

# **Specific brain disorders**

## **Imaging techniques:**

**1-Skull x-ray**

**2-CT- scan and MRI with and without contrast**

**3MRI**

**4-Angiography used for special circumstances as menengiomias**

# Cerebral lesion appearance

Intracranial calcification ■

Seller erosion ■

Sclerosis ■

Abnormal vascular marking ■

Pineal displacement ■

# ***Calcification***

**Tumours:** meningiomas ■

**Infection:** tuberculoma, toxoplasmosis ■

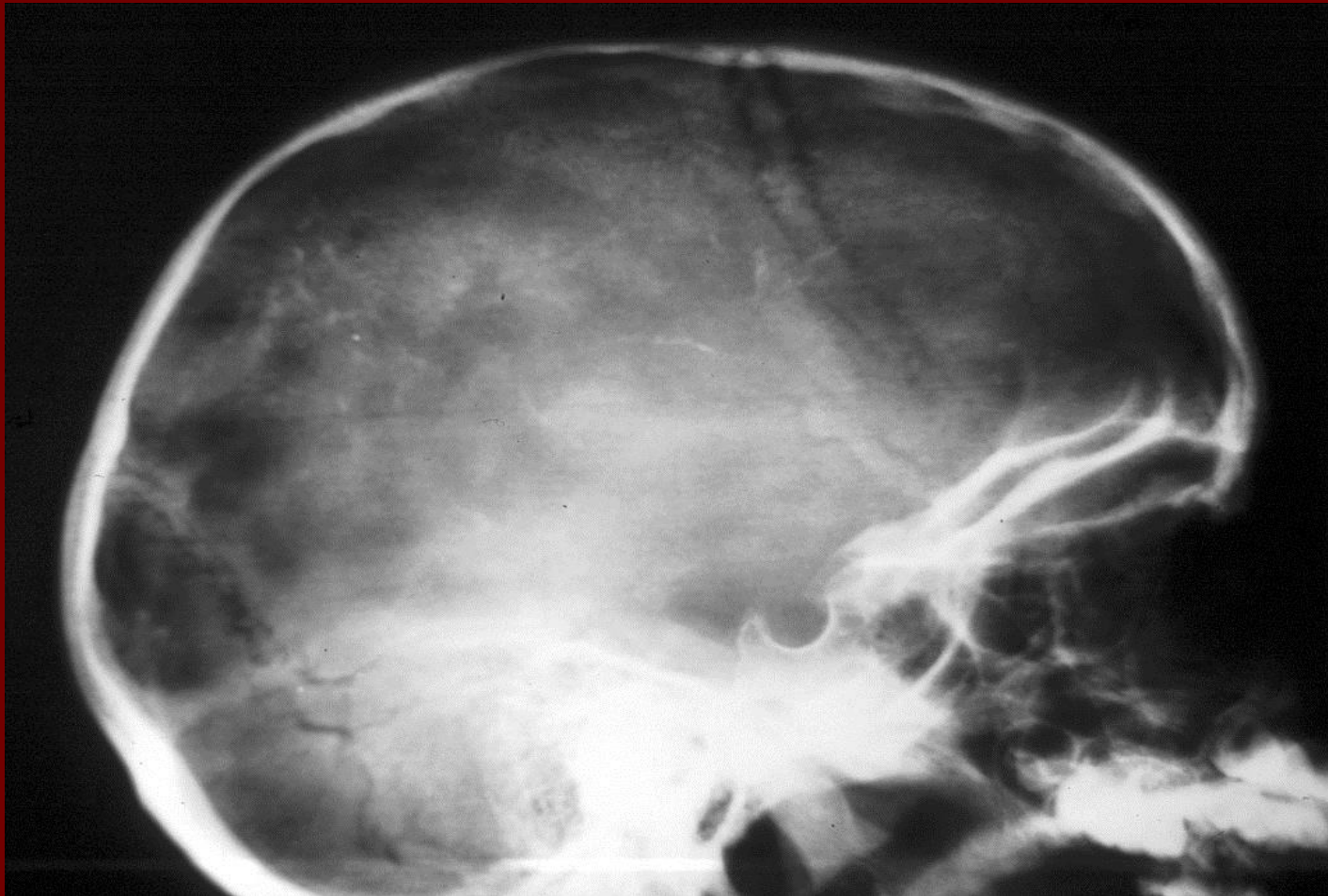
**Metabolic:** basal ganglia ■

**Vascular:** aneurysm , hematoma ■

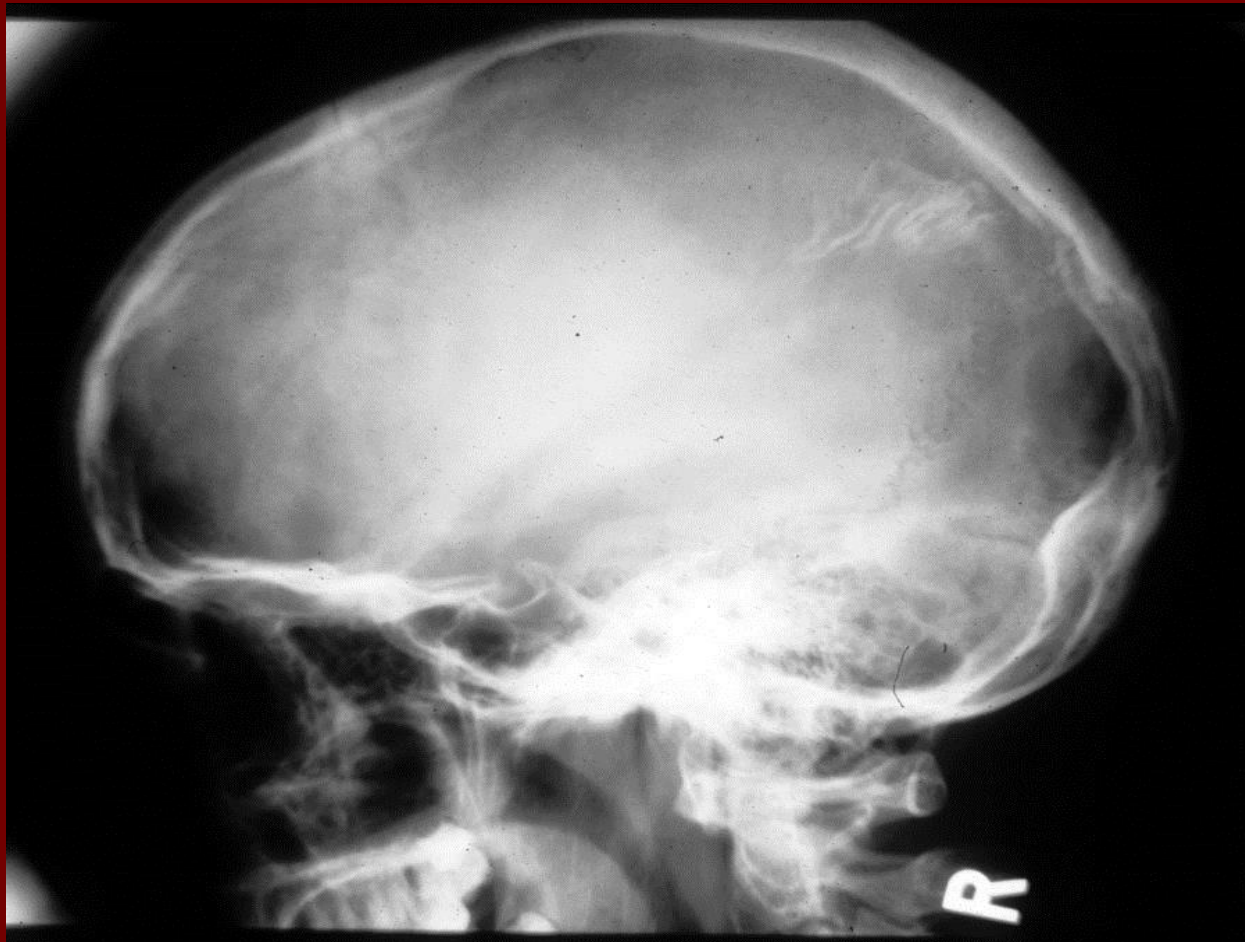
**Miscellaneous ;**neurofibromatosis, ■

Sturge Weber syndrome.





