RADIOLOGY Scientific Meeting

SGH - Hail

SESSION 6

CT BRAIN REPORTING

BY

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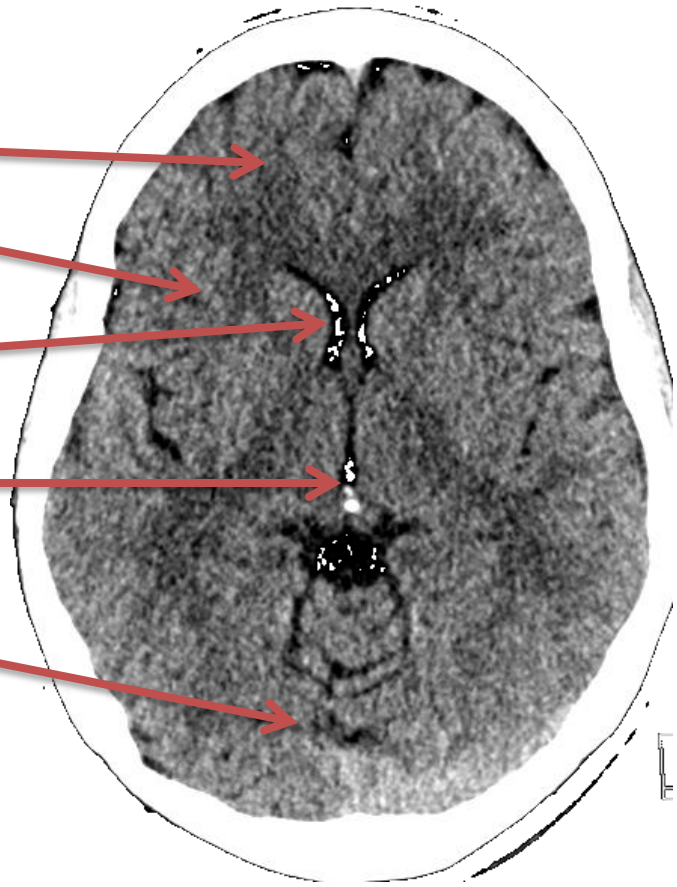
- This review of CT Brain Reporting is depending mainly on Reporting files of Prof. Mamdouh Mahfous

A M Abodahab

Nov 2022

Items to be evaluated:

- Cerebral parenchyma
- Cortical sulci and extra axial CSF spaces
- Ventricular system
- Mid line structures
- Posterior fossa structures
- Para nasal sinuses



Normal CT Brain Report

Normal brain without contrast

①Normal size and configuration of the ventricular system.

② No mid line shift.

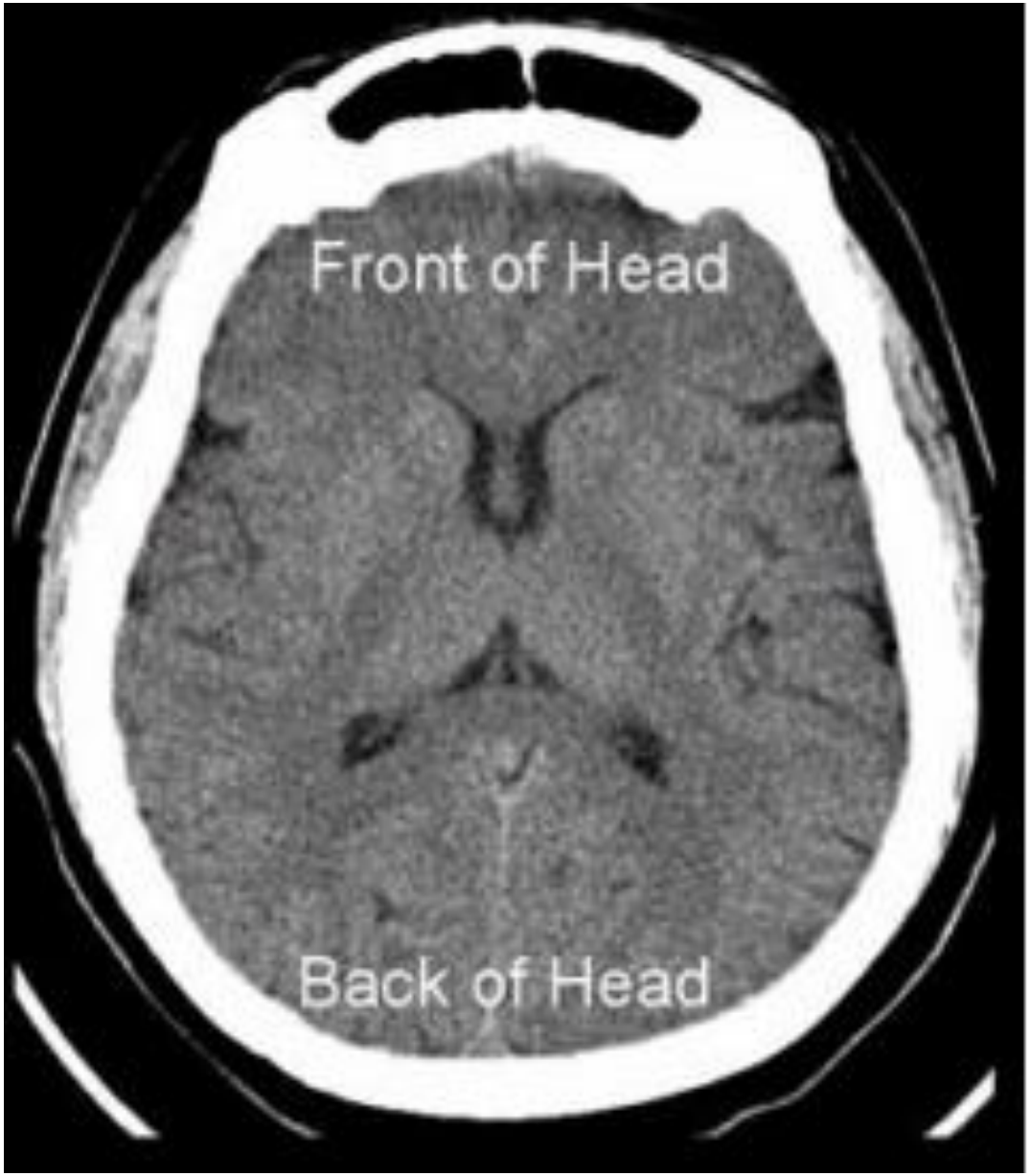
③ No intra cerebral or extra axial areas of abnormal attenuation values.

④ Normal posterior fossa.

OR Normal appearance of the brain stem and cerebellum.

OR No evidence of posterior fossa abnormalities.

⑤ Scanned Para nasal sinuses are clear


Front of Head
Back of Head


R

Normal CT Brain Report

Normal brain with contrast "Enhanced CT Brain"

③ No intra cerebral or extra axial areas of abnormal attenuation values or **enhancing lesions.**

Normal brain without contrast

①Normal size and configuration of the ventricular system.

② No mid line shift.

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④ Normal posterior fossa.

