



RADIOLOGY

TEAM 435

Interactive lecture of nervous system radiology

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- **Objectives:**

- **Resources:**

- Doctor slides
- 434 team

- **Done by:**

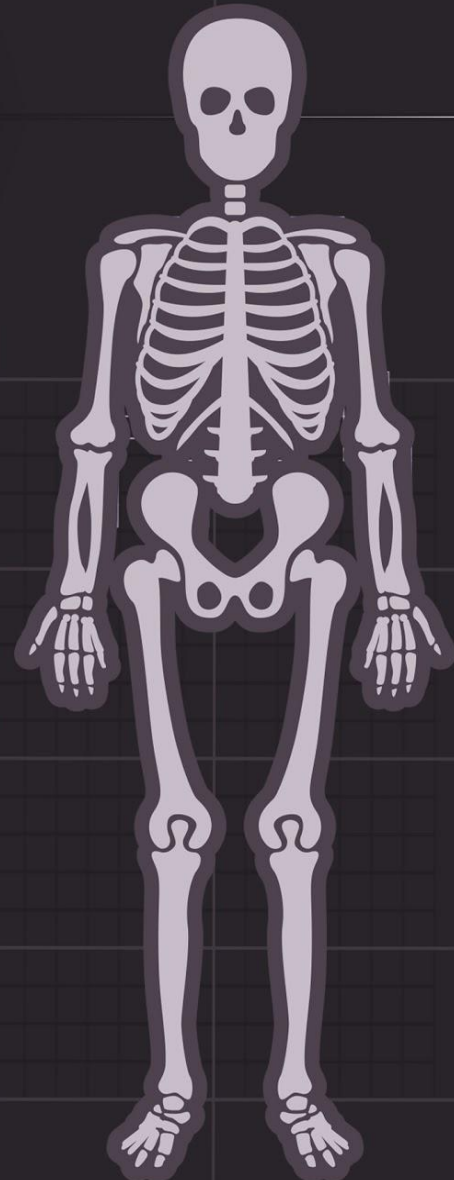
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- **Revised by:**