# Sturge Weber





# ***Erosion***

**Extracranial** : dermoid .

**Bony lesion** as multiple myeloma which appears as multiple small rounded and clear cut defect.

***Metastasis***; extremely common and often multiple •  
have characteristic mouth eaten appearance.

**Intracranial with bony erosion**

Pituitary adenoma ,expand and erode pituitary fosse, •

Acoustic neuroma lead to erosion of inner meat us •

**Non tumorous erosion**

Infection as osteomyelitis . •

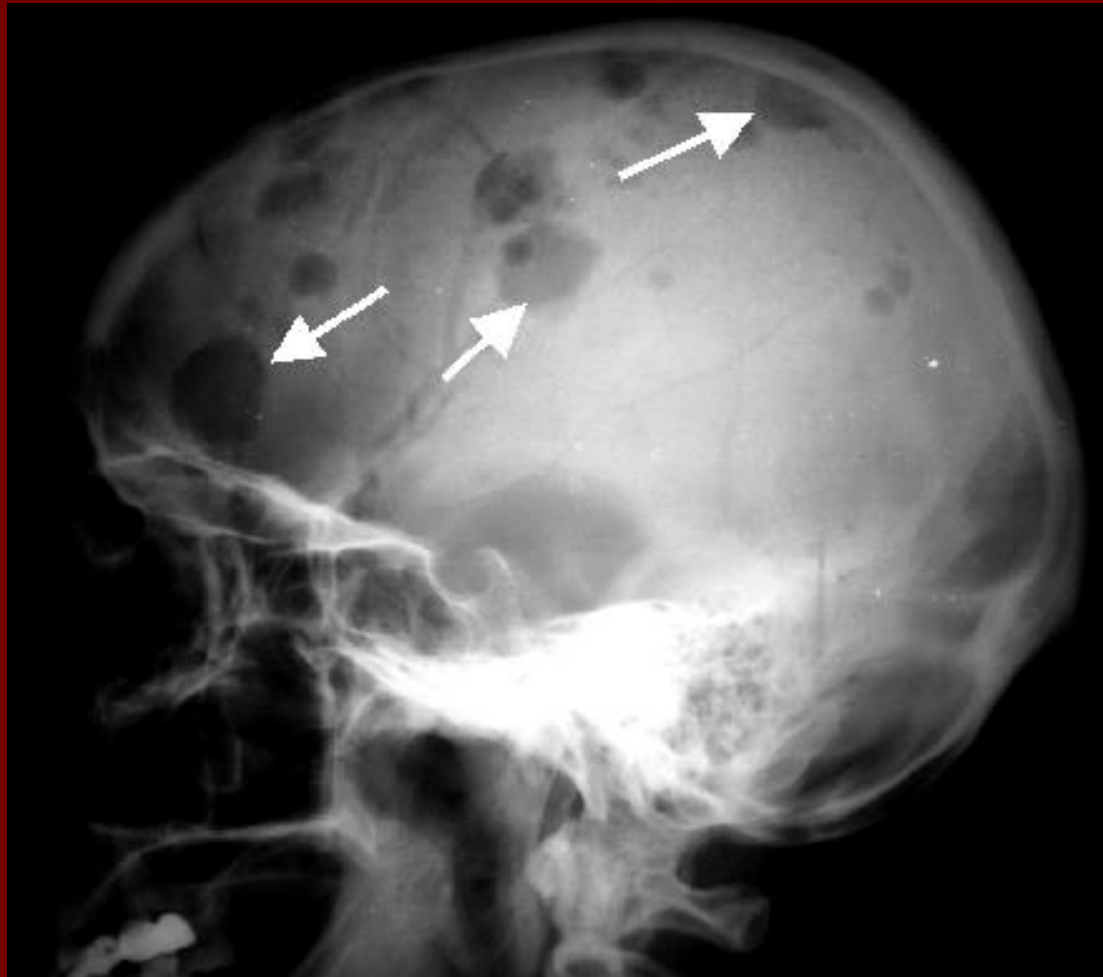
Radiation . •



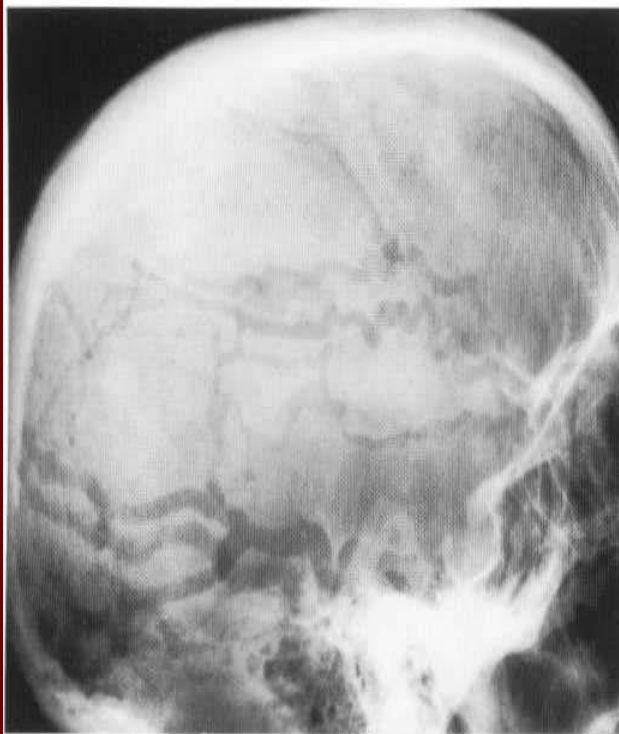
# Metastasis



# Multiple Myeloma



# **Abnormal vascular marking**



# ***sclerosis***

## **Generalize increase bone density**

Paget disease ; it may take form of multiple patchy areas of increase density •