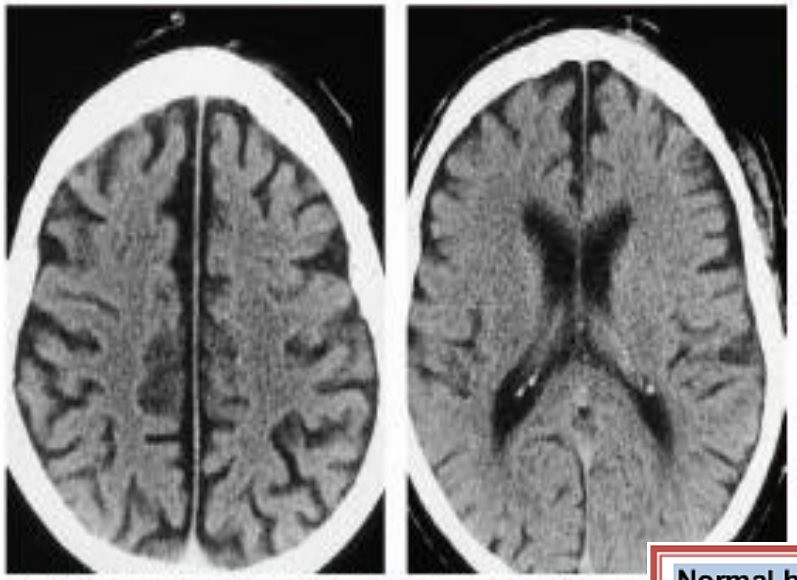
OR Normal appearance of the brain stem and cerebellum.

OR No evidence of posterior fossa abnormalities.

⑤ Scanned Para nasal sinuses are clear

Normal Brain old age

① Symmetrical dilatation of the ventricular system with prominence of the extra axial CSF spaces.



Normal brain without contrast

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OR Normal appearance of the brain stem and cerebellum.

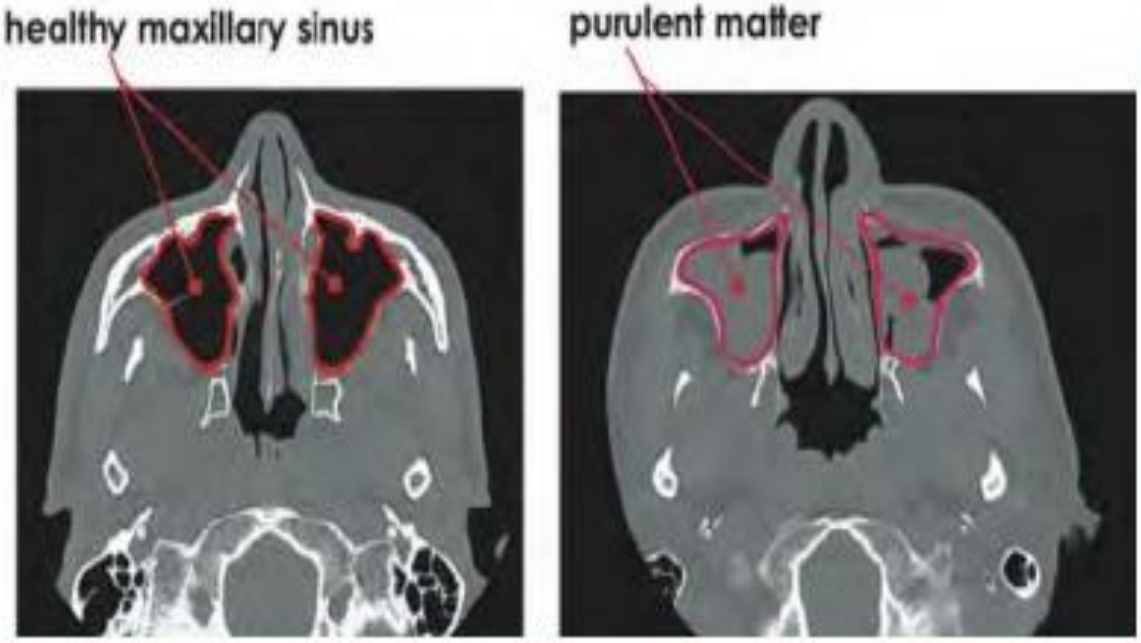
OR No evidence of posterior fossa abnormalities.

⑤ Scanned Para nasal sinuses are clear

Normal Brain (Sinusitis)

⑤ Partial or total **opacification** of .....sinuses by mucosal thickening denoting sinusitis [mention the affected sinuses, maxillary, ethmoidal,...]

Or **air-fluid level** "Acute sinusitis"



Normal brain without contrast

①Normal size and configuration of the ventricular system.

② No mid line shift.

③ No intra cerebral or extra axial areas of abnormal attenuation values.

④ Normal posterior fossa.

OR Normal appearance of the brain stem and cerebellum.

OR No evidence of posterior fossa abnormalities.

⑤ Scanned Para nasal sinuses are clear

Abnormal CT Brain

AbNormal CT Brain

To describe a lesion you should mention the following points:

- **S**ite [intra axial, extra axial, frontal,parietal, …..]
- **D**efinition [well defined, ill- defined]
- **S**hape [oval, rounded, irregular…]
- **S**ize (---x---x---) cm in maximal AP, transverse & cranio caudal diameters
- Surrounding **edema** [If present]
- **Mass effect** which includes
  - effacement of the cortical sulci
  - Compression of the ventricle
  - Midline shift

Intra Cerebral Hemorrhage

①A well defined, oval shaped area of **recent blood density** is seen in the ------

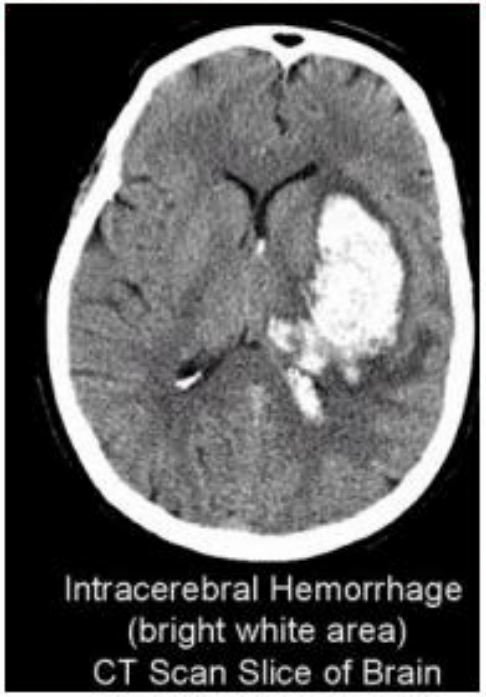
[mention the **site,** right or left, which part of the brain]

②The lesion **measures** ----x ----x --- cm maximal AP, transverse and craniocaudal diameters respectively.

③The lesion exerts a **mass effect** in the form of effacement of the cortical sulci

± compression of the ipsilateral ventricle

± contra lateral shift of the midline structures.