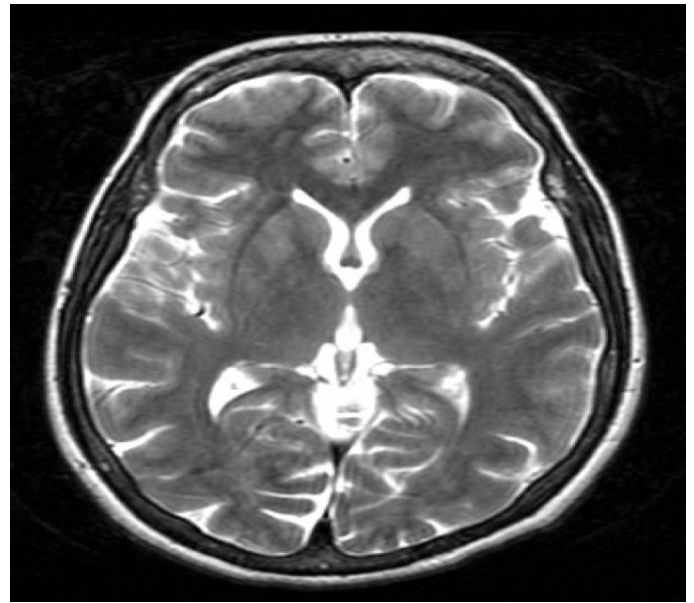
- Luluh Alzaghayer



Introduction

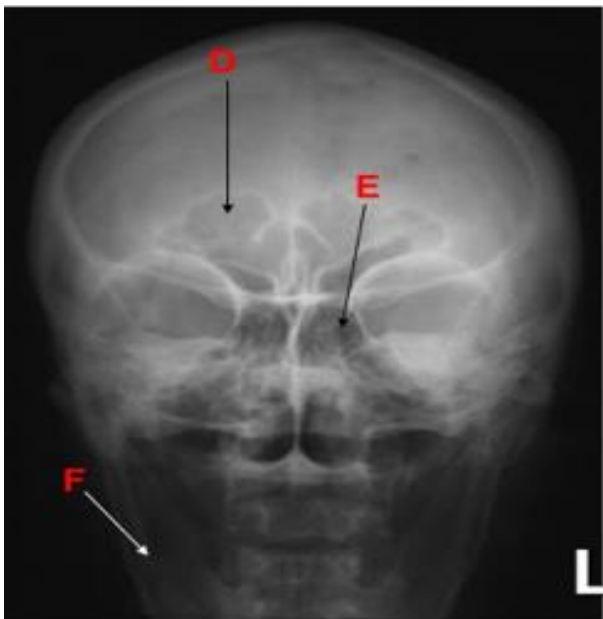


CT :
bone is white
fluid is black

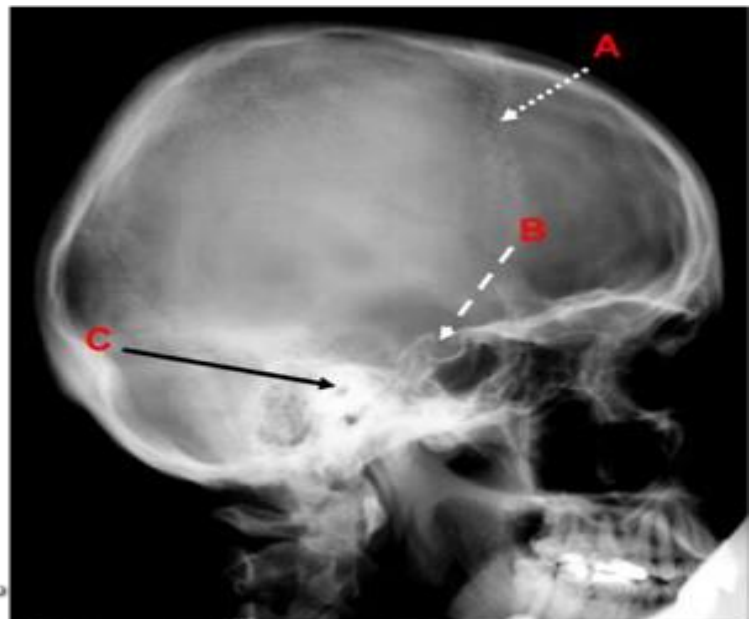


MRI :
bone is black
T1: FLUID IS DARK
T2: fluid is bright

- Name the following structures :



SKULL PA VIEW



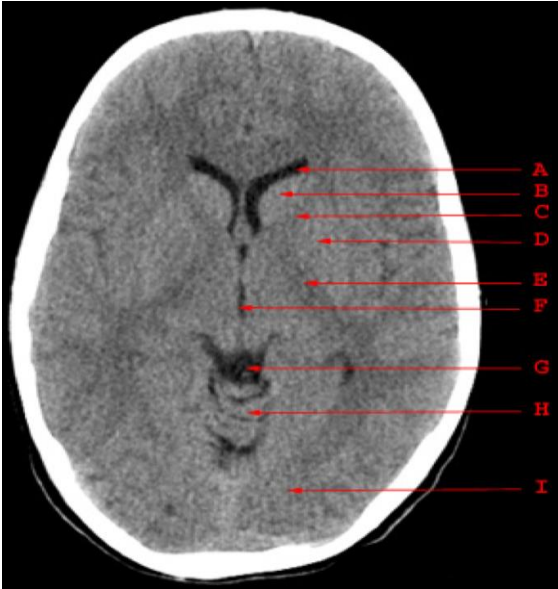
Skull X-RAY LAT. VIEW

x-ray is rarely used these days

(doctor said it does not matter if it PA or AP in the skull x-ray)

- A. Coronal suture B. Sella turcica C. External acoustic meatus D. Frontal sinus E. Ethmoidal sinus
F. Mandible

