



# INVESTIGATION OF CNS

## PART TWO

DR . HAMDY HASSAN

TO all my love brothers and sisters

\* Sorry I don't hold responsibility for any missing information or perhaps – I say perhaps – wrong material. **I swear the God** that I tried my best to present this lecture in the best way and I hope that what I wrote in enough to cover the subject .

If you have any question plz contact me at [www.ksums.com](http://www.ksums.com) or send to me at [zizo2rad@hotmail.com](mailto:zizo2rad@hotmail.com)

\* شكر خاص للدكتور حمدي على مراجعته للمذكرة ومساعدته لنا .

\* هذه المذكرة إهداء إلى أخي احمد الرشيدى على جهوده في الميدان

وايضا مساعدته لي المعنوية بالراد

☺ هذا الرمز شيء مهم .

نظرا لانو لا يوجد بالاسلايدات أي شرح سوا الصور .. فكل ما هو مكتوب عبارة

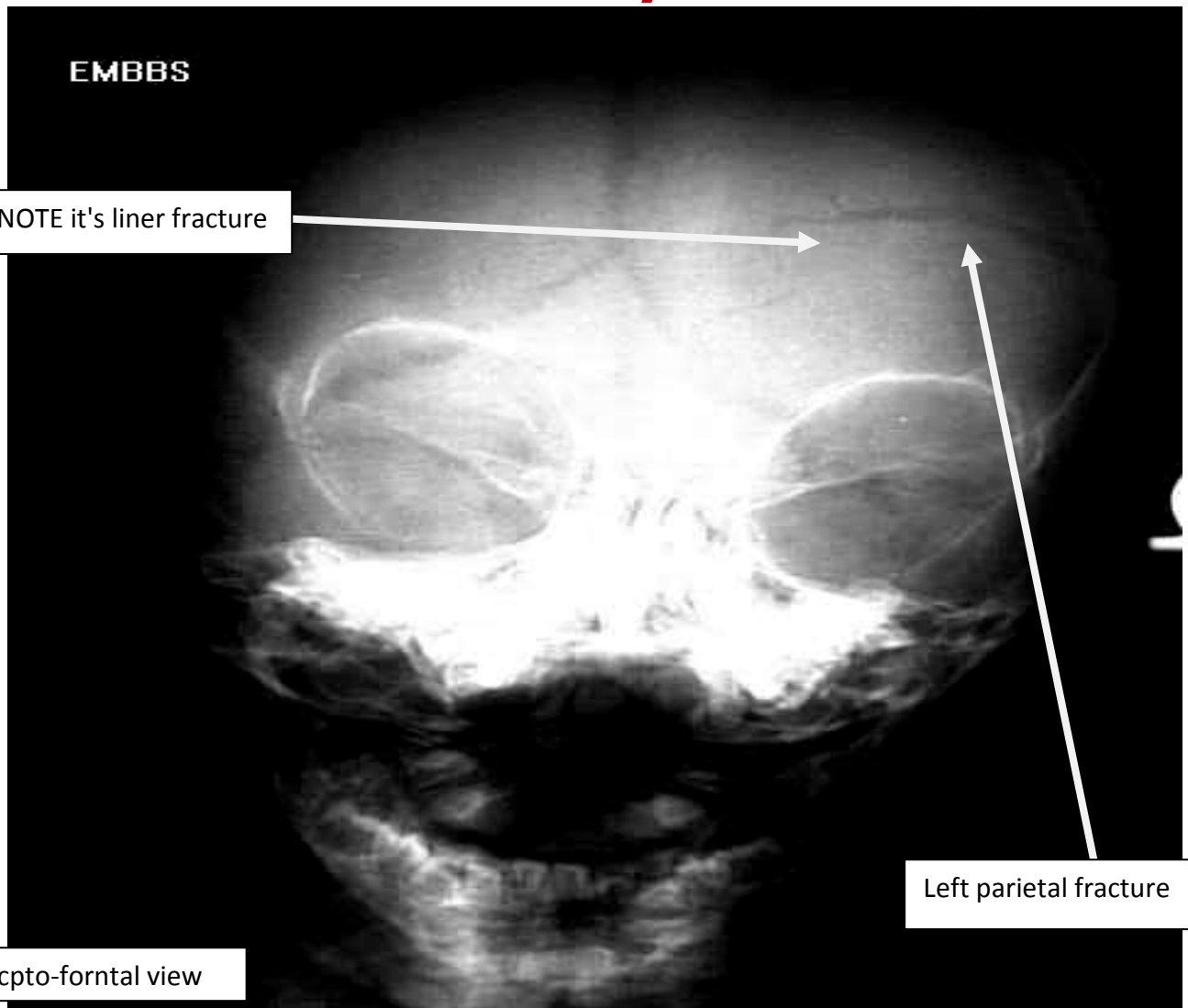
عن نوات بالمحاضرة

أخوكم عبدالعزيز آل سعد

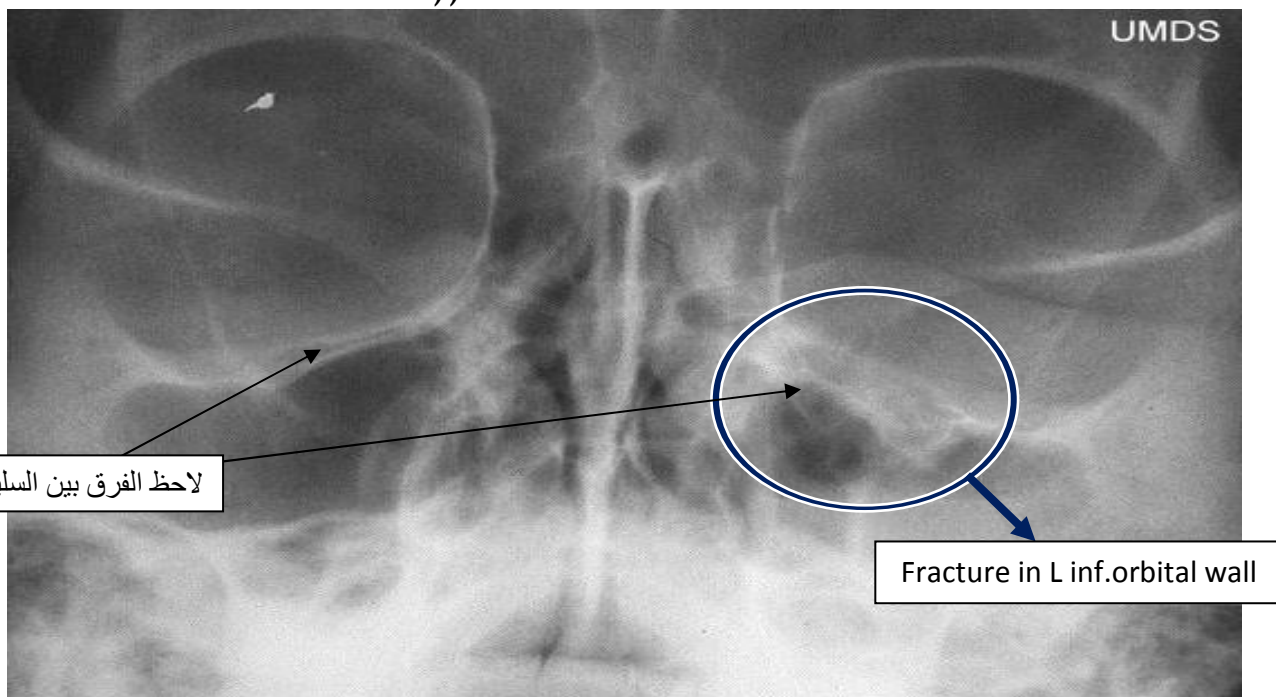
rad Gp

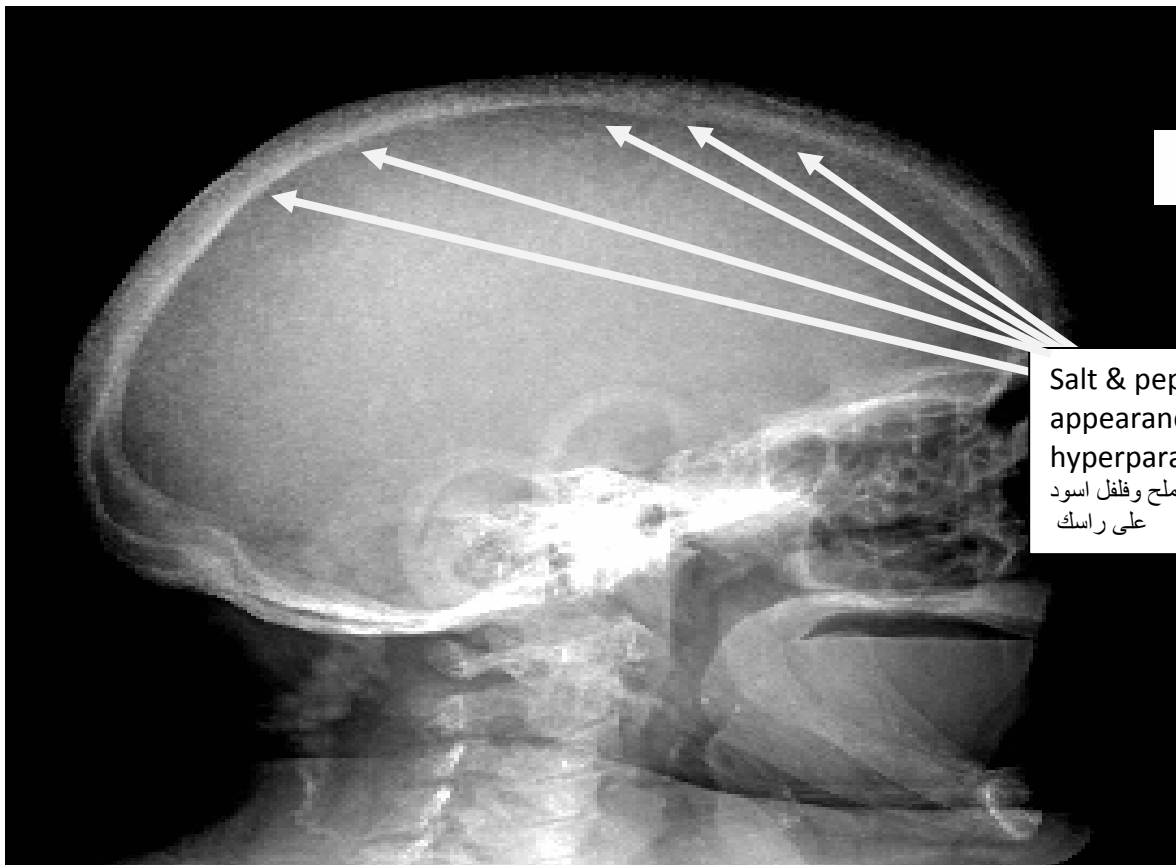
( dr.zeezu ☺ )

# \* Investigation for skull fracture by x-ray



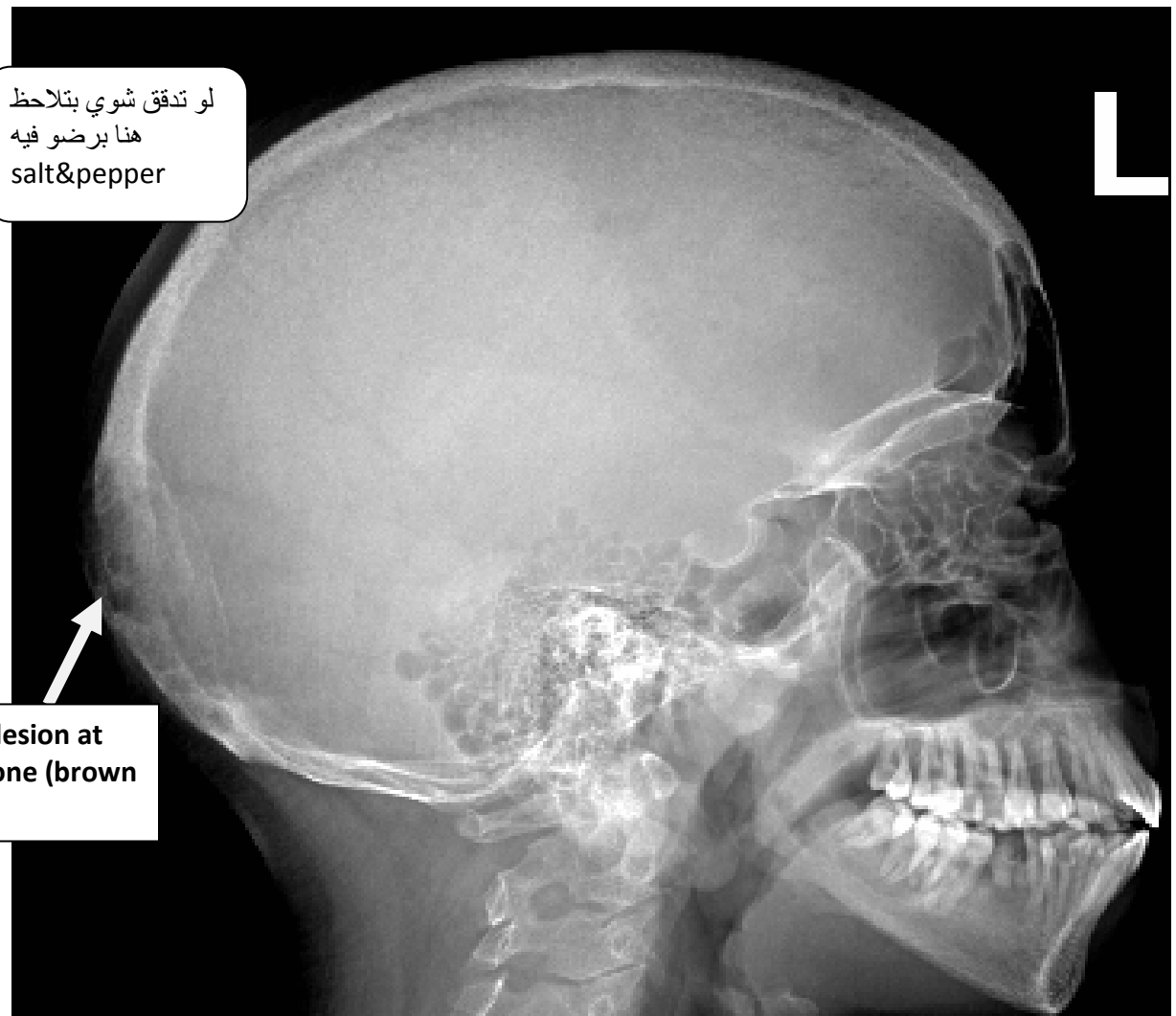
Remember that one of the indications of brain X-ray is trauma (( to check the fracture )) .





Salt & pepper  
appearances (bcoz of  
hyperparathyroidism)  
يعني كأنك رامي ملح وفلفل اسود  
على راسك

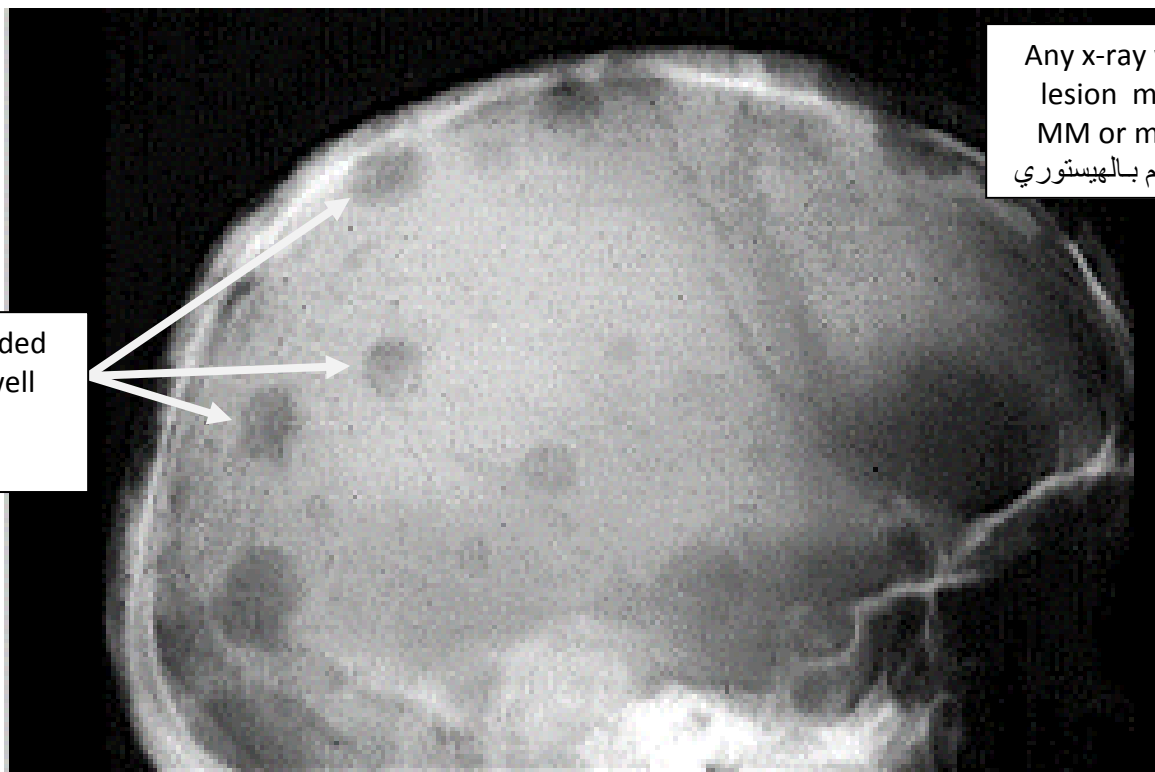
Another indication of skull x-ray is metabolic disorders e.g. hyperparathyroidism which appears like (salt and pepper) ☼