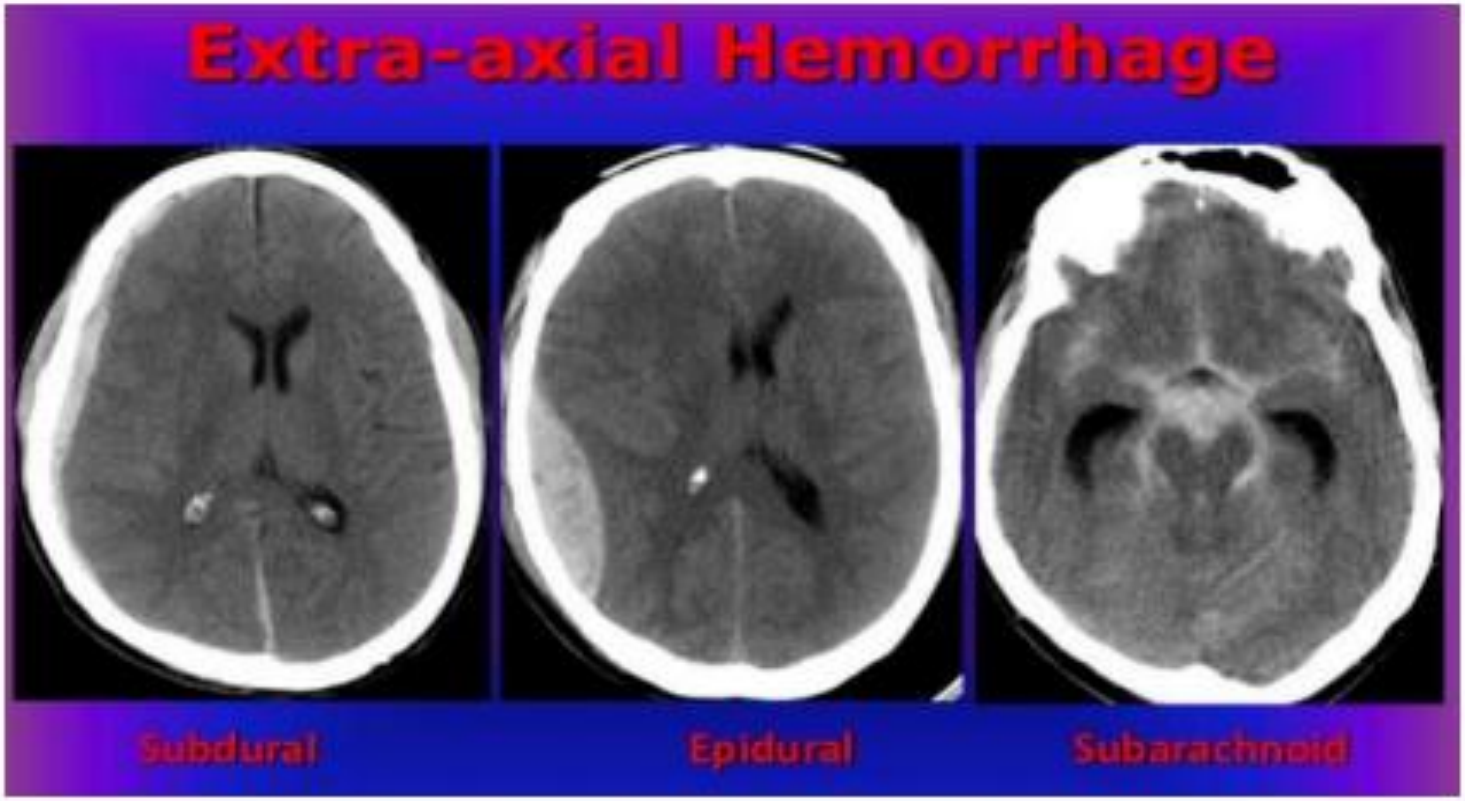
Intracerebral Hemorrhage
(bright white area)
CT Scan Slice of Brain

■ Extraaxial hemorrhage (Eliptic = Extradural \ Cresent = Subdural)

①A well defined extra axial (**elipitical** or **cresentric** shaped) area of recent **blood density** is seen in the -------[mention the site]

②The lesion measures ----x ----x ----cm maximal .....

③ The lesion exerts a **mass effect** in the form of :.....sulci ± ..... ventricle ± ..... midline structures.

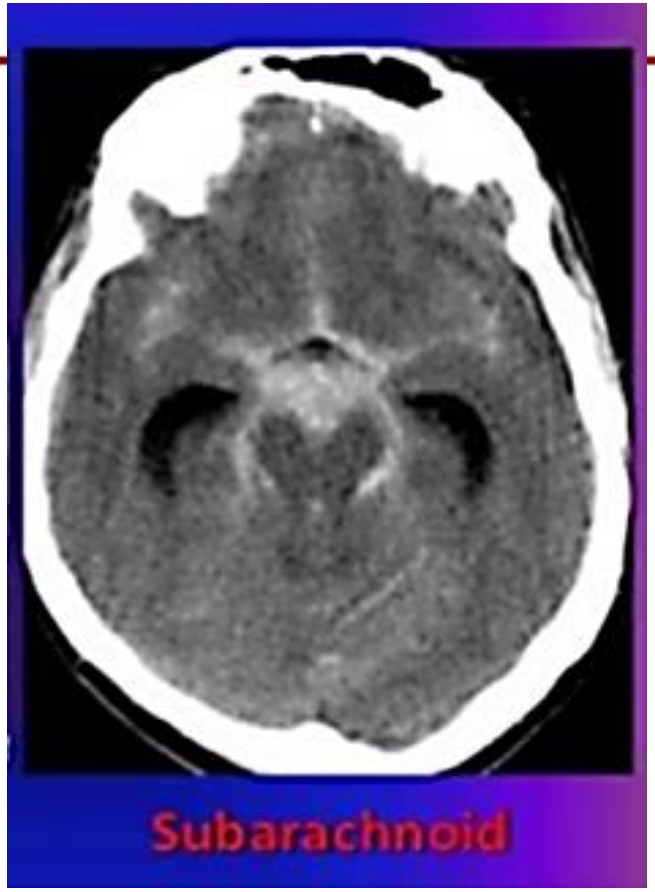


■ Sub arachnoids hemorrhage

①**Fresh blood density** is seen **smearing the cortical sulci** and extra axial CSF spaces ± extension into the ventricular system

(also mention that the ventricular system is dilated denoting the presence of communicating hydrocephalus which is usually seen in cases of subarachnoid hemorrhage.)

② ③ not included



■Brain infarction

① A well defined **hypodense** area is seen in -------[mention the **site**].

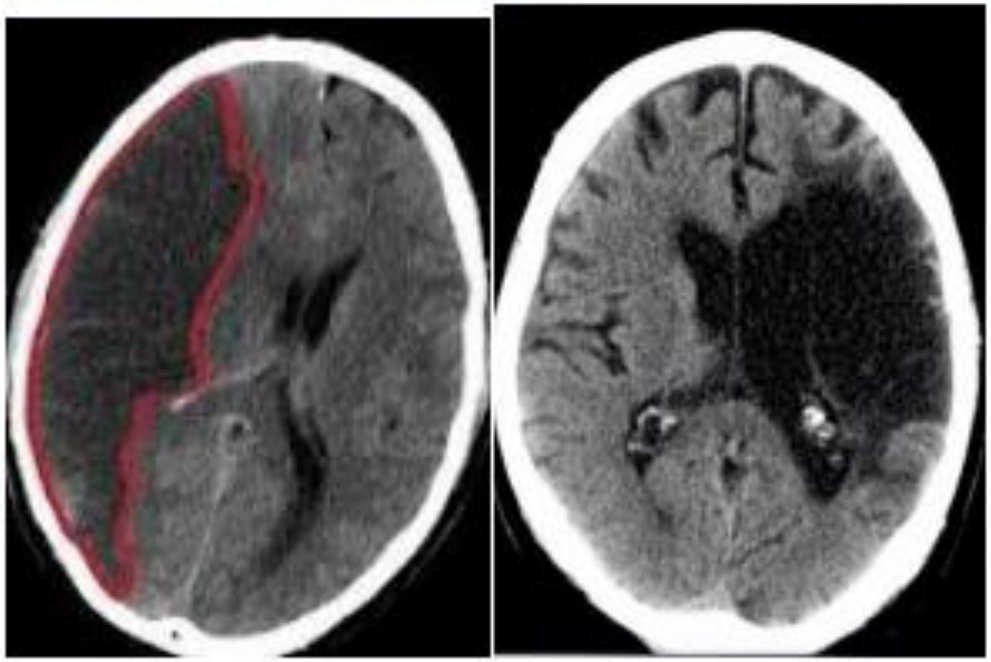
② Not included [we do not usually measure the size of the infarct]

③ It exerts a **mass effect** in the form of …. sulci ± …. ipsilateral ventricle ± ….. midline structures.

