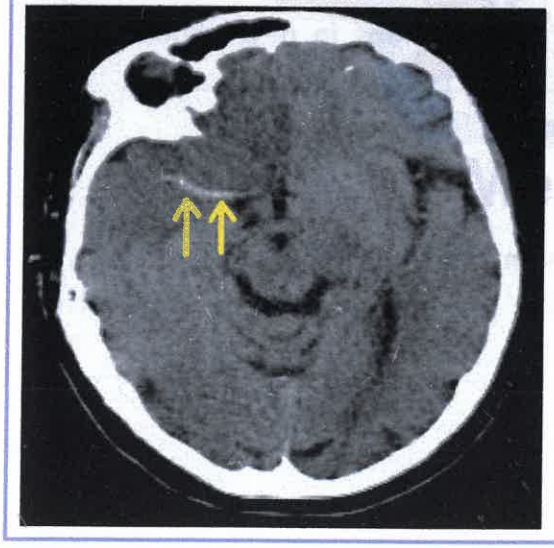


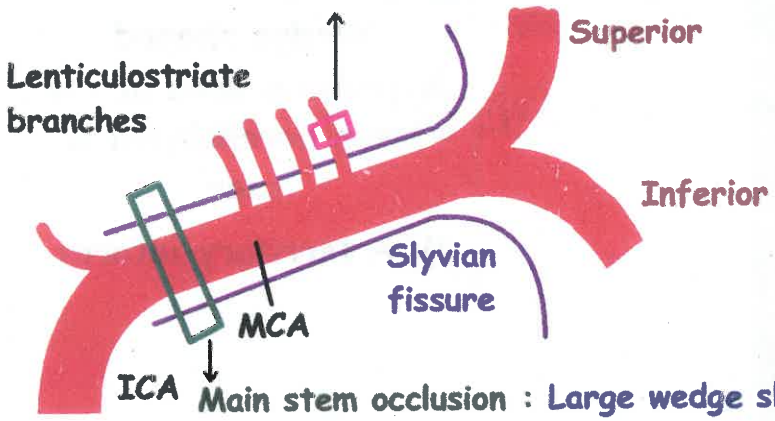
Image Notes

Dense MCA Sign

Earliest CT visible sign infarct

Even before oedema is seen , Sometimes in the early stage of infarct Dense MCA Sign is seen

Lacunar infarct : small branch getting occluded



Main stem occlusion : Large wedge shape infarct in the MCA Territory

Haemorrhage - CLOT → RBCs come close to each other & get tightly packed → Haemoglobin, It has globin, Electron density increases → Appears Hyperdense

Infarct

ATP in the brain will reduce
↓
Na^+K^+ ATPase stops working
↓
Neuronal swelling
↓
Capillary endothelial cells get damaged due to ischemia
↓
Fluid will leak & vasogenic edema on CT develops in 6-24 hours

Appears Hypodense

(Q). Is it possible to have venous thrombosis in the brain ?
Ans :Yes, if there is hypercoaguable state like pregnancy, oral contraceptive or ear infection

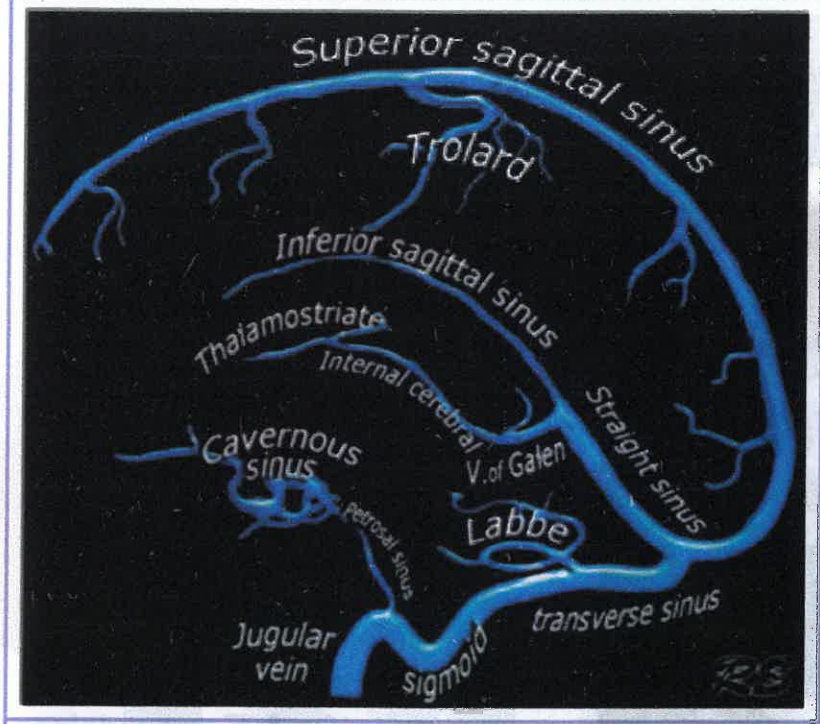


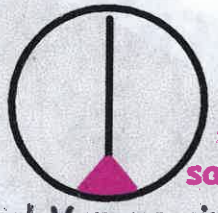
Image Notes

PYQ

Vein of Trolard drains into

Superior Sagittal sinus

CS



Superior sagital sinus

Dural Venous sinuses will be triangular in shape because they are within the Dura. It is posterior because the superior sinus is more posterior

Image Notes

Non Contrast CT - (NCCT)

No contrast or dye is given

Delta Sign

Cerebral Venous Thrombosis

(Q). Why delta ?