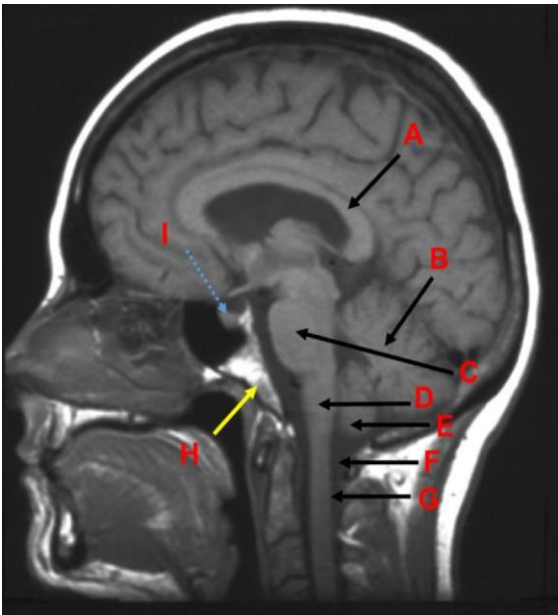
Brain CT (Axial) (we know it's CT from the bone color - white in CT)



- A. Anterior Horn of the Lateral Ventricle
- B. **Caudate** head *زي حبة اللوز*
- C. Anterior Limb of the Internal Capsule
- D. Putamen and Globus Pallidus (lentiform nucleus)
- E. Posterior Limb of the Internal Capsule
- F. Third Ventricle
- G. Quadrigeminal Plate Cistern
- H. Cerebellar Vermis

I. Occipital Lobe (left)

Sagittal view



- A. Corpus callosum (body)
- B. Superior vermis of cerebellum
- C. Pons
- D. Medulla
- E. **Cerebellar tonsils**
- F. 4th ventricle
- G. **Spinal cord**
- H. Clivus
- I. Pituitary

Q1. which is true about CT ?

1. Bone is black (the bone color in CT is white)
 2. CSF is black (true)
 3. Gray matter is darker than white matter (not true, the opposite is true " there is more fluids in white matter)
 4. Gray and white matter cannot be differentiated (no, we can not differentiate in one condition : brain edema either generalized or localized)
-

Q2. contraindication of MRI include all the following EXCEPT ?

1st and 2nd trimester you have to take precaution (relative contraindication) because it's time for embryogenesis, also there is no proof of safety or harm

1. cardiac pacemaker
2. cochlear implants
3. metal close to the eye (some metal are not ferromagnetic)
4. neurostimulators (over stimulate)
5. pregnancy (3rd trimester). (true but also contrast is contraindication)

These days there are some devices which are MRI compatible

Q3. MRI diffusion (DWI) is particularly helpful in assessment of all of the following except :

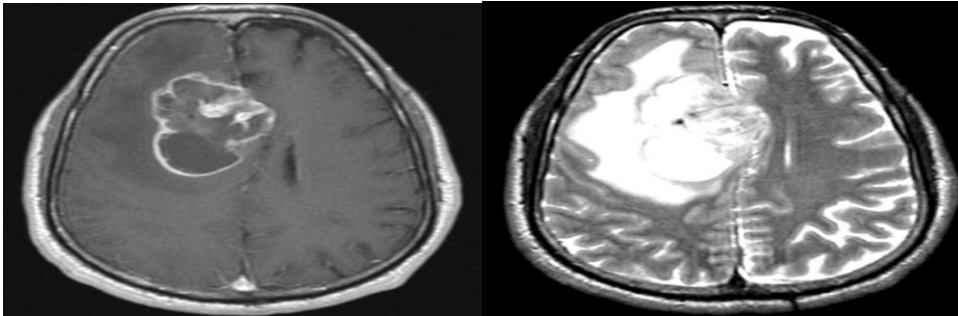
1. Brain infarction (in early infarction "from 7-10 days", after that will be normalized)
 2. Brain abscess (helpful)
 3. Brain tumors (in some types of tumors)
 4. Hydrocephalus (not helpful) no fluid restriction like the 3 above choices
-

Q4. Which of the following is true?