لو تدقق شوي بتلاحظ  
هنا برضو فيه  
salt&pepper

Large lytic lesion at  
occipital bone (brown  
tumor ) ☼

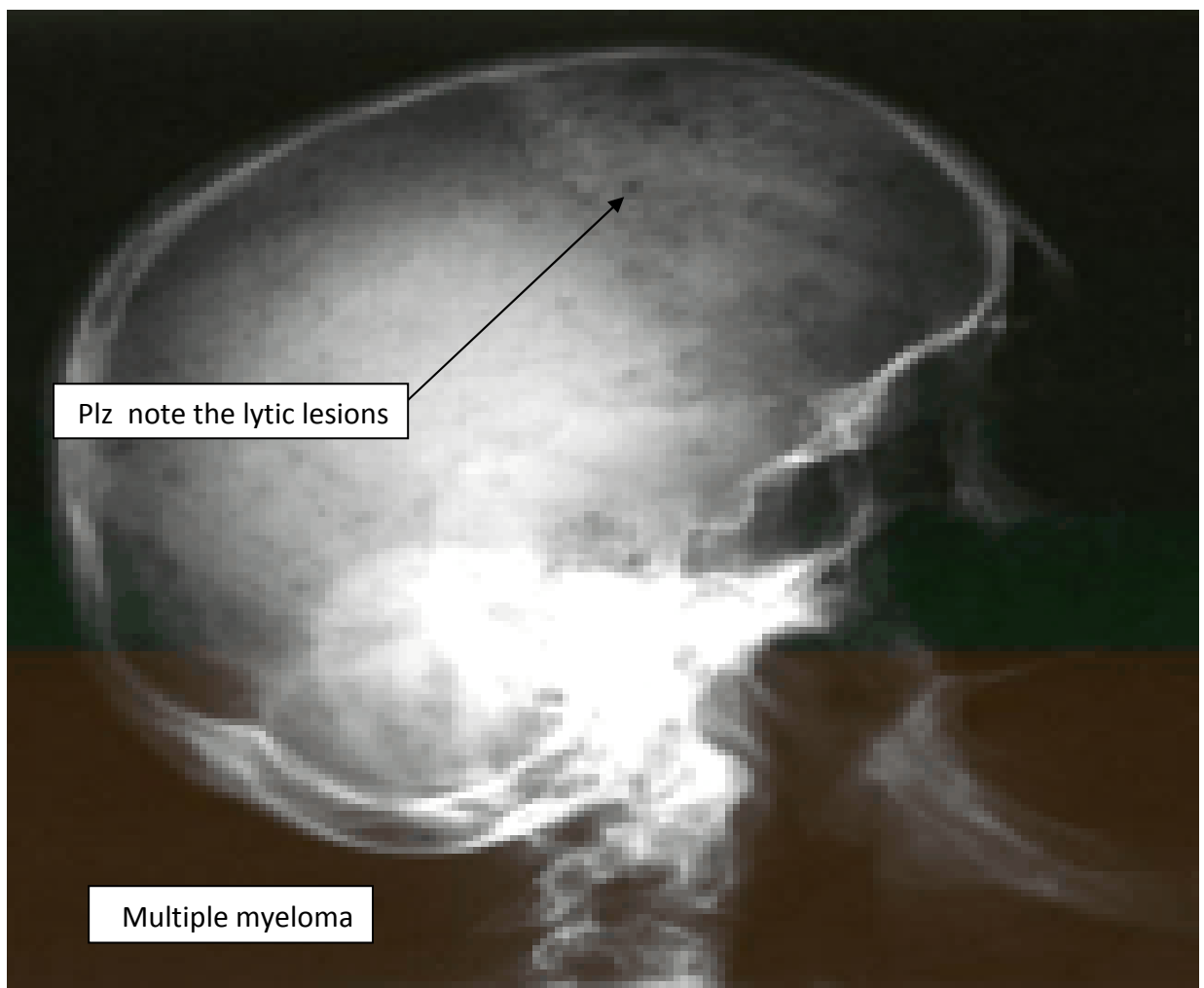
Brown tumor in the posterior skull , it is another sign of hyperparathyroidism



Any x-ray with lytic lesion may be it's MM or metastasis  
وبتفرق بينهم بالهستوري

Multiple rounded  
Lytic lesions well  
defined

**Multiple lytic(destroyed)lesions in the skull → multiple myeloma(MM)**



Plz note the lytic lesions

Multiple myeloma

**Another example of multiple myeloma .**

# \* Investigation 4 skull fracture by CT

Brain window

نقدر نختار ونغير بين أي واحد منهم بالكمبيوتر

Bone window

Noted here brain parenchyma is with detail but bone is without details

Noted here brain parenchyma is without detail but bone is with details

Note

Few small hemorrhagic contusions

Note

In CT we can choose between ☹️☹️  
Brain window (نستخدمه اذا بغينا نشوف الدماغ اوضح اكثر)  
Bone window (نستخدمه اذا بغينا نشوف العظام بالتحديد)

Note

Depressed fracture in L. occipital bone  
لاحظوا انه واضح باستخدام هذي الوندو

Linear fracture

Bone window

**Note**

**Acute hemo. In CT → hyperdens**  
**Chronic hemo. In CT → hypodens**

fracture

Acute extradural hemorrhage

Acute (hyperdens)  
Extradural (biconvex)

**Note**

**Acute extradural hemorrhage (obvious in the brain window)**  
**Fracture (obvious in the bone window)**  
**Note compressed R ventricle midline shift ☹️**