Because the cerebral veins are in the Dura and shaped like a triangle, so a blood clot between them will lead to a delta like this

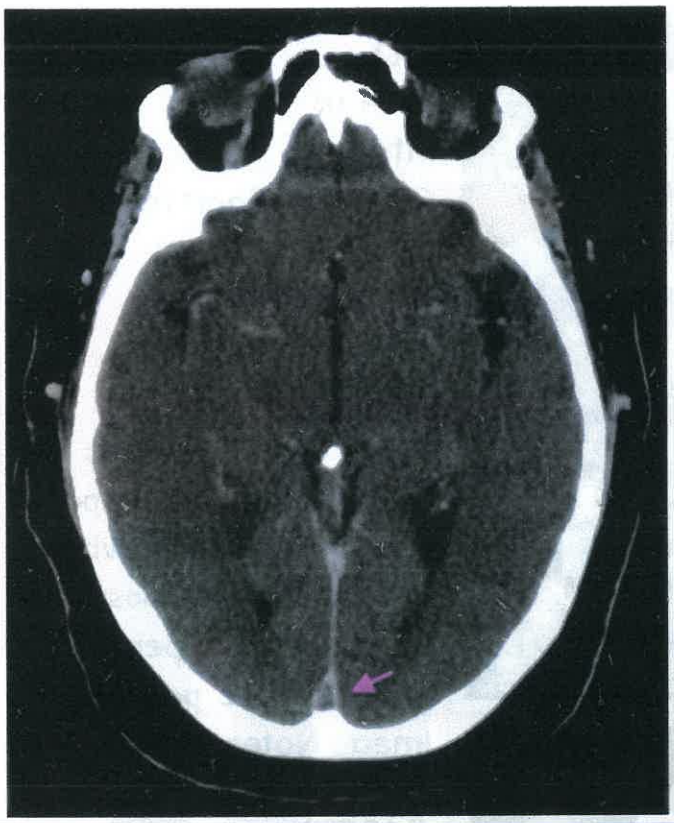


Image Notes

Contrast enhanced CT (CECT) :
i/v dye is given

Dye will go into all the blood vessels, but if there is a thrombus in the blood vessel, the dye will not be able to opacify & Empty delta sign is seen as shown

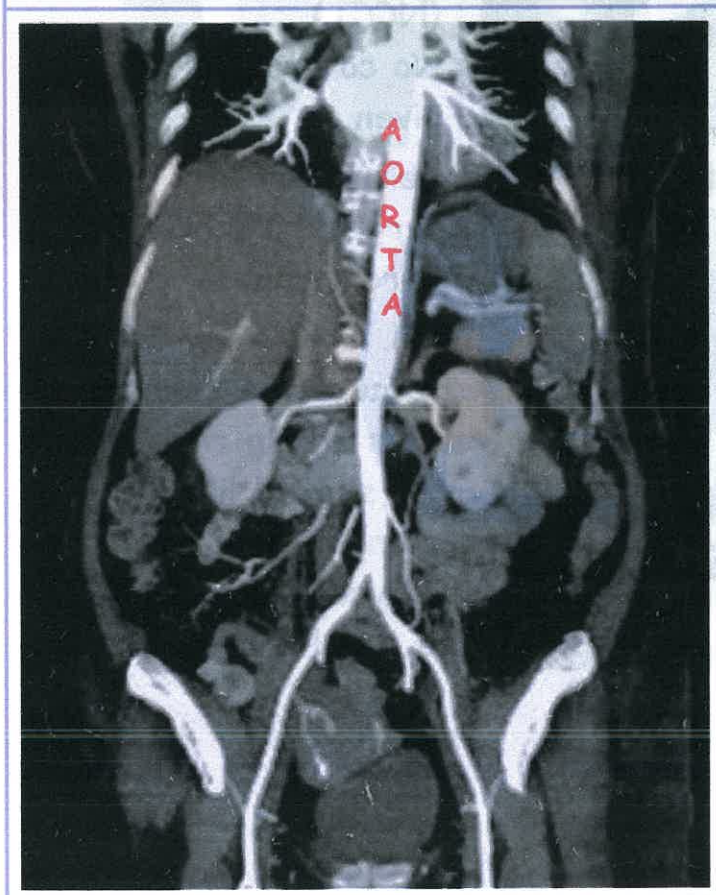


Image Notes

CT angiogram

- It tries to see the arterial phase when the dye is in the artery

CECT

- Trying to see the tissue phase, where we can see the tissue vascularity - there is any inflammation or tumour in the tissue