OR It associated with **evacu dilatation** of the adjacent ventricle & cortical sulci → [in case of **chronic infarction**]

③ **No recent blood density** intra cerebral or extra axial seen.

OR **Foci** of recent blood density within the lesion [in case of **hemorrhagic infarction**]



Acute

CHRONIC

Hemorrhagic Stroke

⇨ Lacunar infarction

① A small well defined **hypodense focus** is seen in the ------- exerting

→**no mass effect** on adjacent structures,

→**OR subtle mass** effect on the adjacent structures

[if there is appreciable signs of mass effect].

N.B. In cases of **multiple lesions** we write :

Multiple **w**ell defined **h**ypodense foci are seen in------

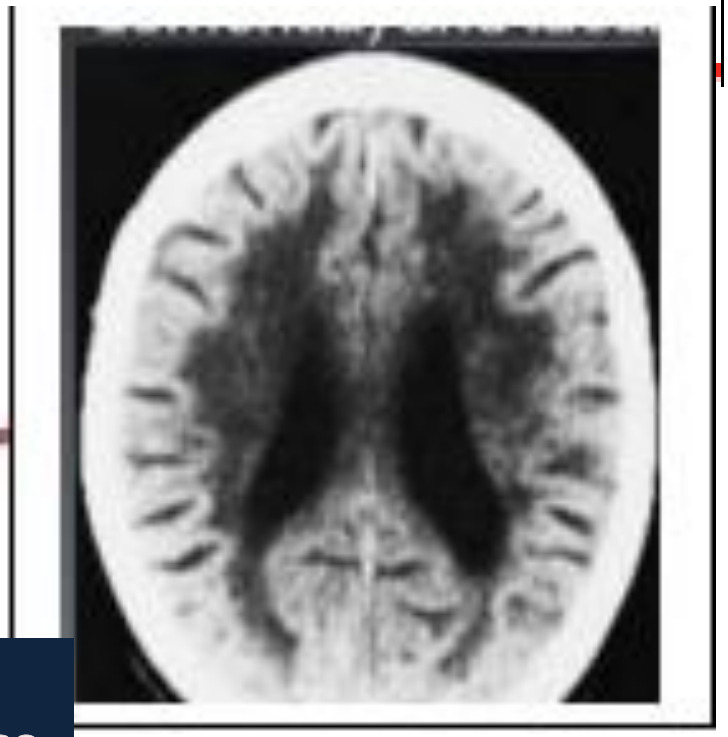
[Examples: both cerebral hemispheres, cerebellum and brain stem,..]

exerting **no mass effect** on adjacent structures.

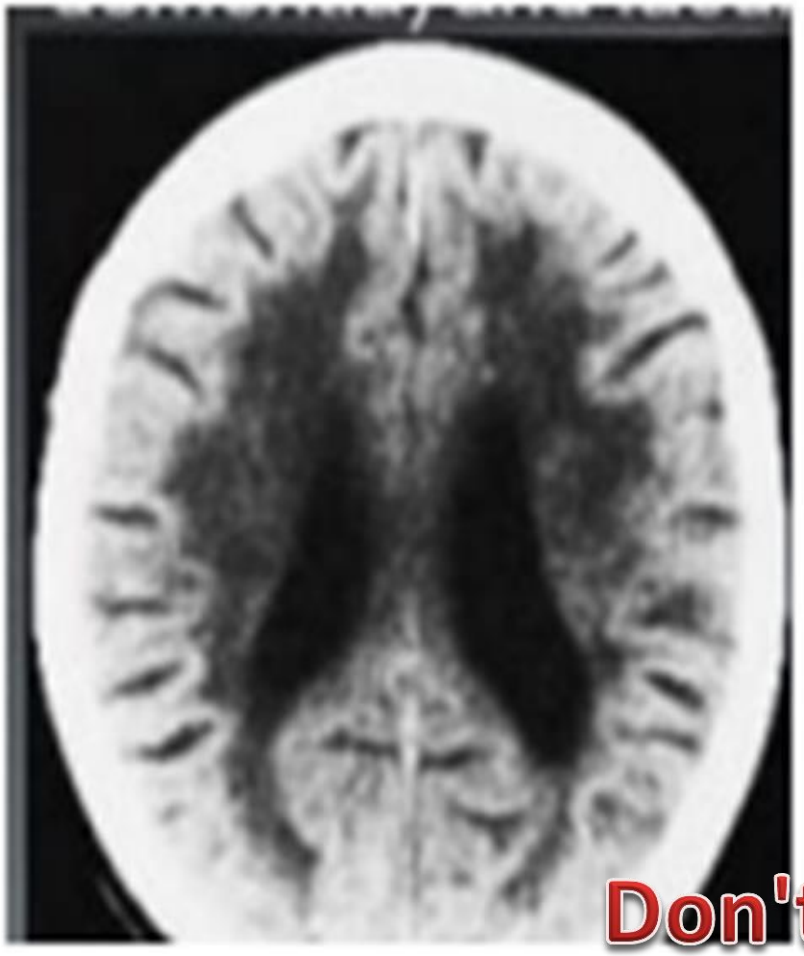
Lacunar Infarction

Sub cortical arteriosclerotic encephalopathy

① Exaggerated peri ventricular white matter hypodensity due to sub cortical arteriosclertic changes.



Also Named
White Matter Ischemic changes



Don't Confuse

White matter Ischemic changes

Vs

Vasogenic Edema

SPACE OCCUPYING LESION

- ✓Lesion
- ✓Enhancement
- ✓Edema
- ✓Mass effect

Points to be evaluated:

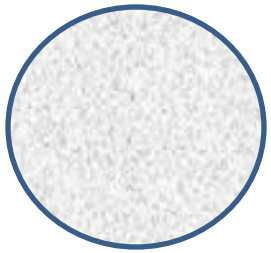
- **Site** (**L**eft or **R**ight) / (frontal, temproparietal , ..., brain stem, cerebellum,..)
- **Definition** (well defined, ill-defined)
- **Shape** (rounded, oval, irregular, ...)
- **Size**----x ----x ----cm
- **Enhancement** (**no**, **homo**genous, **hetero**genous, **marginal**, ...)