Acute hemorrhage  
becoz it hyperdens

Acute subarachnoid hemorrhage

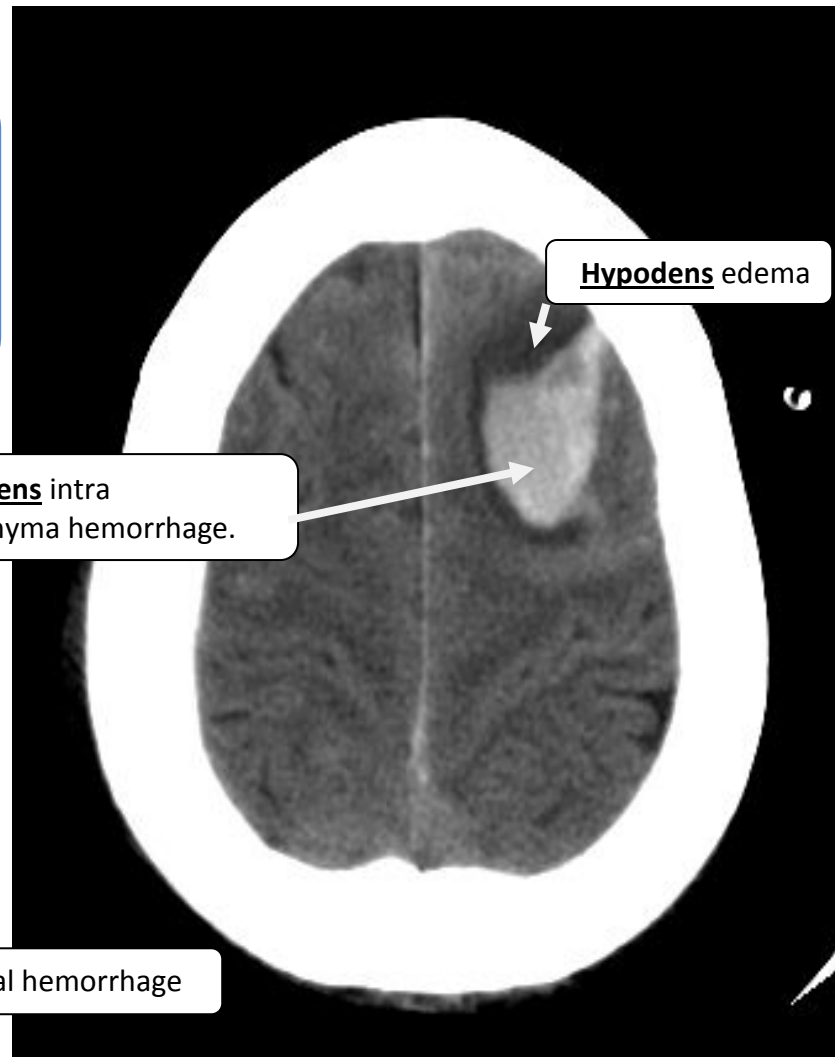
Acute intraventricular hemorrhage



### Note

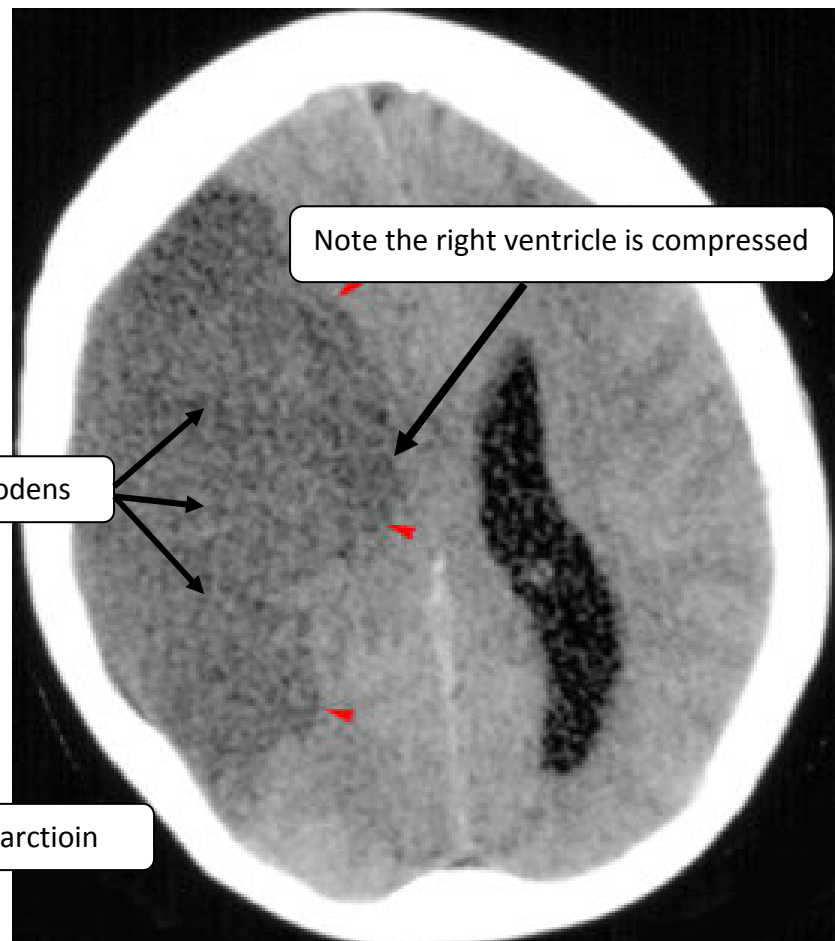
→ Sub acute hemorrhage is difficult to be detected on CT because it is isodense to the surrounding tissue, but it can be suspected by its mass effect (midline shift, or compressed ventricle)

→ MRI can easily detect subacute hemorrhage. 🍷



### Note

For detect stroke we start 1st by CT although MRI can detect early stroke





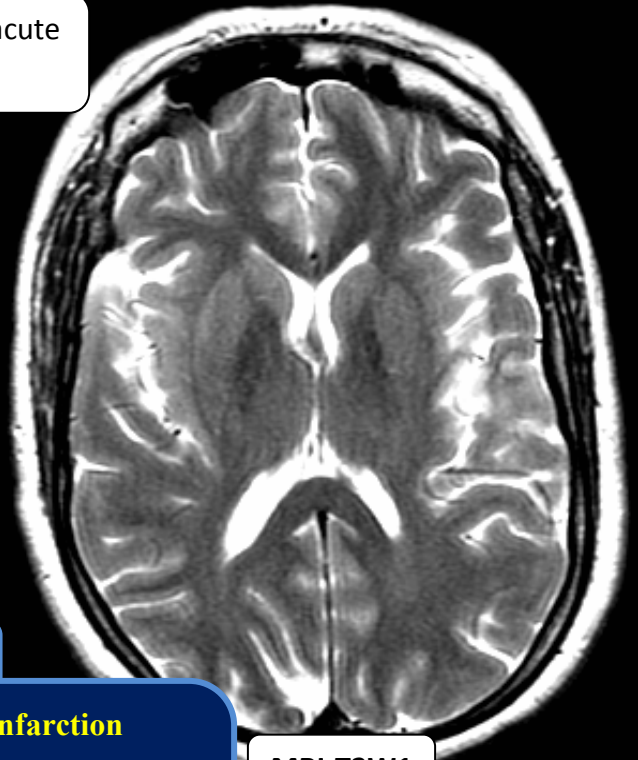
# \* Acute Infarction by CT and MRI

لاحظ هنا انو مافيه شيء لانو  
مثل ما قلنا السي تي احيانا ما  
يكتشف الانفاركشن بسرعه بس  
لازم نسويها لانو احيانا تكتشفها  
وهي طبعا الأسرع والارخص

All 4 picture are acute  
infarction



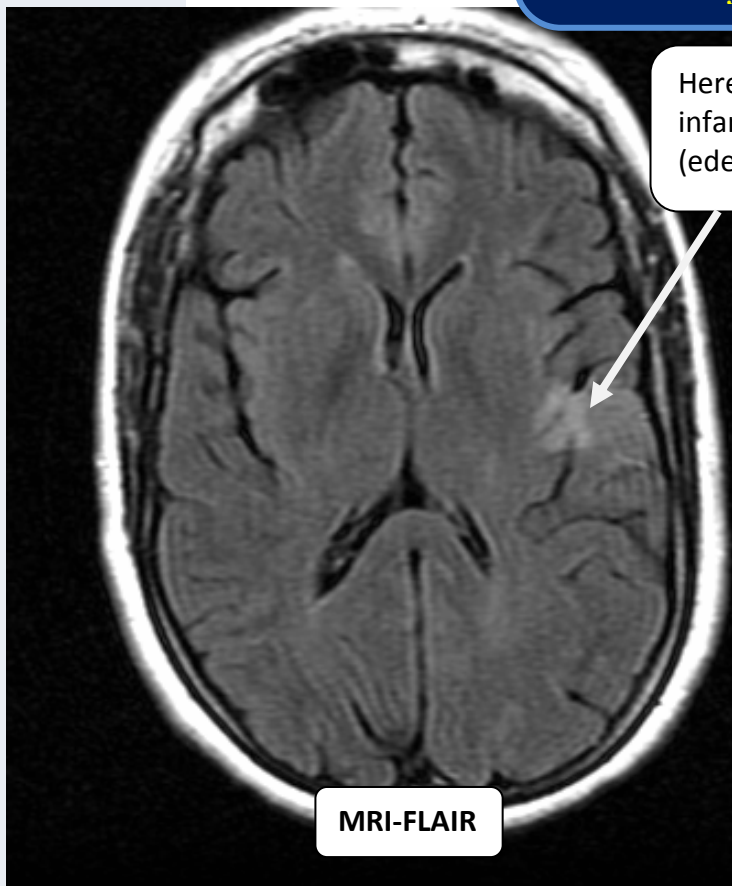
CT SCAN



MRI-T2W1

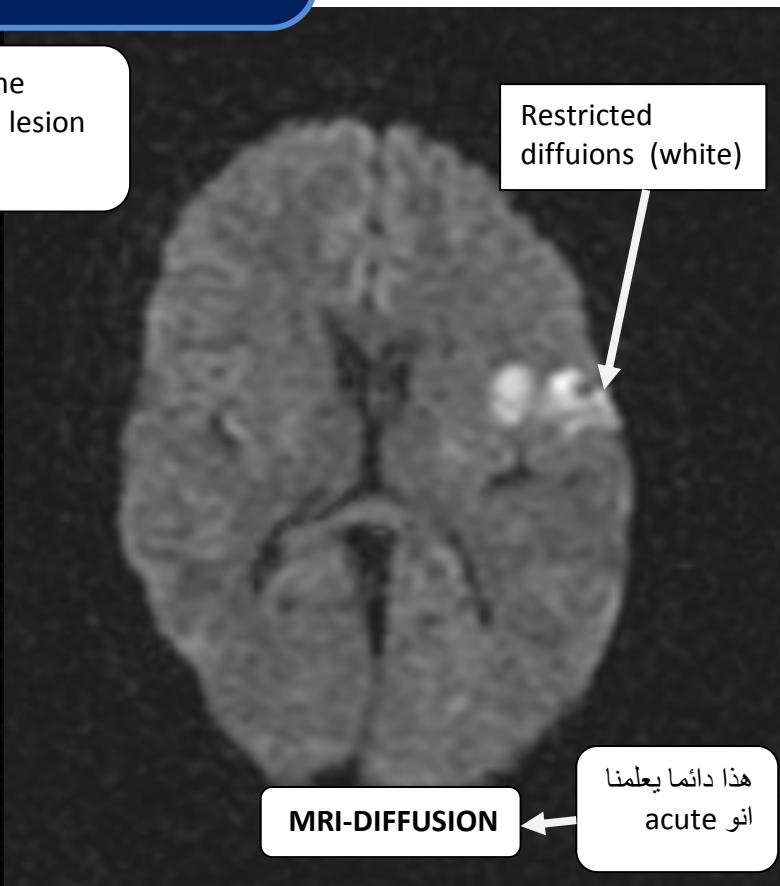
## Note

In MRI we can see the infarction  
lesion earlier than CT .  
CT may not show the infarction  
lesion, sometimes up to 24 hours after  
it happened but MRI may show it  
lesion as early as 2 hours. 🌟