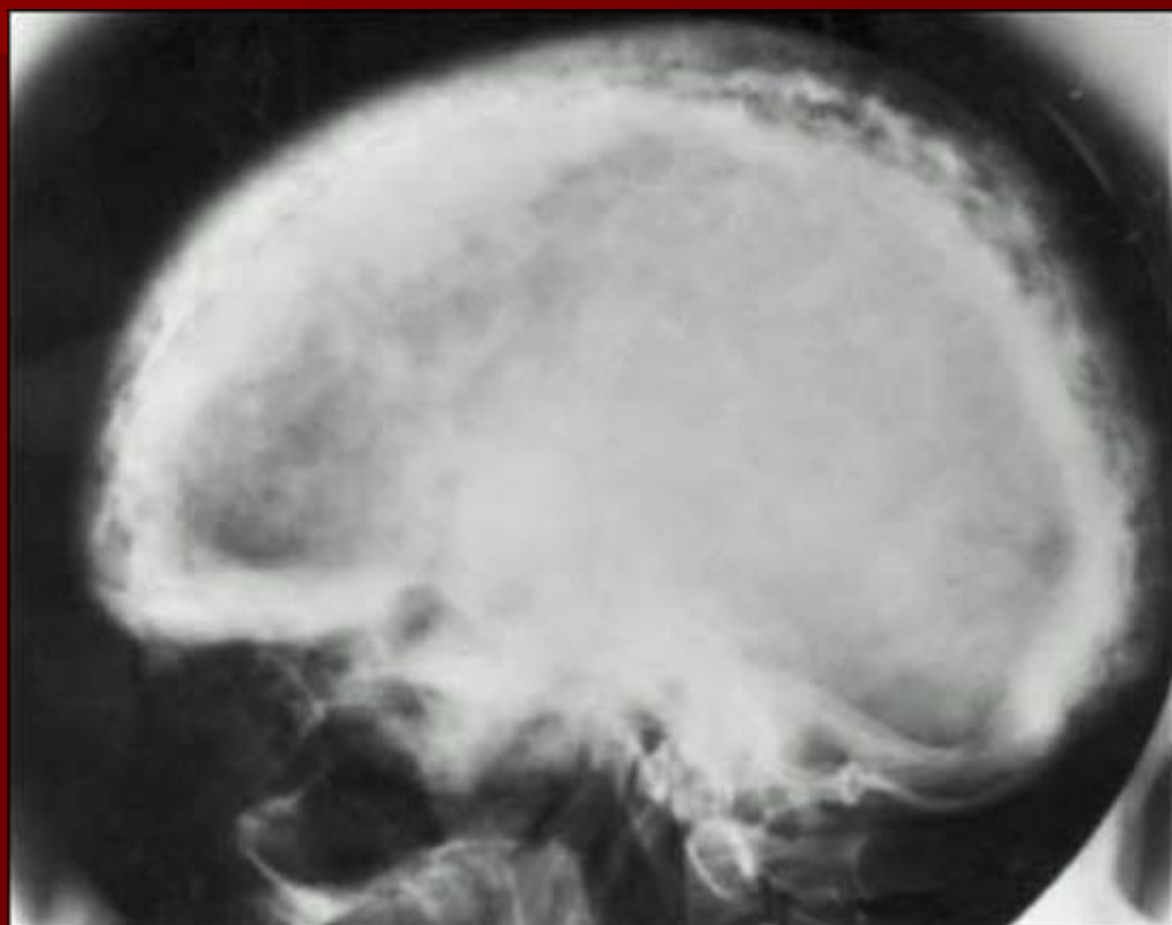
## **Localized**

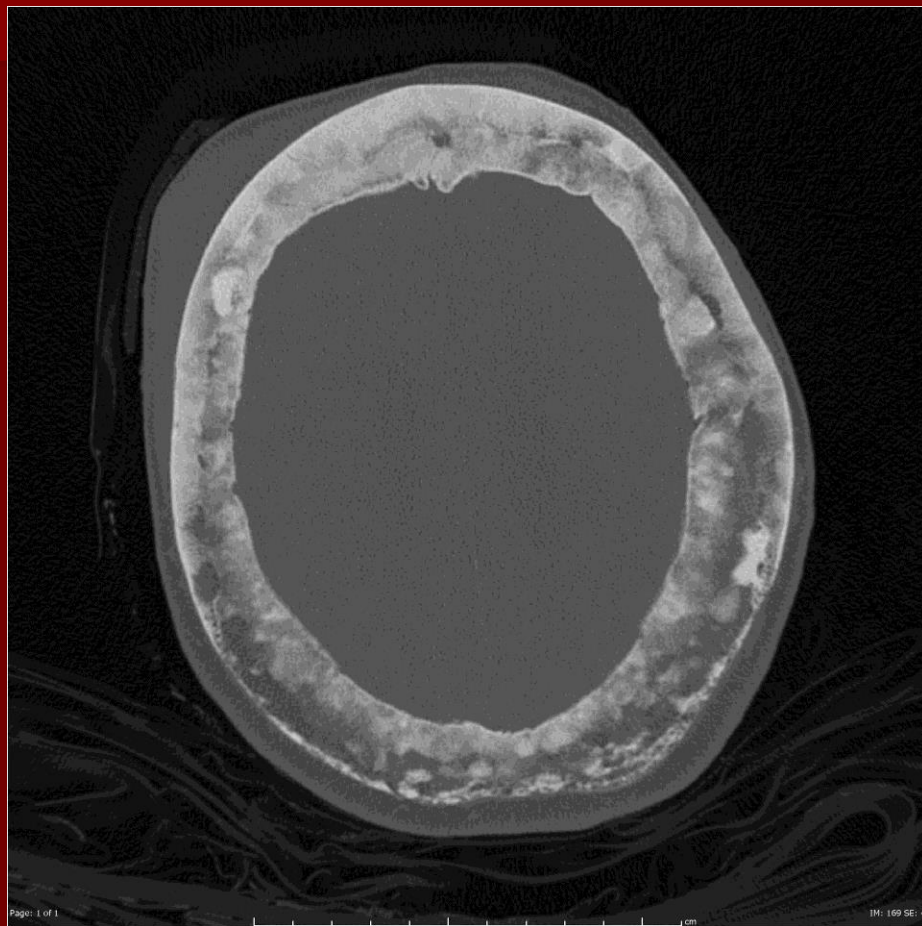
the commonest cause of bone sclerosis is •

**hyperostosis frontalis interna** ,a condition of no clinical significance, in which there's irregular thickening of inner table of the skull in frontal region sparing midline

Meningioma •

Osteosarcoma •





**Cerebral neoplasm can be classified in several ways**

**According to the location :-**

**1-Intraxial (within the brain parenchyma)**

**2-Extra axial,out side the brain tissue (in the surrounding meninges,subarachnoid,subdural ,epidural or within the bony calvariam**