- A. This is CTA study (bone is black)
 - B. This is MRA study (that is true)
 - C. This can only be done with contrast (MRA can be done without contrast just depend on the flow)
 - D. This is good to diagnose cerebral venous thrombosis (this is not venography, you can just differentiate between the MRA & MRV by anatomy only).
-

Q5. This lesion is most likely:



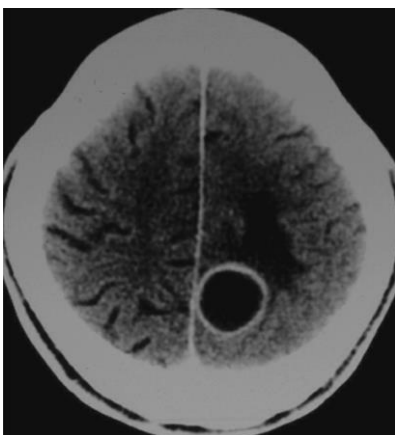
An MRI showed intra-axial lesion that is necrotic, irregular, strongly enhancing, and crossing midline. (intra-axial: in the brain not in the meninges, from the description we know that is malignant lesion)

- 1. Meningioma (NO, extra-axial, rarely necrotic)
- 2. Infarction (No, infarction is hypodense)
- 3. Multiple sclerosis (NO should be multiple lesions - they do not cross midline - hypodense)
- 4. Glioblastoma multiforme (GBM) (true)

- In the picture above what is the type of the edema ?

white matter edema which usually comes with tumors is a vasogenic edema because of leakiness of the blood vessels so fluid is not restricted in the cell but it is free in the interstitium (will not be seen in the DWI)

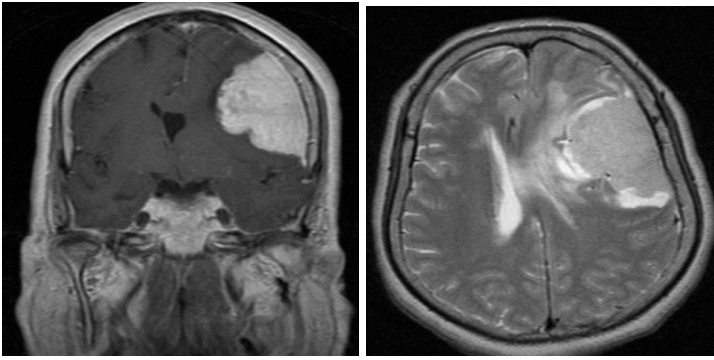
Q6. The lesion on this CT is :



intra-axial, regular, necrotic cavity and there is edema around it (Typical abscess)

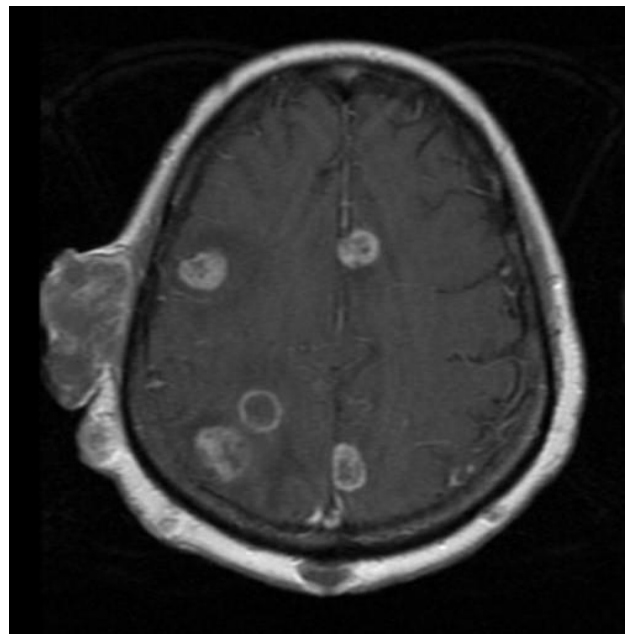
- 1. Meningioma (no this is an intra axial lesion)
- 2. Abscess (ring enhancement)
- 3. Multiple sclerosis (No, MS enhancement is incomplete ring and there is no edema around it)
- 4. Glioblastoma multiforme (does not fit the previous description)

Q7. The lesion on this MRI is :