MRI-FLAIR

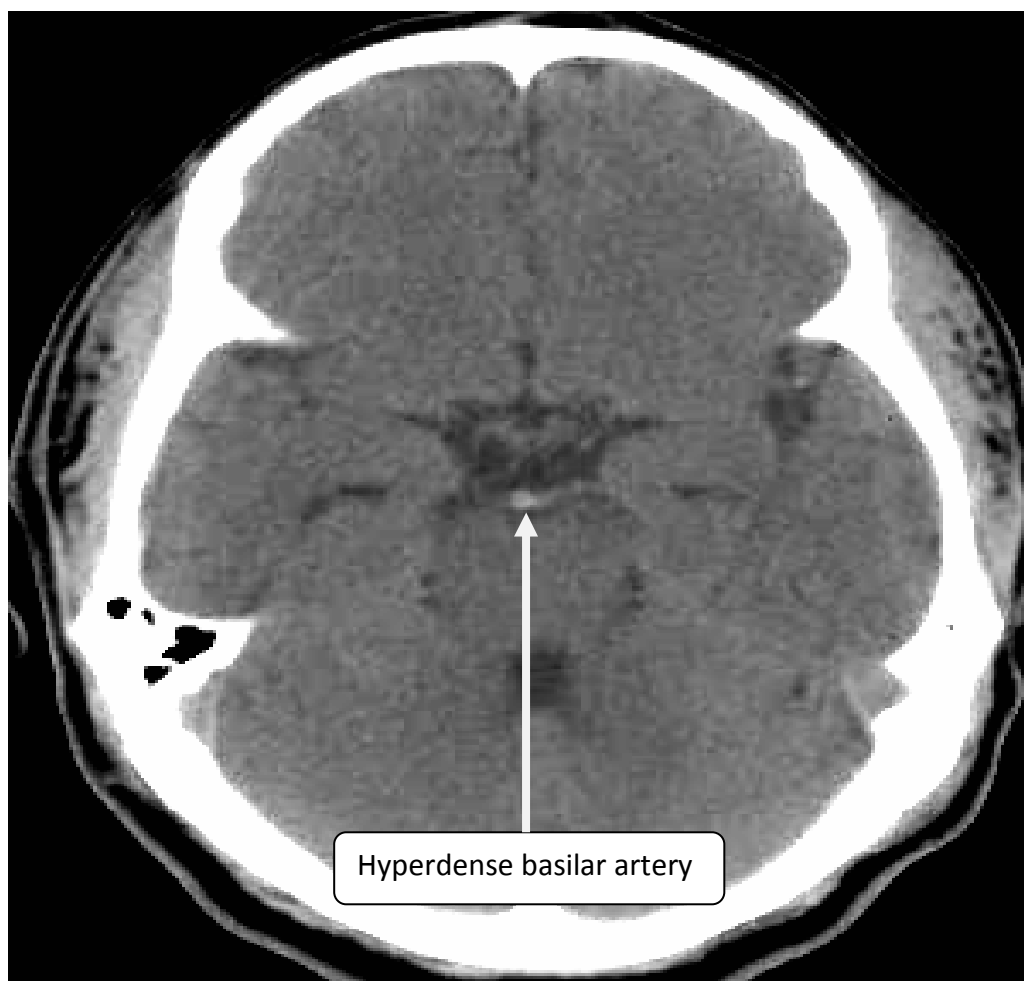
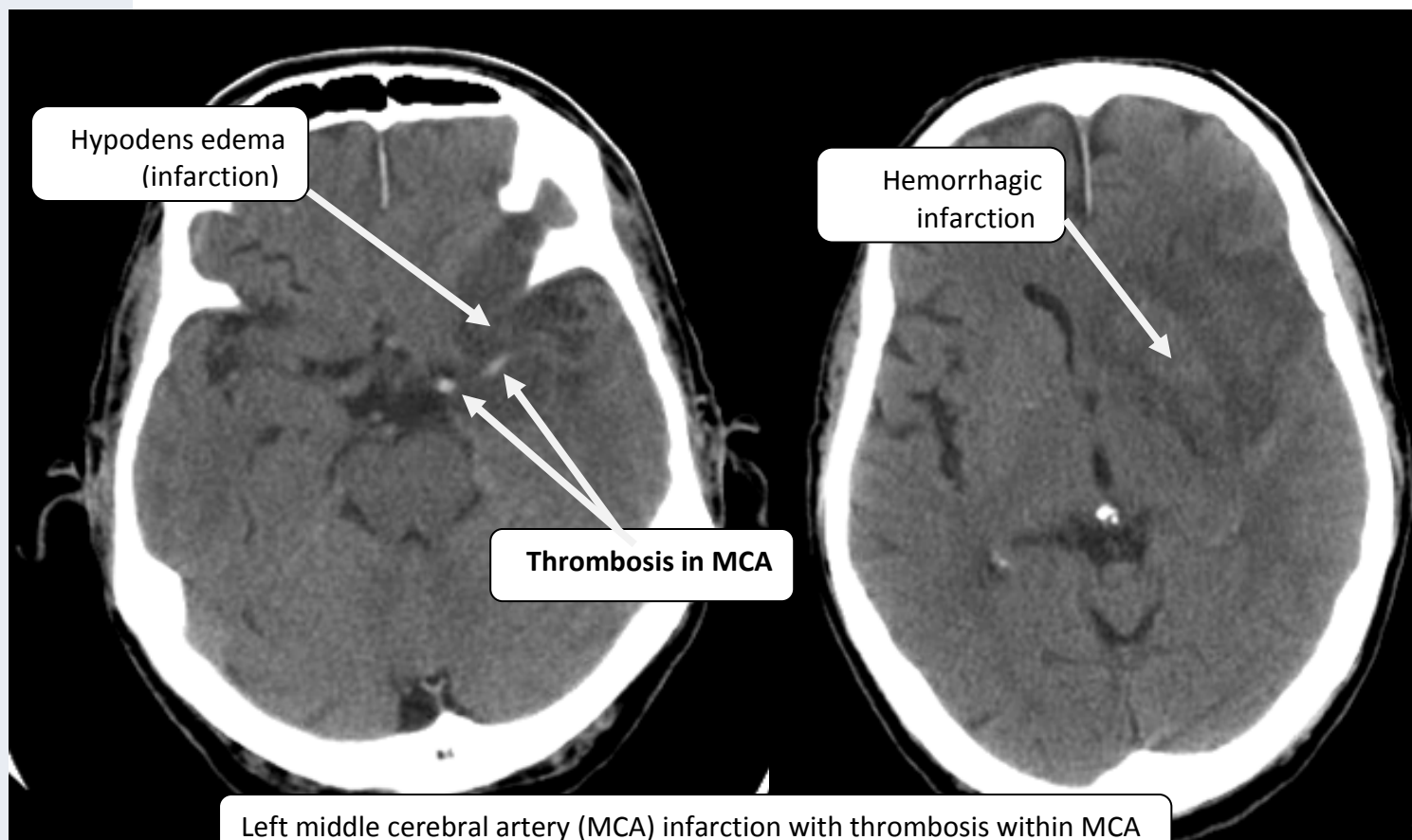
Here is the  
infarcted lesion  
(edema )



Restricted  
diffusions (white)