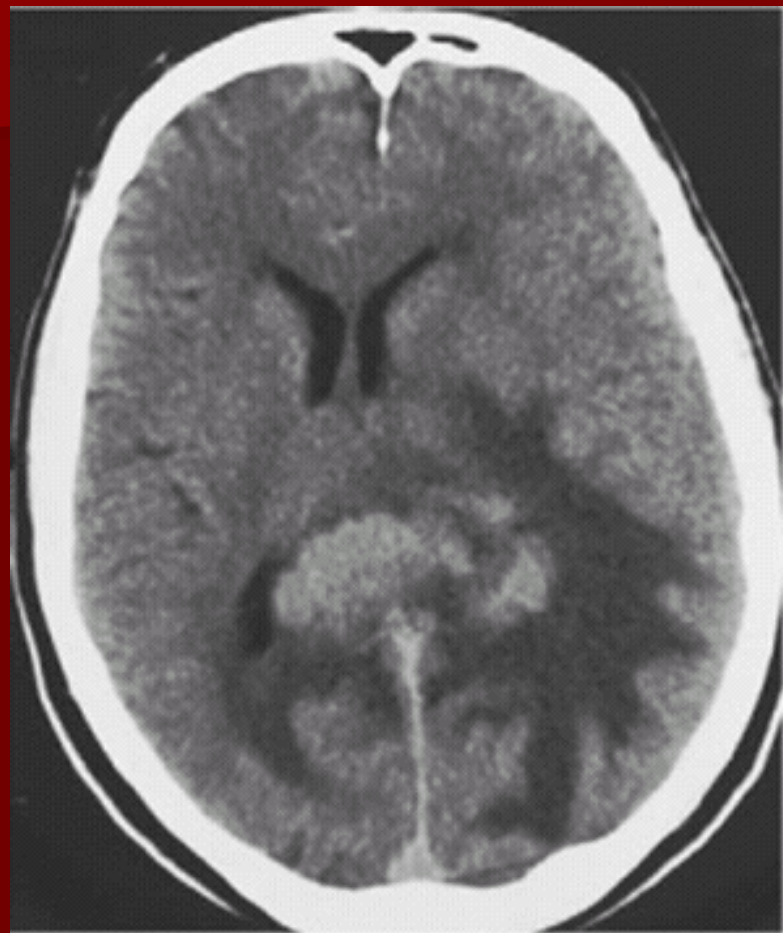


**Also the tumors can be localized as to compartment of brain within which it arise into supratentorial, sellar, suprasellar and infratentorial.**

## ***CT- scan***

**Observation are made of density of tumours prior to contrast and after it, most paranchymal tumours are hypodense indicating increase fluid with it ,hyper density in tumours raises one of three possibilities either**

- 1-Bleeding(glioblastoma multiforma)**
- 2-Calcification (craniopharangioma)**
- 3-Hypercellular tumors (lymphoma)**



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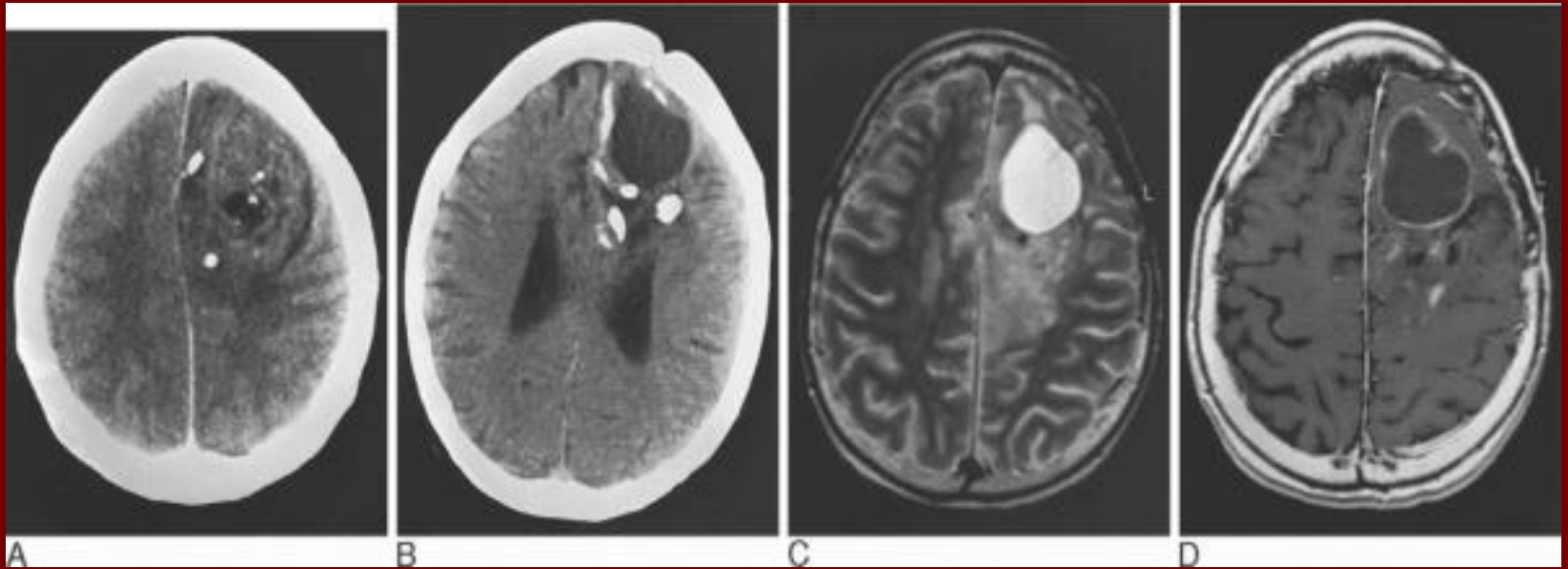


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# ***Appearance by MRI***

**Usually sequences used in MRI are T1, T2 weighted images, most tumours appear hypointense on T1 weighted images lower than the grey matter and hyperintense on T2 weighted images**

# Oligodendroglioma



***Metastasis***



**Metastasis to the brain, skull and meninges can occur in most forms of systemic cancer .**

## ***CT-scan appearance***

**The CT- scan appearance of hematogenous metastasis in adult in grey-white matter junction ,seen most typically as zone of vasogenic oedema within white matter surrounding much smaller areas that are denser, varying from hypodense to isodense to increase density relative to cortical grey matter.**