Patterns of contrast enhancing

Don't Forget

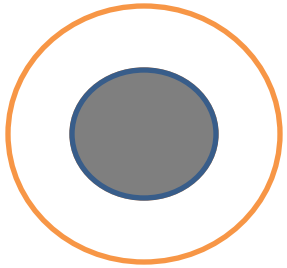
Non enhancing

ENHANCING



HOMO

HETERO

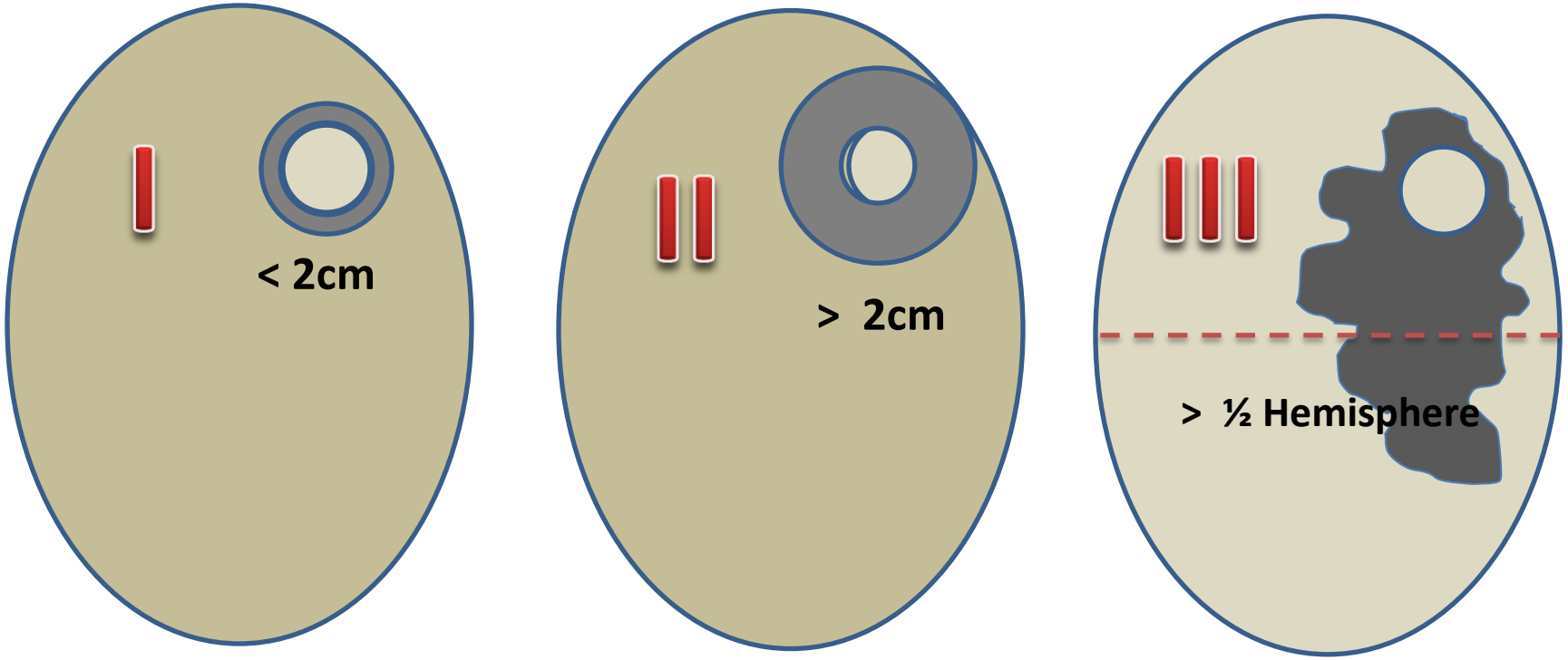


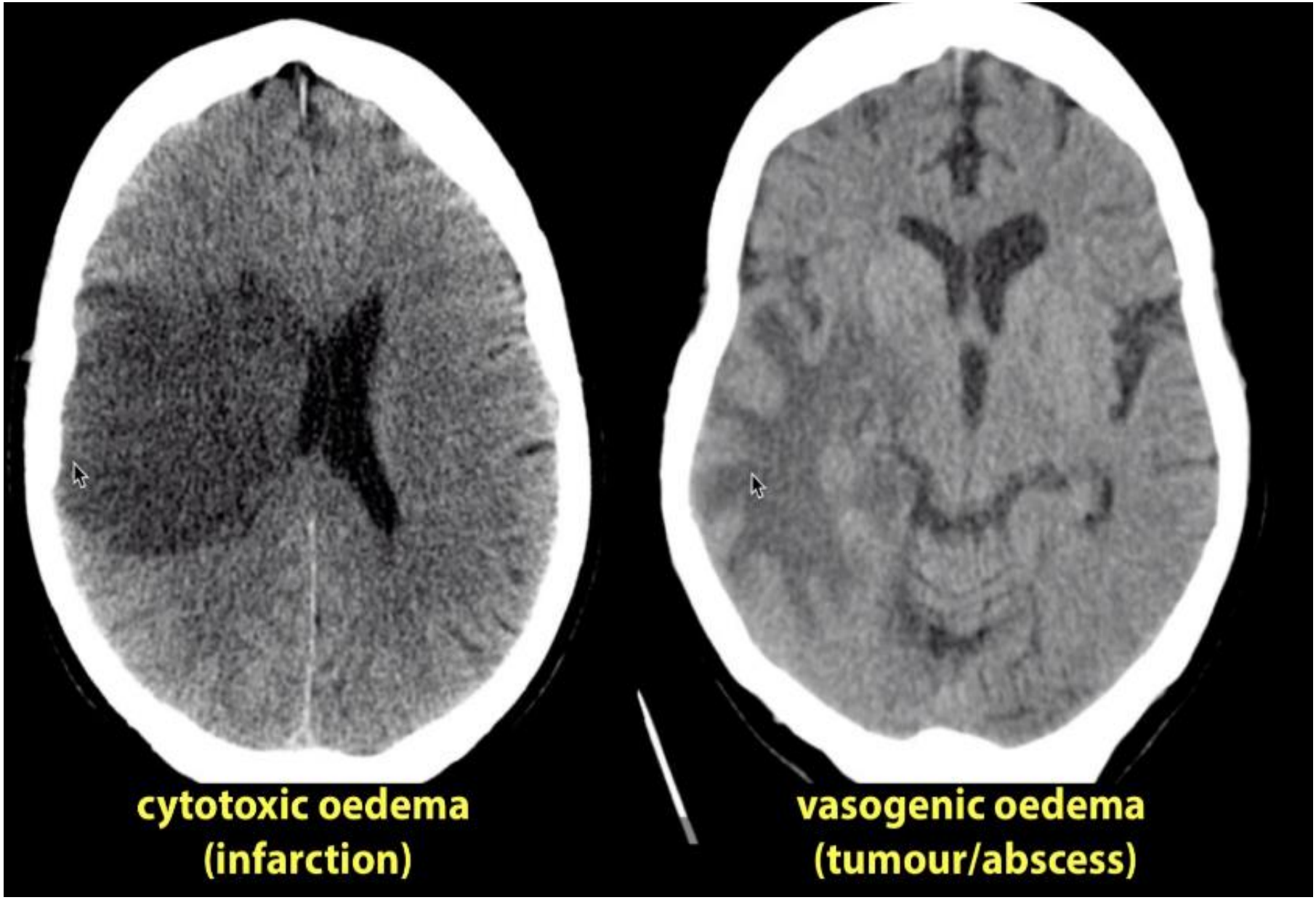
Uniform

Non Uniform

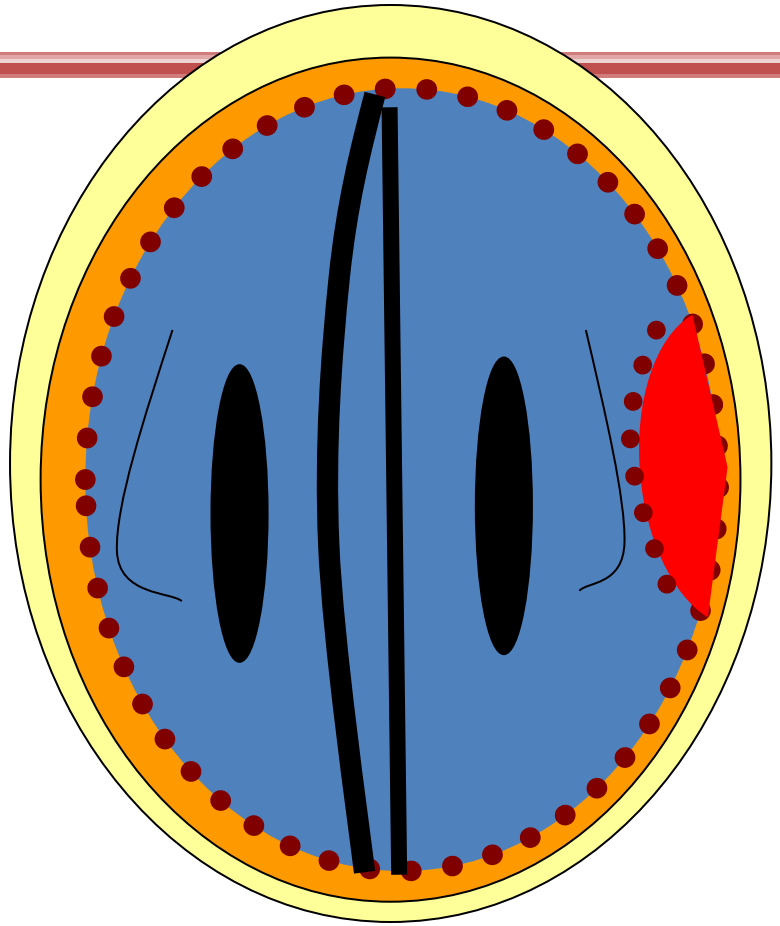
MARGINAL

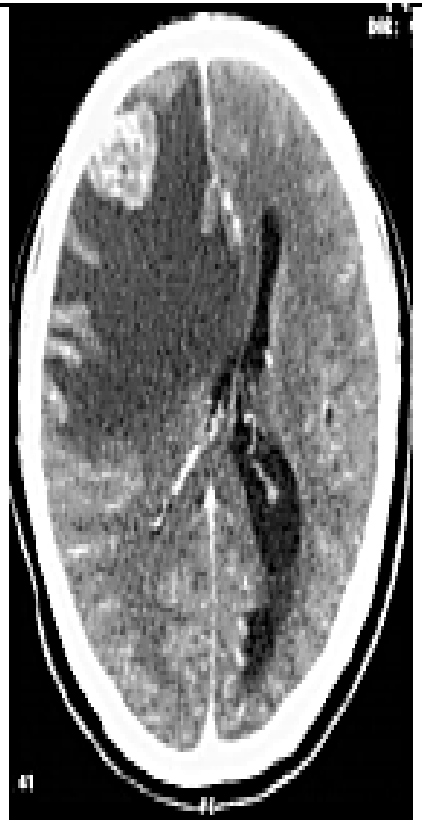
- Surrounding **edema** (if present)(grade I,II,III)
  - **Grade** I = hypodense area **less than 2 cm** around the lesion
  - **Grade II** = hypodense area **more than 2 cm** but less than 1/2 the cerebral hemisphere in which the lesion is present.
  - **Grade III** = hypodense area **more than 1/2 the cerebral hemisphere** in which the lesion is present




cytotoxic oedema
(infarction)
vasogenic oedema
(tumour/abscess)

- **Mass effect** which includes:
  - Effacement of the cortical **sulci**
  - Compression of the **ventricle**
  - **Midline** shift.





Meningioma

① **DURAL BASED** well defined, oval shaped [or any other shape] space occupying lesion is seen in the ------

② The lesion measures ----x ----x---cm in maximal diameters

& shows **homogenous** contrast enhancement.

± foci of matrix **calcifications** are seen within the lesion.

± localized reactive **bone sclerosis** adjacent to the lesion.

③ The lesion is surrounded by grade --- perifocal brain **edema** hypodensity.

The lesion and edema exert a mass effect in the form of ------, -------

Meningioma

Homogeneous Enhancement