MRI-DIFFUSION

هذا دائما يعلمنا  
انو acute



MRI-FLAIR



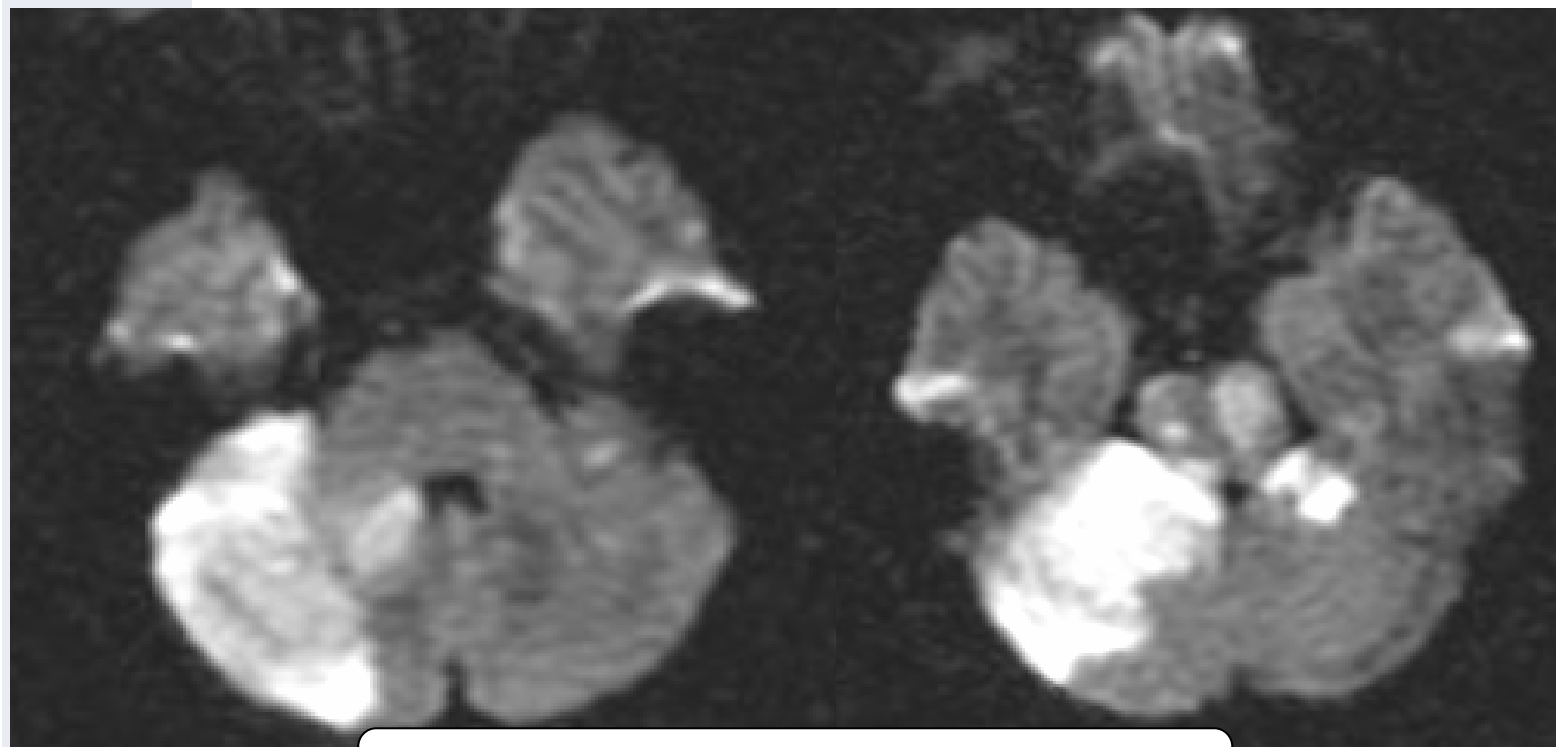
MRI-T2



Acute infarction due to basilar artery thrombosis

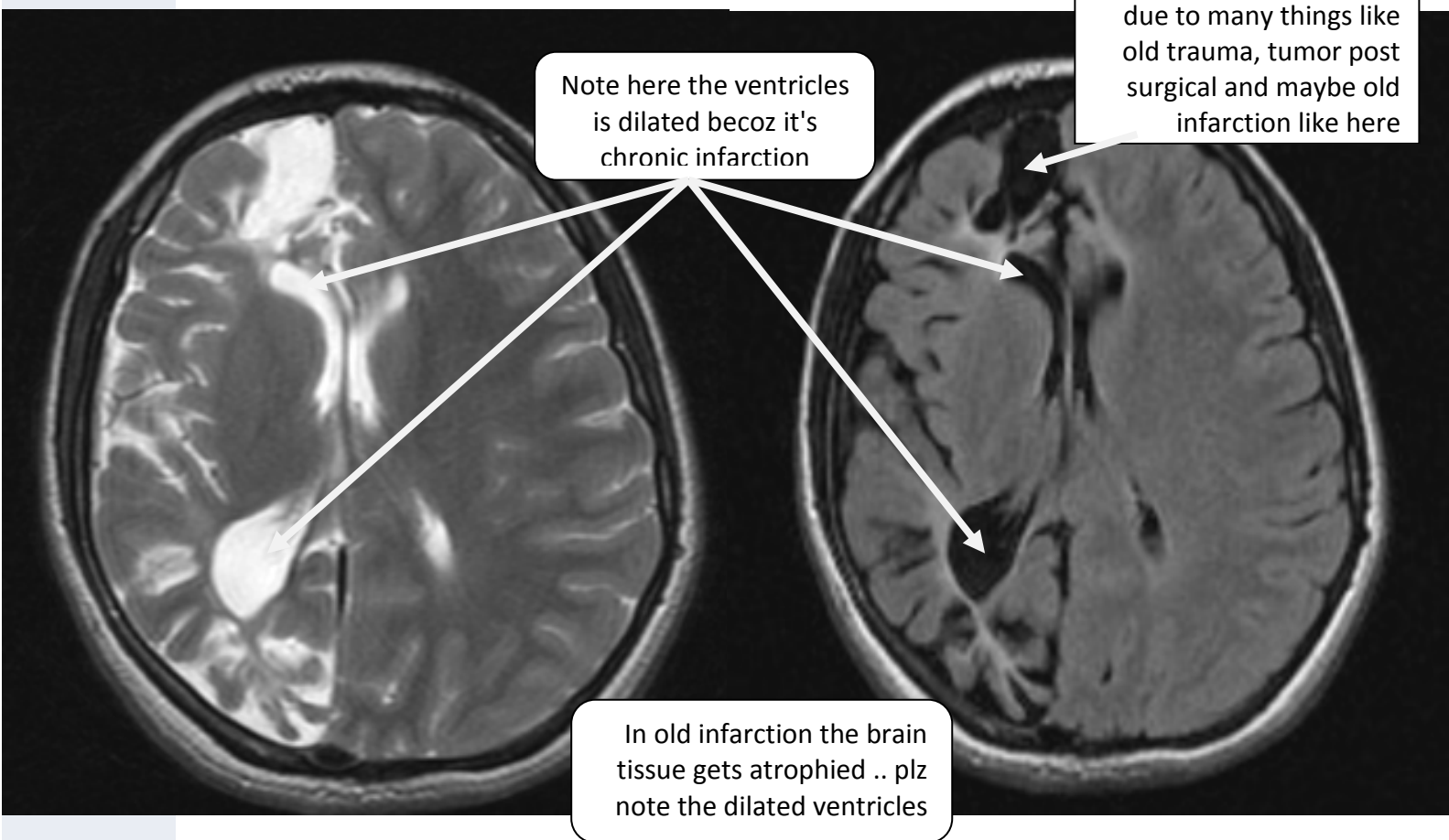
### Note

ياشباب لاحظوا اننا يوم سويننا السي تي سكان طلع  
عندنا ثرومبوس بس مو متاكدين لان يمكن يكون  
هذا الشي كل سيفكشن .. مشان كذا سويننا ام ار أي  
مشان نتأكد انو ثرومبوس وانو انفاركشن



Acute infarction due to basilar artery thrombosis and it's same pt. above but here by using MRI diffusion sequence

## \* Old infarction by MRI





# \* Meningioma

MRI-T2

Edema produce mass effect

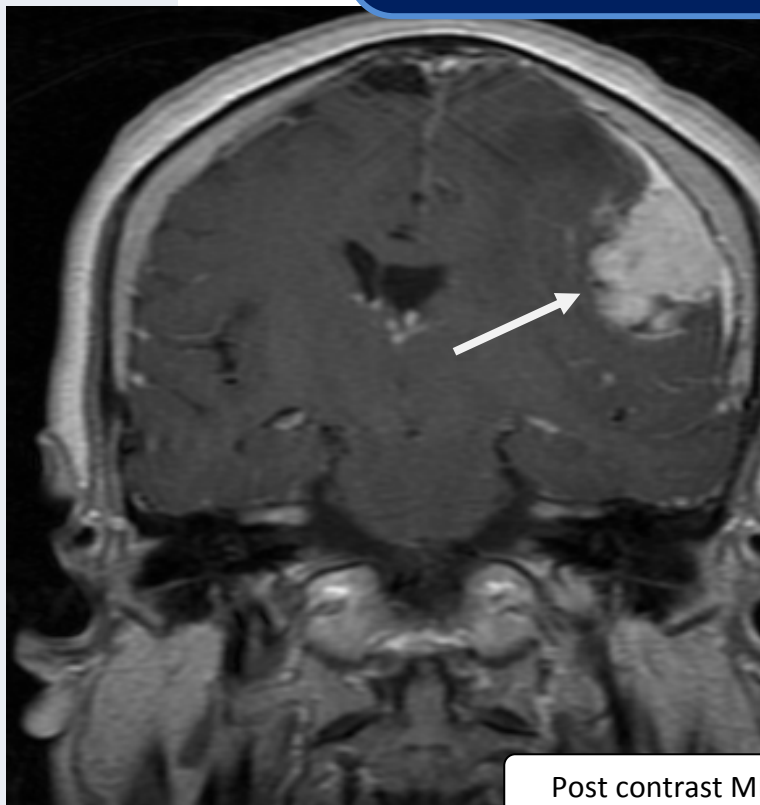
meningioma

Midline shift and compressed Lt lateral ventricle (as 2<sup>nd</sup> manifestation)