**Most of secondaries multiple.**

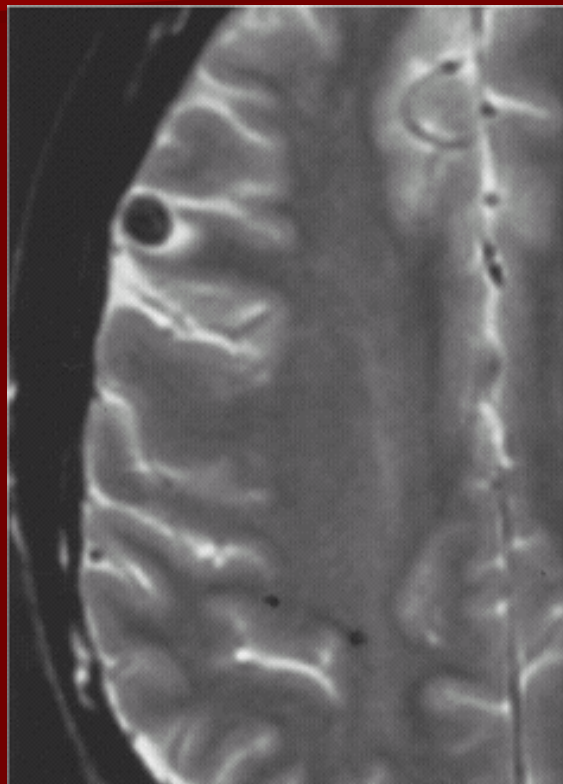
**Following contrast ,most secondaries enhances ,**

**Pattern of enhancement quite variable depending on whether secondaries is solid which is densely enhances or centrally necrotic which have ring like appearancec .**

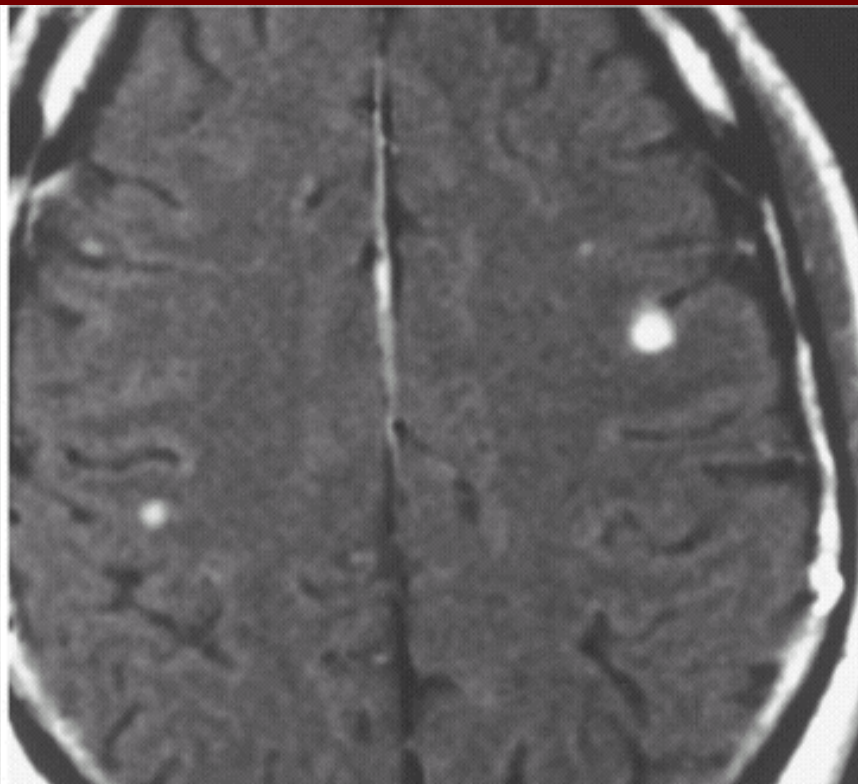
**.Some secondaries solitary similar to primary tumour**

## ***MRI appearance***

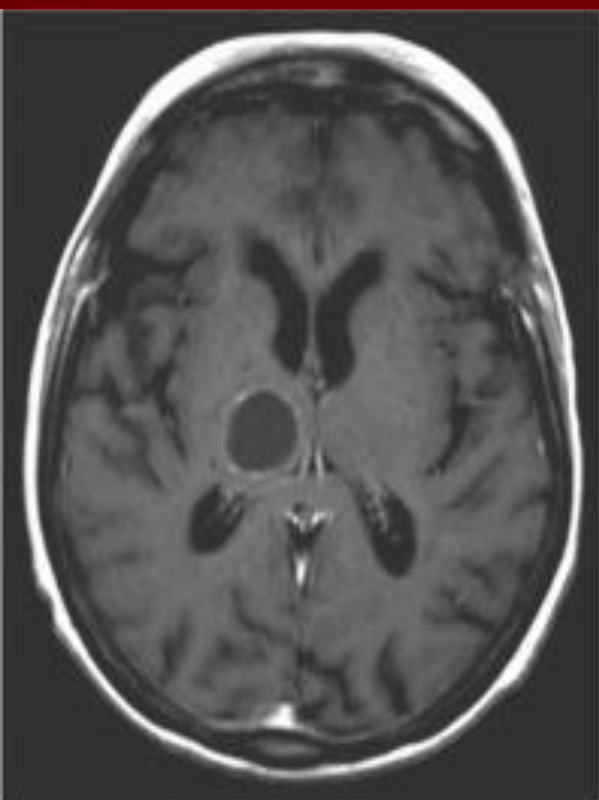
**Appearance are variable but most are hypointense on T1 and hyper intense on T2 weighted images with similar CT –scan enhancement pattern.**