■Space occupying lesion -- Astrocytoma / Glioma

① A ……defined …… shaped SOL is seen in the -----[mention the site]

② If not enhanced –write→ [Showing **no evidence** of post contrast enhancement]

OR Showing **heterogenous** (or **marginal**) enhancement

+/- central areas of necrosis and breakdown.

OR The lesion is mainly **cystic** with an **enhancing mural nodule** measuring….cm in maximal transverse diameters [mention the measurement of the nodule]

③ The lesion is surrounded by **grade ---** perifocal brain edema hypodensity.

The lesion and edema exert a mass effect in the form of -------, --------, ---

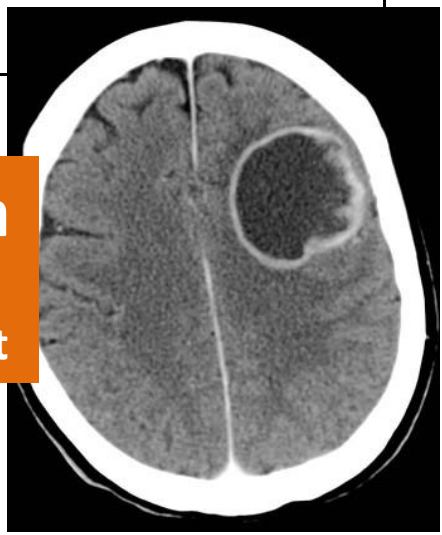
④ Normal posterior fossa (if the lesion is not in the posterior fossa).

Glioma

Heterogeneous Enhancement

Gliblastoma

Non Uniform Ring Enhancement



■Space occupying lesion / Metastatic deposits

① **Multiple** well defined SOLs are seen in --------

②The lesions **range in size** between -------[smallest lesion] and ------

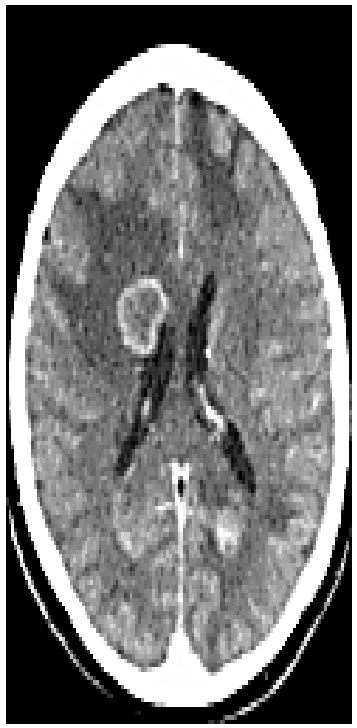
-[largest lesion]

and showed---------[mention the **pattern of enhancement.**

③ The lesion is surrounded by grade --- perifocal brain **edema**

The lesion and **edema** exert a **mass effect** in the form of -------, --

------, -----



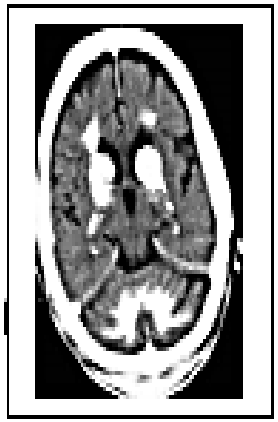
NB. **solitary metastatic deposit** (a patient with known primary malignancy is described in the same way as glioma).