**Note**

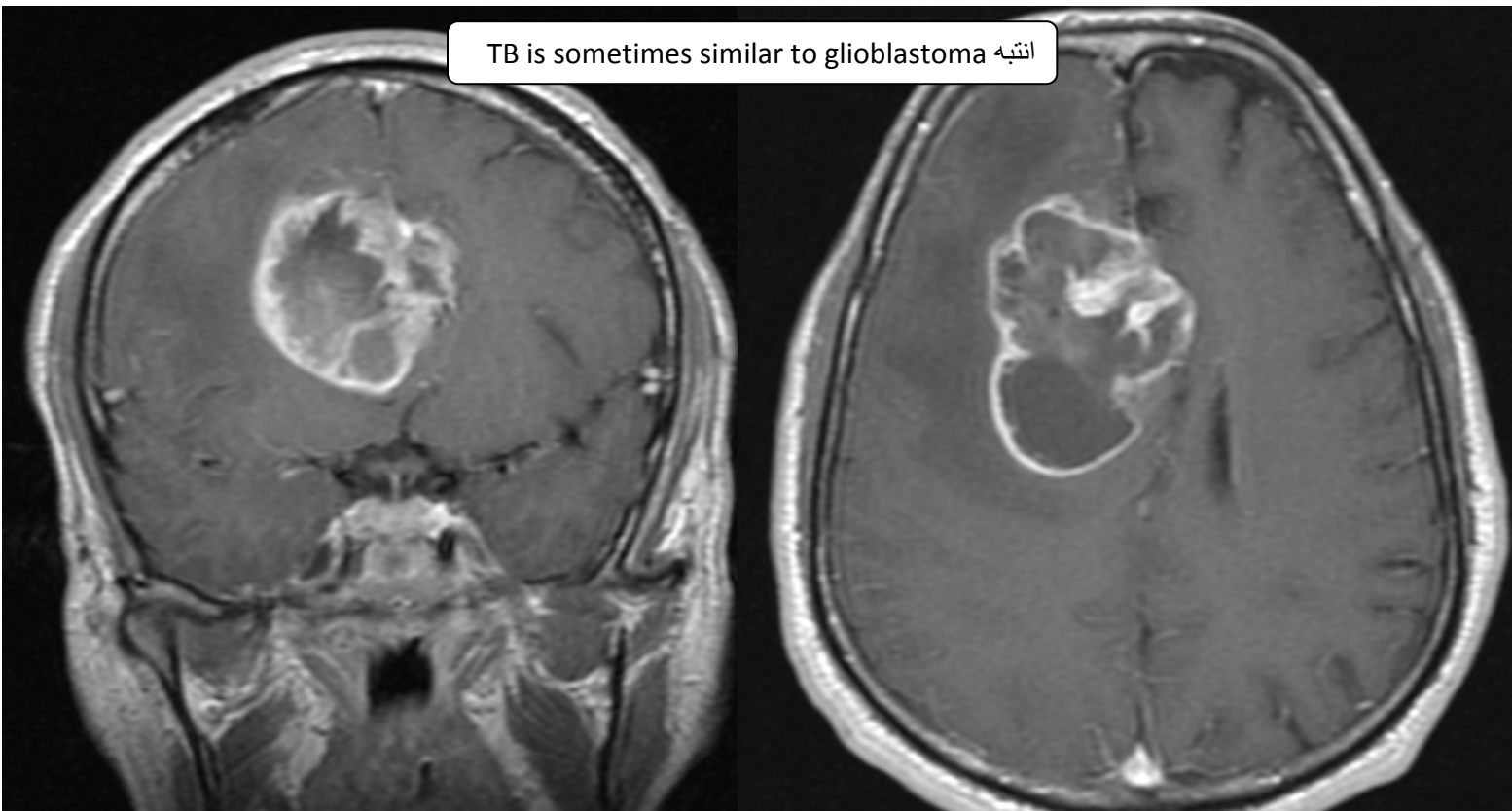
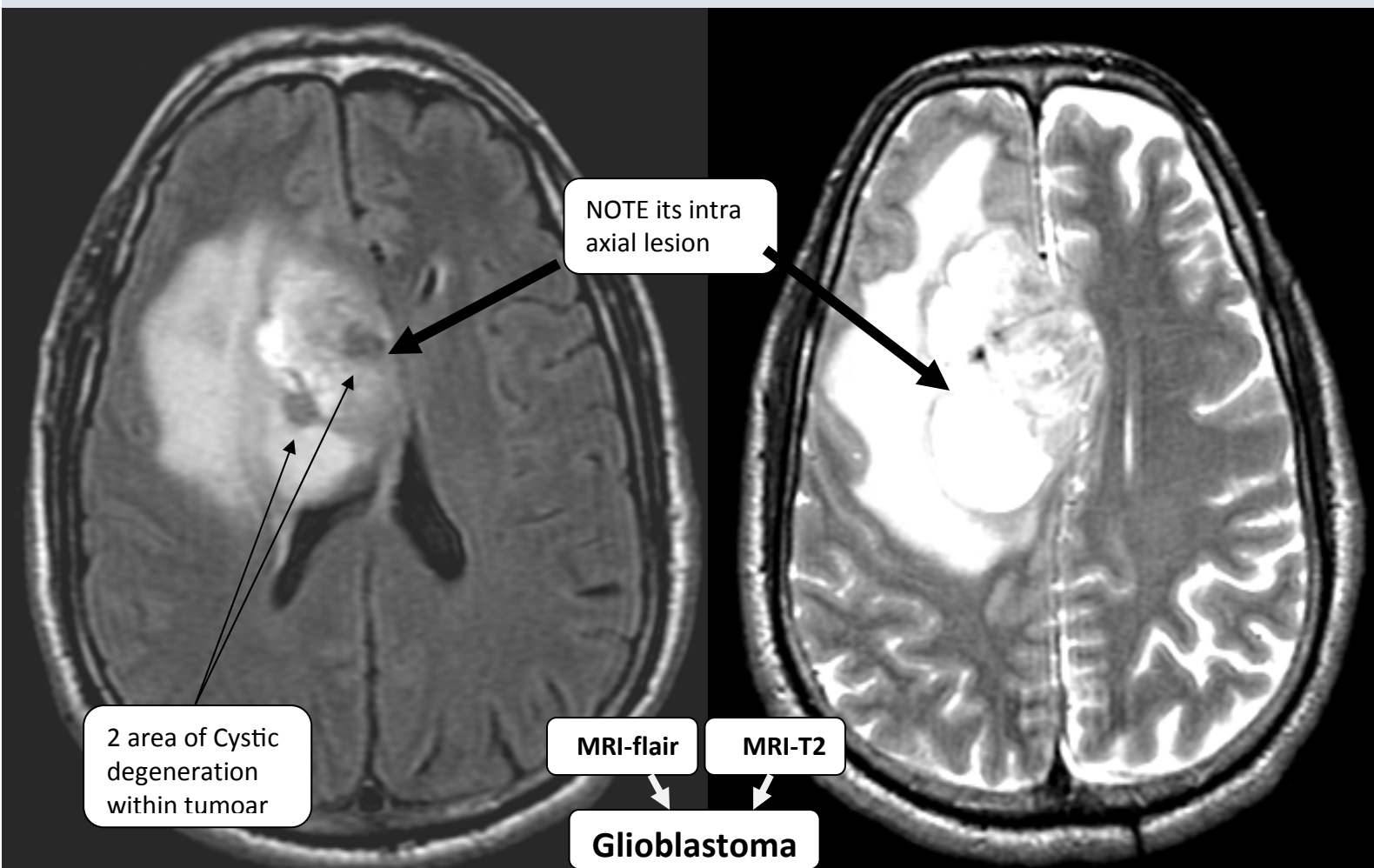
**My lovely friend if you see a mass inside the brain u have 2 know if it's 1- intra ,extra brain parenchyma 2- signal intensity 3- pattern enhancement . So if it's extra axial lesion it well have this feature: 1- CSF cleft 2- broad base attached to the surface of brain 🍌\***