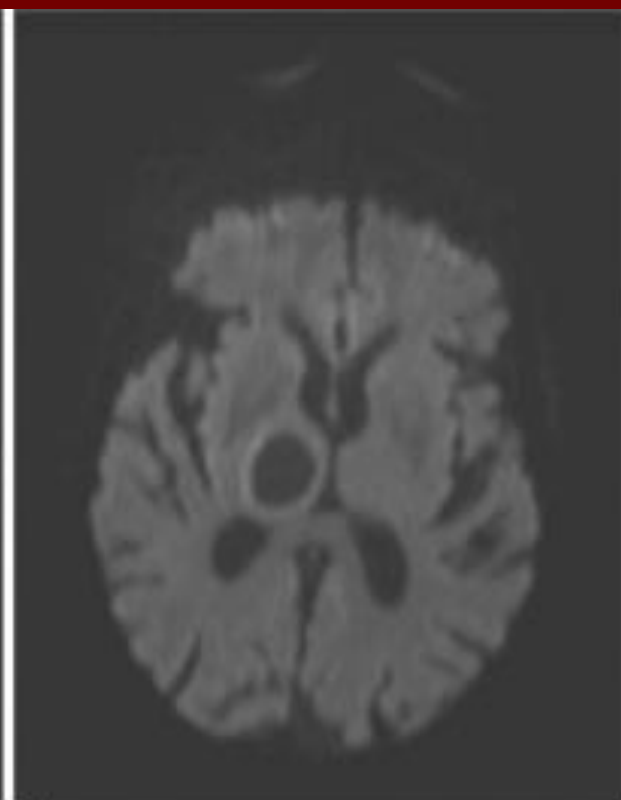
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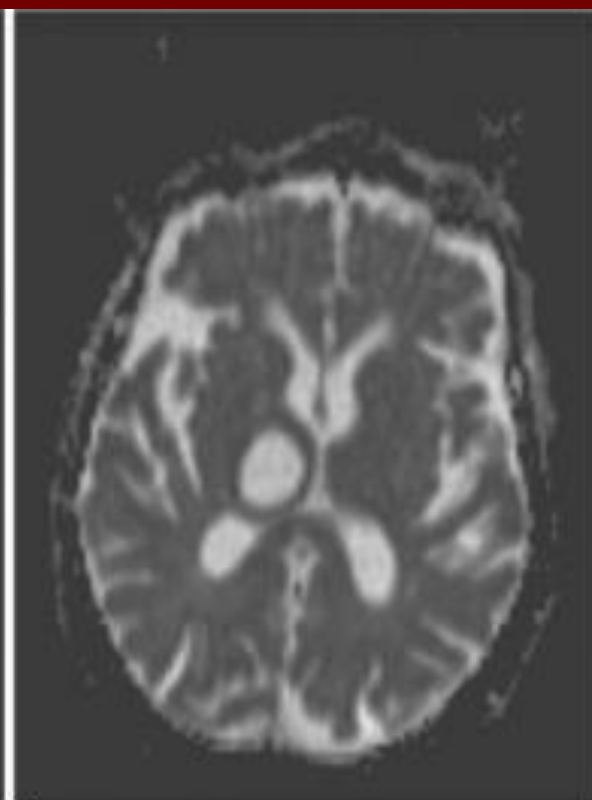
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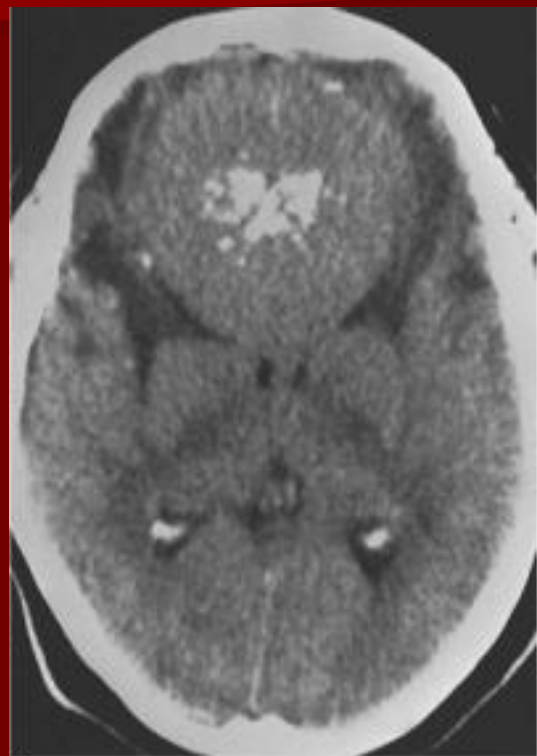


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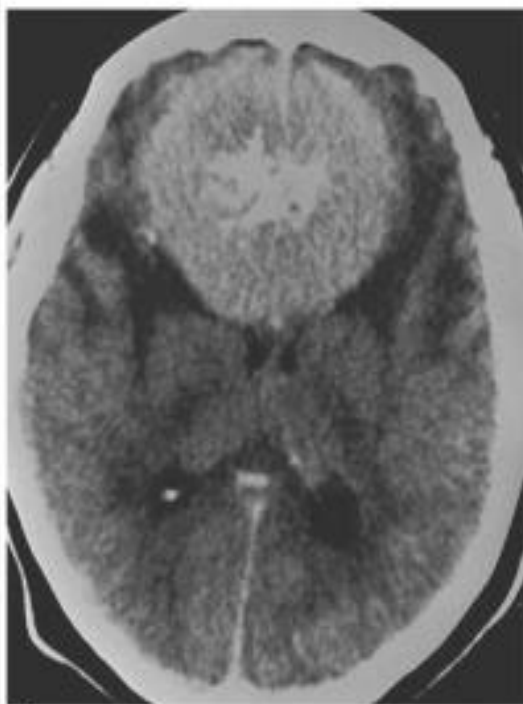