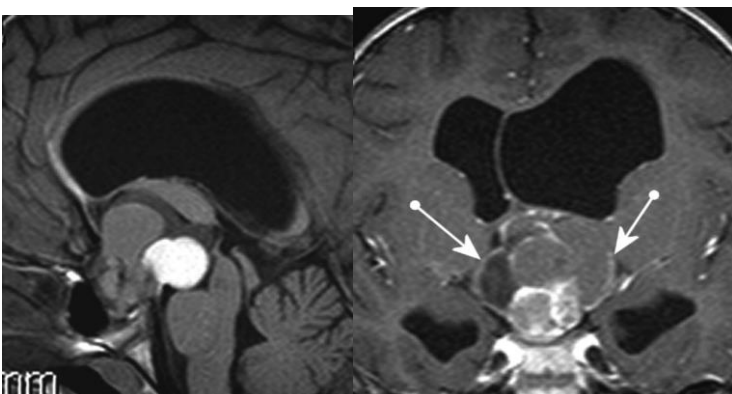
Extra axial, pushing the white and grey matter, non necrotic, CSF cleft sign (fluid in between it and the brain), solid enhancement .

1. **Meningioma** (true)
2. Infarction
3. Metastasis (very rare to reach that size solitary)
4. Abscess (no necrotic cavity)



This is metastasis brain tumor came from breast cancer

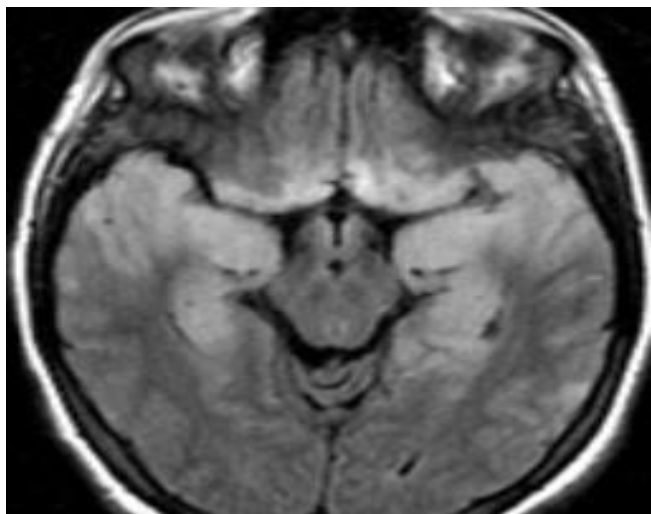
Q8.The lesion on this MRI is:



Partially enhancing

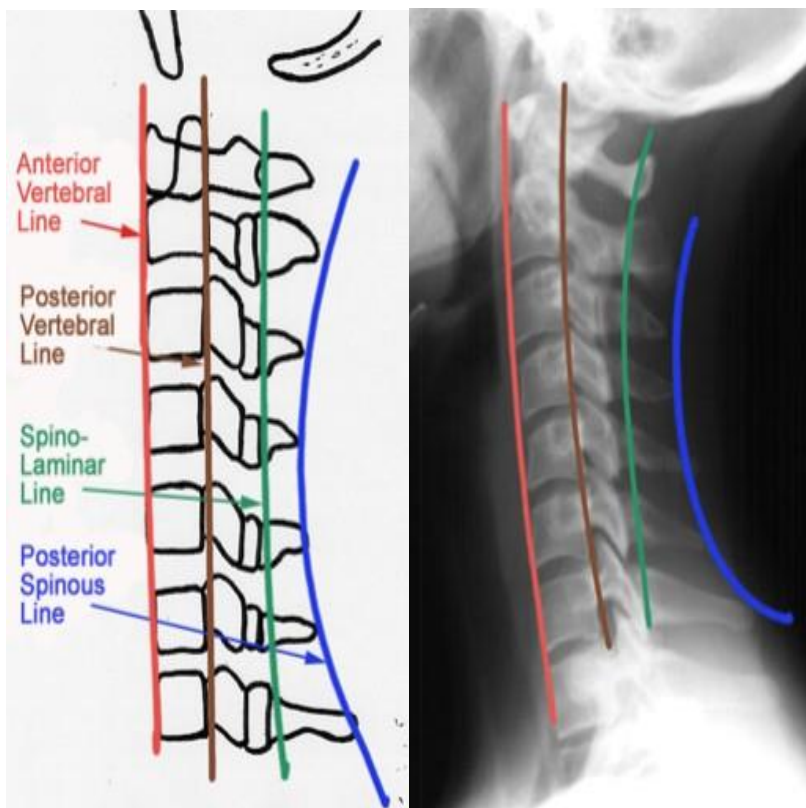
most of this mass is cavities of different content. Here look to the context of the question