Intracranial calcification

■Bilateral symmetrical basal ganglia calcification

① Bilateral almost symmetrical patchy areas of calcifications are seen affecting the **basal ganglia**, mainly the caudate ± lentiform ± thalami

± dentate nuclei (in the cerebellum).



NB **Foci** or **patches** of calcifications may be present in the cerebral parer

② The lesions exert **no mass effect** with no detectable perifocal brain edema.

The lesions showed **no post contrast enhancement**. [if the patient was injected with contrast]

Intracrainal Vascular lesions

■ Aneurysm

①A well defined rounded ------x----- cm [mention the measurement of the lesion] lesion is seen in the ------- [mention the site] **common sites include**:

- **Suprasellar region** to the left or right of the midline plane
- Within the **sylvian fissure**.
- In the **prepontain cistern**.

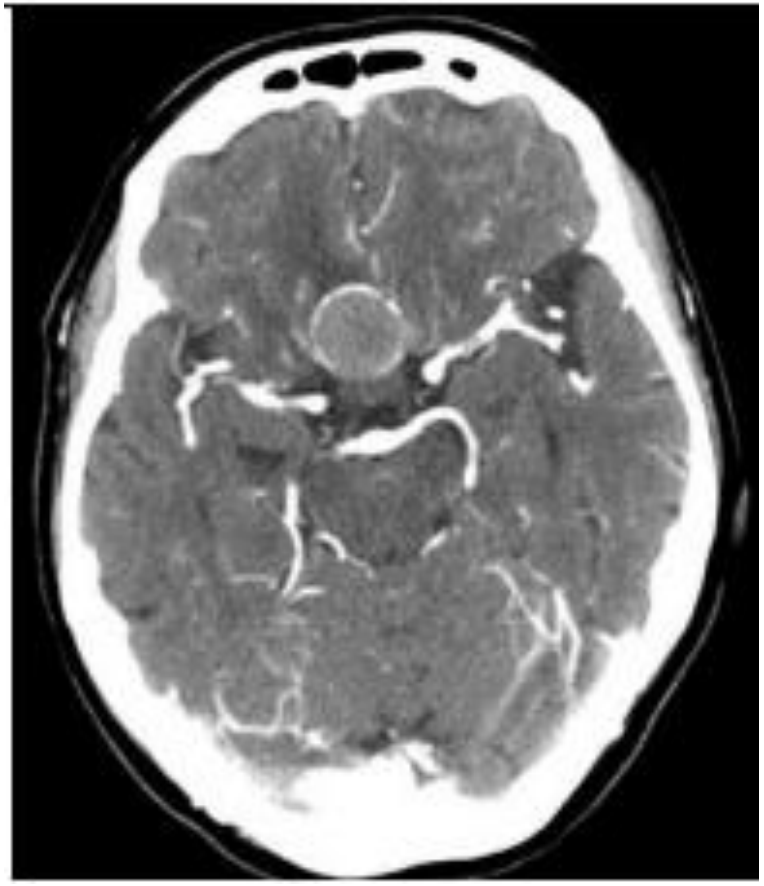
②The lesion showed **homogenous post contrast enhancement** with no perifocal brain edema around ± marginal curvilinear calcification.

NB If the lesion is **more than 2cm** (**giant aneurysm**),

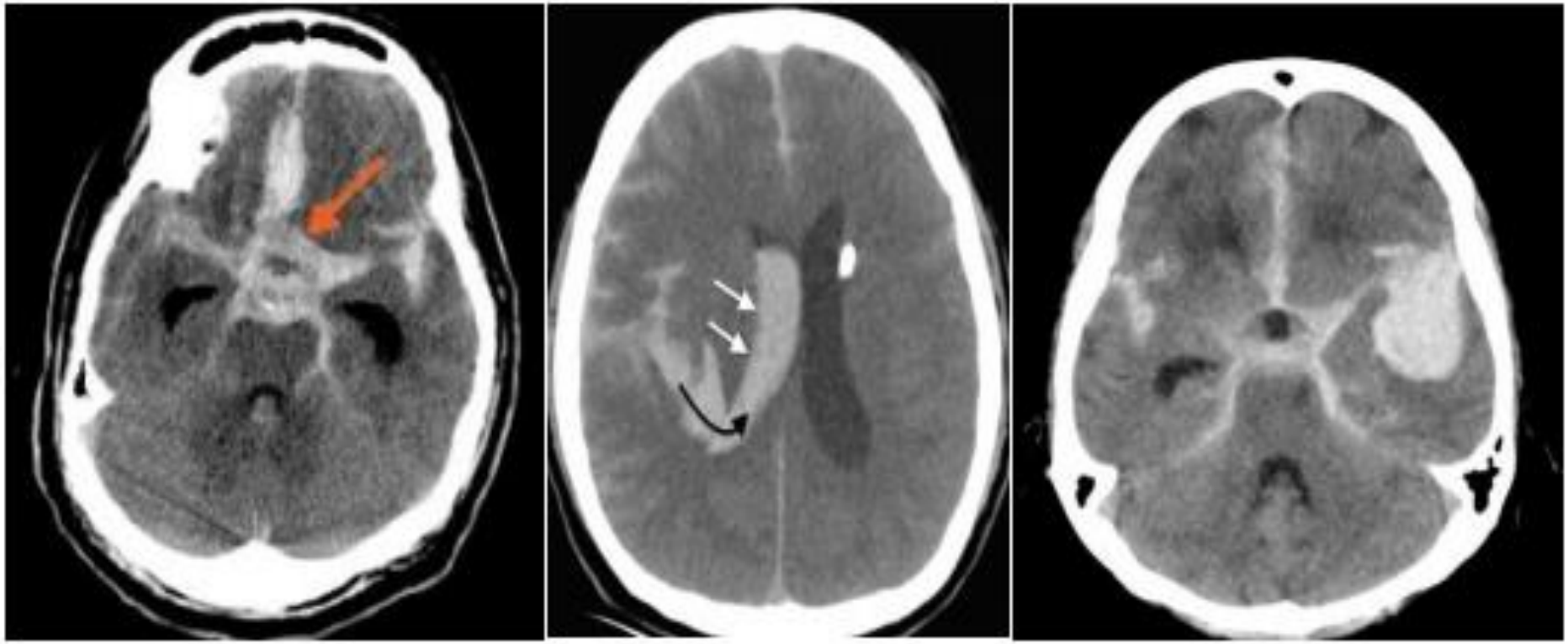
it may show **internal thrombosis**, then you can say :

the lesion has a homogenously enhancing component which represents the patent lumen

and a non enhancing component which represents the thrombosed part.