MRI-T1



Post contrast MRI T1 shows meningioma

# \*GLIOBLASTOMA

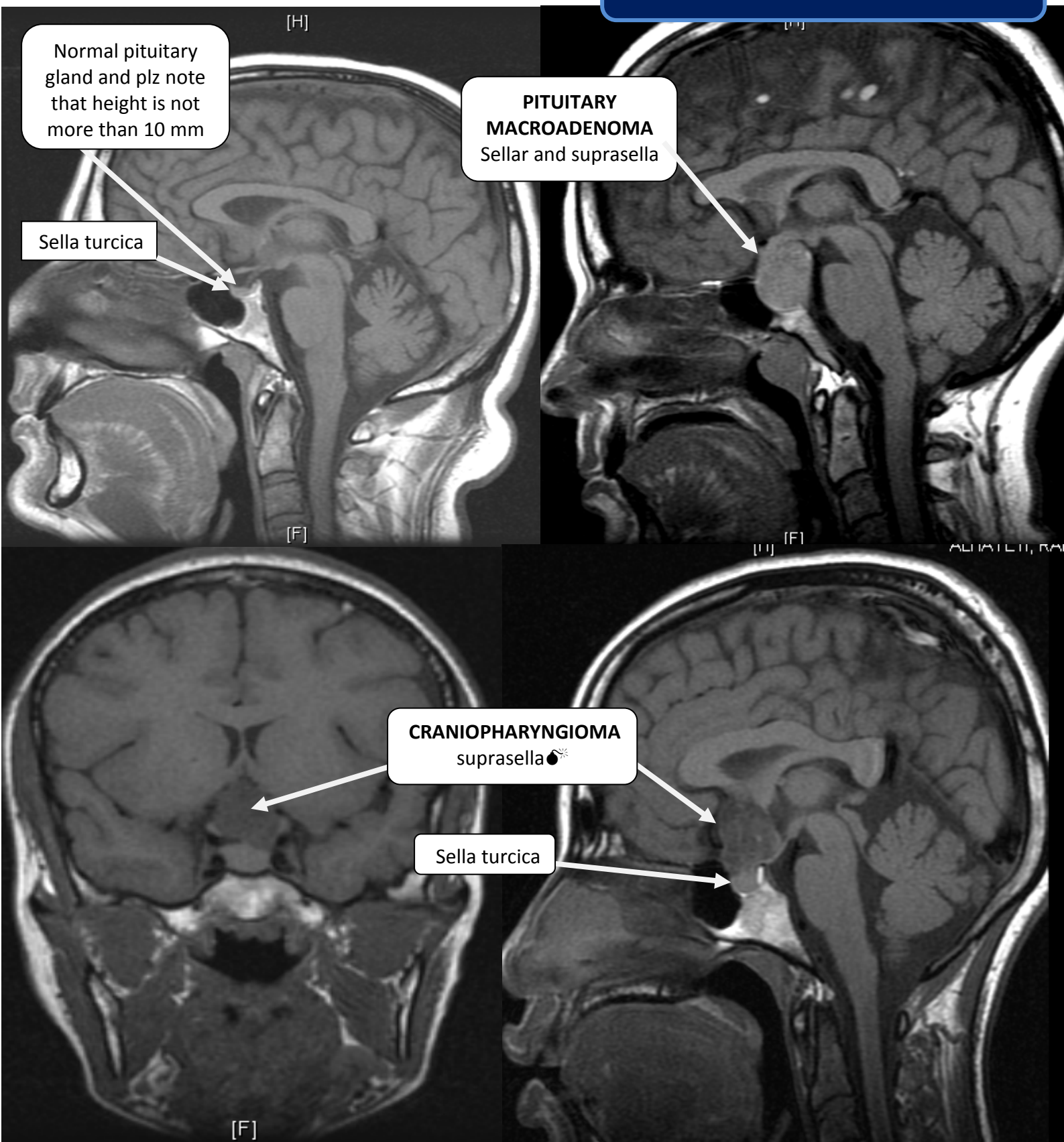


2 img. Of Post contrast MRI shows a lesion in the brain → glioblastoma



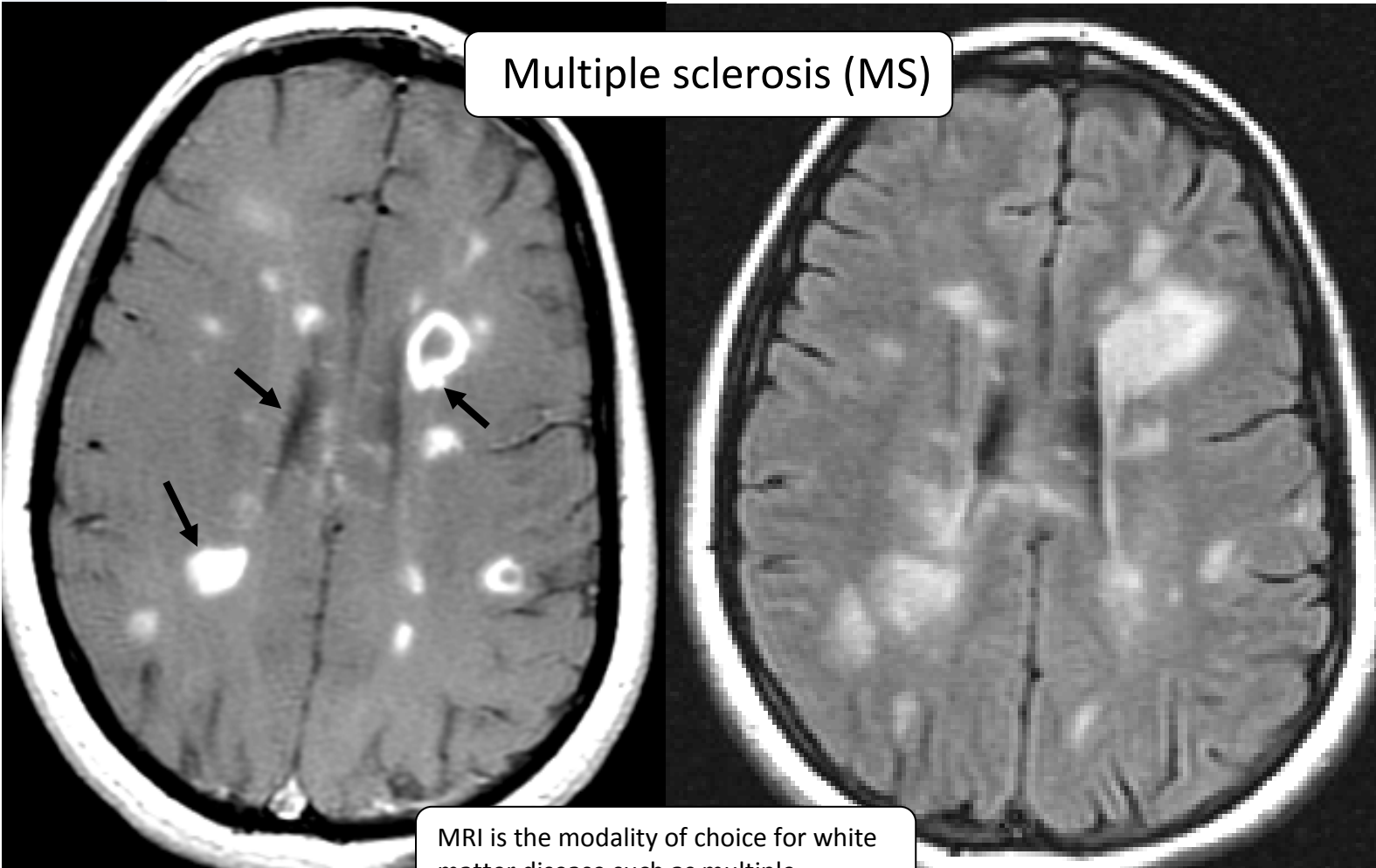
# \* Pituitary gland

MRI is the modality of choices for sella turcica and the pituitary gland inside it . 🧠

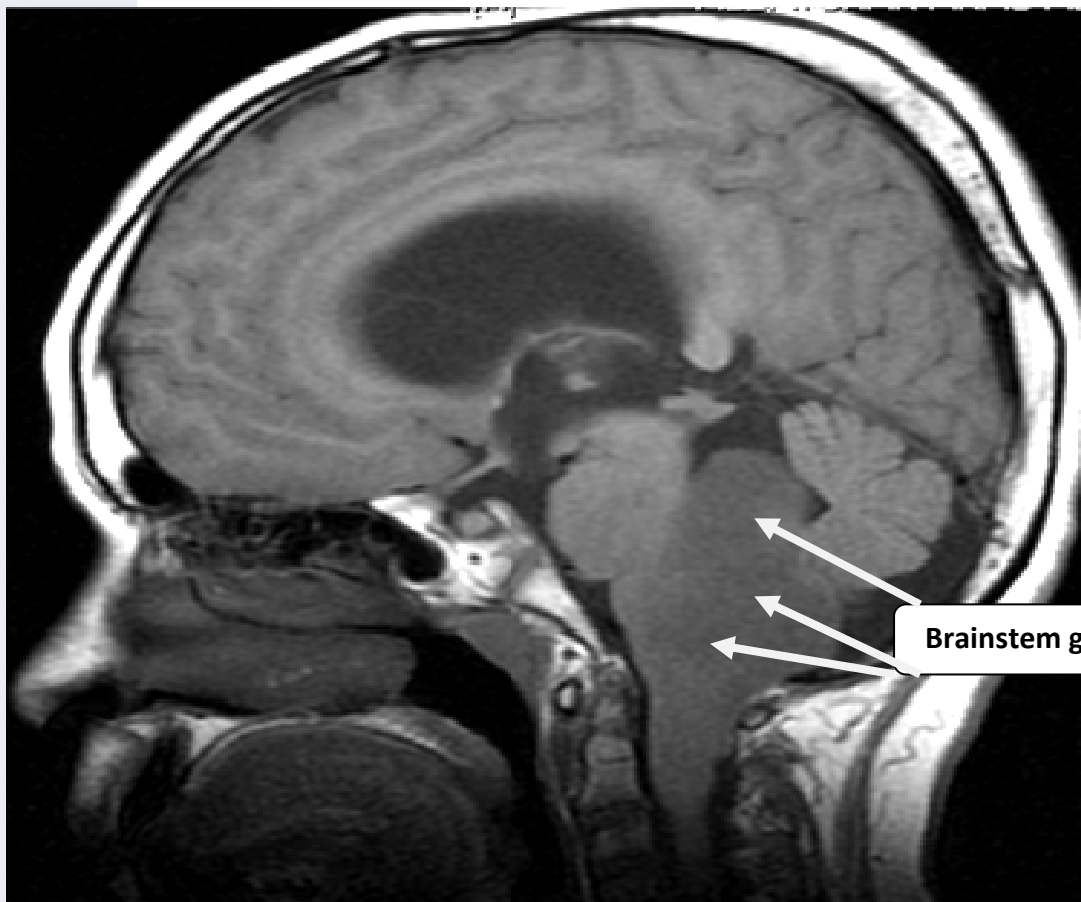




## Multiple sclerosis (MS)



MRI is the modality of choice for white matter disease such as multiple



**Brainstem glioma**

Advantage of sagittal MRI for evaluation of brain stem lesion

# Done