- A. Pituitary adenoma (supposed to have single cyst unless if not treated)
 - B. Craniopharyngioma (multicystic) (present in children and elderly, it's known that CPoma with cyst with different content) we do CT, if there is a calcification the choose it 100%) correct
 - C. Meningioma (no it must be solid enhancement not cystic)
 - D. Glioblastoma multiforme (rare to affect pituitary)
-



Q9.The abnormalities on this MRI are due to:

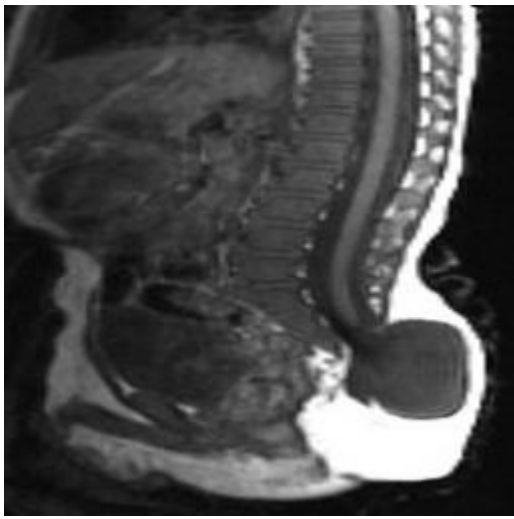
- A. Multiple sclerosis
 - B. Meningitis
 - C. Brain tumor
 - D. Encephalitis (correct) herpetic encephalitis
- the most important here is the pattern: bilateral and symmetrical increased intensity of the temporal lobe



Q10.Which of the following is true about the lines of the cervical spine?

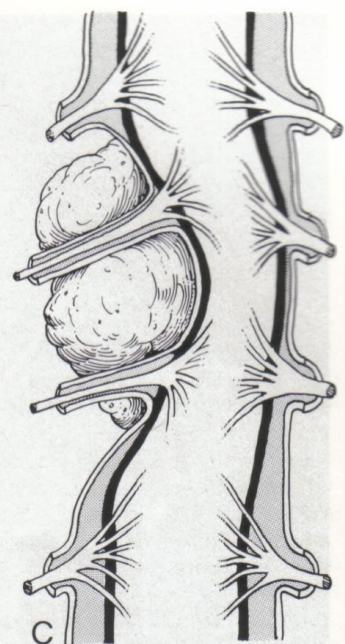
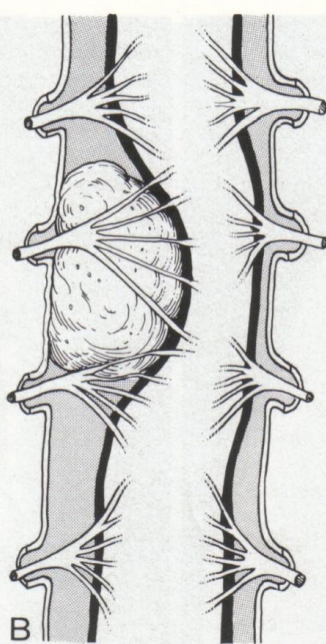
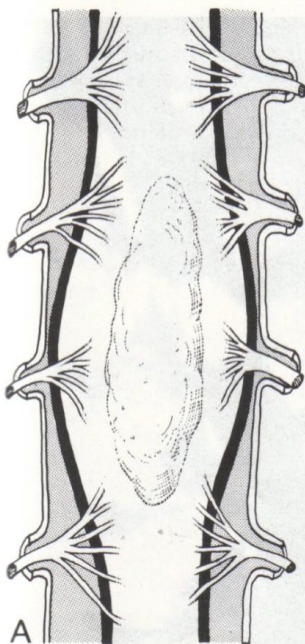
- A.Red is intervertebral line
- B.Brown is posterior spinous line
- C.Green is spinolaminar line
- D.Blue is posterior vertebral line