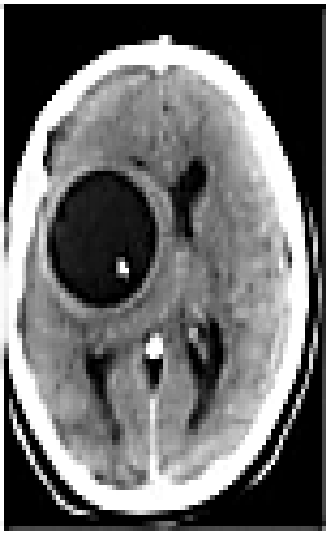
Aneurysm rupture



Rupture = **Lesion** *(as described before)* + **Subarachnoid / IV Hage**

Colloid Cyst

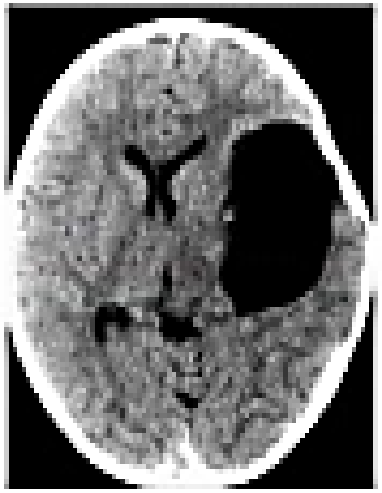
Hydatid Cyst



Porencephalic

Arachnoid

"CSF – No Enh."



Epidermoid

Lobulated +/- Ca

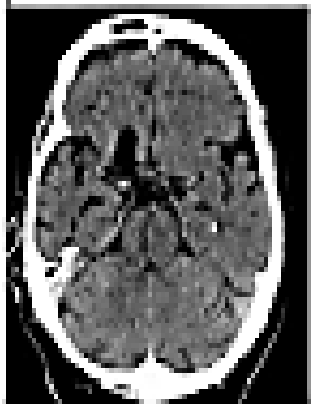
T1 Low<CSF / T2 Hi>CSF

Dermoid

Rare

Fat +/- Ca

Rupture → Fat – Fluid level



Cyst

①A well defined **cystic** **hypodense** SOL is seen in the ------(site).

Ex. **Arachnoid cyst** is usually present in the inferior temporal region against the greater wing of the sphenoid bone.

Ex. **Epidermoid cyst** is usually located in the cerebellopontine angle.

Ex. **Dermoid cyst** is usually located in the midline and **contains fat**.

②**Size & Enhancement** (note that most of the cysts do not enhance,→showing no evidence of post contrast enhancement)

*Also note thet some cysts show **matrix calcifications**, → mention that foci of matrix calcifications are seen within the lesion.

NB **Colloid cyst** may be associated with **hydrocephalus** due to compression of the foramina of monro.

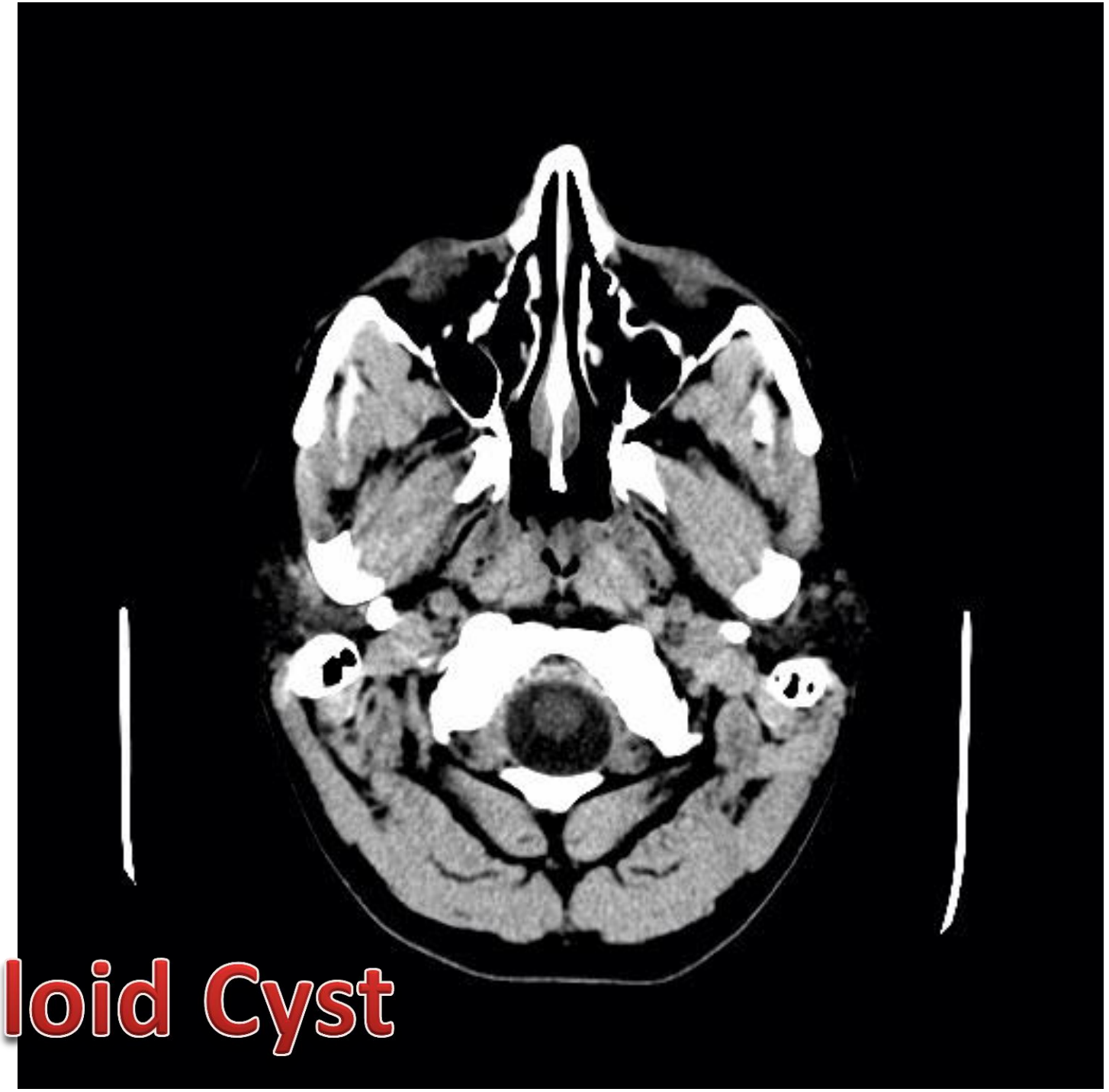
A **well** defined hyperdense SOL is seen in the **midline plane** in the region of the **anterior part of the 3rd ventricle**. Then mention the **size** and say showing

NB In cases of **Dermoid cysts** → look for fat globules in the subarachnoid spaces (sulci, fissures, cisterns) as well as in the ventricles.

If they are present = cyst has **ruptured** into the subarachnoid space.

NB **Hydatid cyst** is described following the steps mentioned for glioma.

NB **porencephalic cyst** → mention it's communication with the ventricular system.



Colloid Cyst

For More details :
Summary of CT Brain Reporting

SUMMARY OF CT BRAIN REPORTING

SUMMARY OF CT BRAIN REPORTING

Source : *Prof. Mamdouh Mahfouz Reporting* File

This file is just a Re edit of the file "Brain CT Reporting" of our Prof. Dr. Mamdouh Mahfouz

A.M. Abodahab

4 August 2018

WISH IT BECOME EASIER

THANK YOU

DR.AHMADABODAHAB@GMAIL.COM

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