The lines are important in fractures and dislocation



Q11.MRI of the spine shows :

1. **Meningocele correct**
2. Extradural tumor
3. Discitis
4. Vertebral fusion

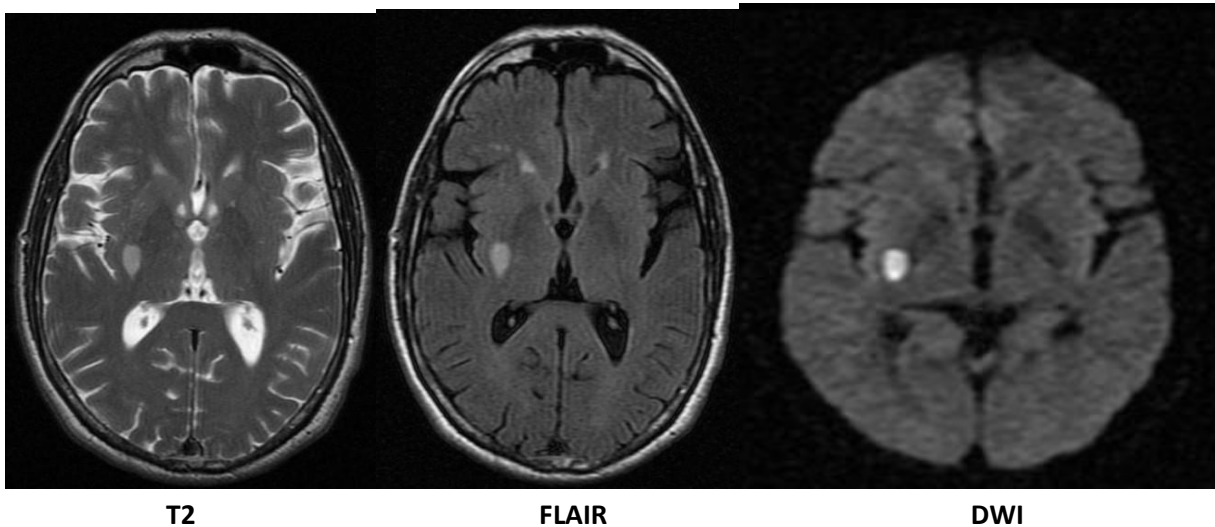


A: Intradural intramedullary lesion **B:** Intradural extramedullary **C:** extradural (Epidural)extramedullary



Q11. what is the difference between the two images?

The first one on the left is control normal the, 2nd is patient with **cervical spondylosis** vertebral disc space is narrowed, vertebral body endplate sclerotic it is SPONDYLOSIS



T2

FLAIR

DWI

Q12. This MRI shows an infarction in the right basal ganglia.

A. The infarction is:

1. **Acute** (recent) (APPEARED IN DWI) CORRECT
2. Chronic (old)
3. Hemorrhagic
4. In PCA territory

B. This patient is most likely to have:

1. Left monoplegia (caused by PCA)
2. **Left hemiplegia** (correct)
3. Diplegia (upper limbs paralysis)
4. No symptoms (Dr said it is difficult in our level to have a question with this option)



Q13. This CT shows:

1. Subdural hematoma
2. Subarachnoid hemorrhage
3. Intraventricular hemorrhage
4. **All of the above (correct one)**



Q14. The hematoma pointed by the arrow is:

acute because it is bright

1. **Acute epidural (it crossed the falx)**
2. Chronic epidural
3. Acute subdural
4. Chronic subdural
5. None of the above



Q15. This CT shows:

1. **Acute PCA infarct (in PCA territory)**
2. Chronic ACA infarct
3. Subarachnoid bleeding
4. Meningioma
5. Abscess

There is also intraventricular hemorrhage