# Meningioma

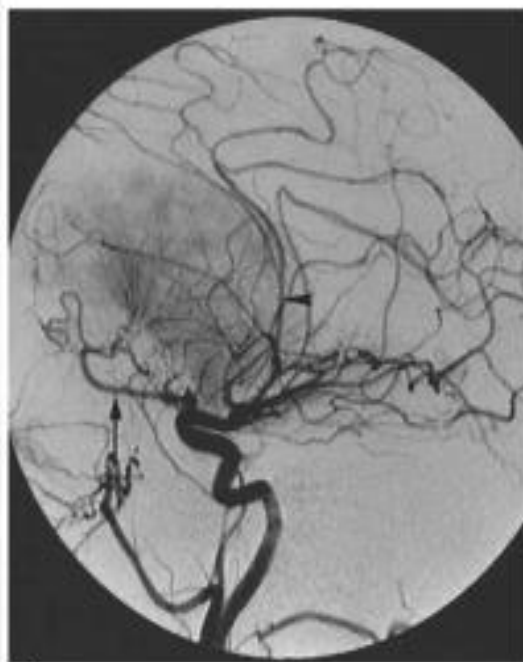




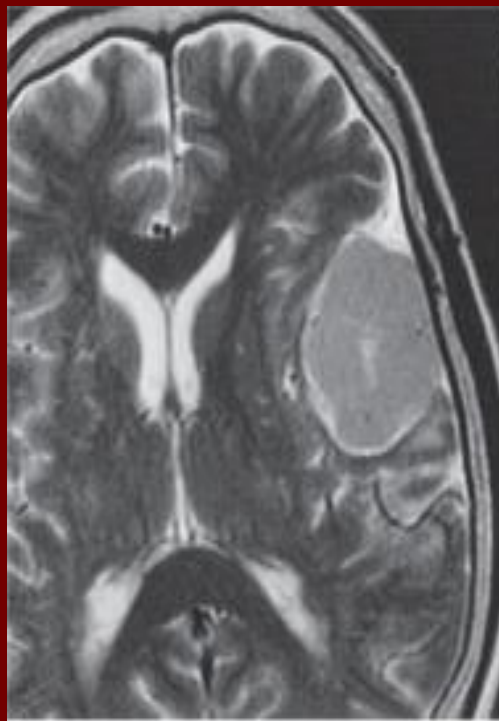
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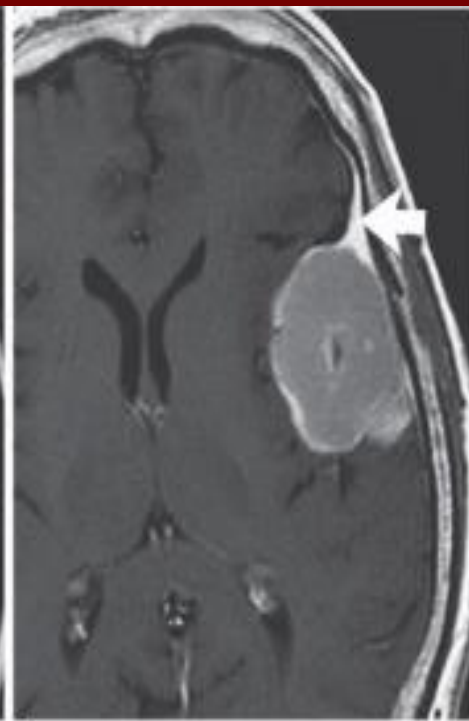
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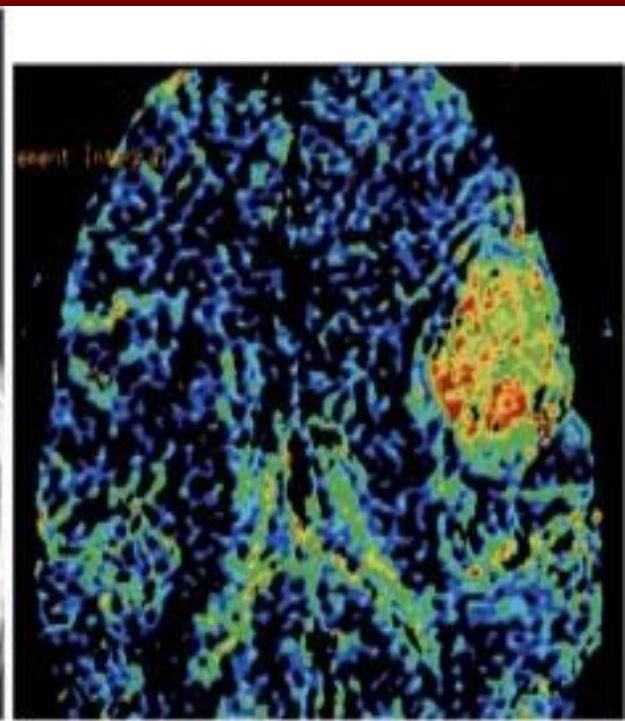
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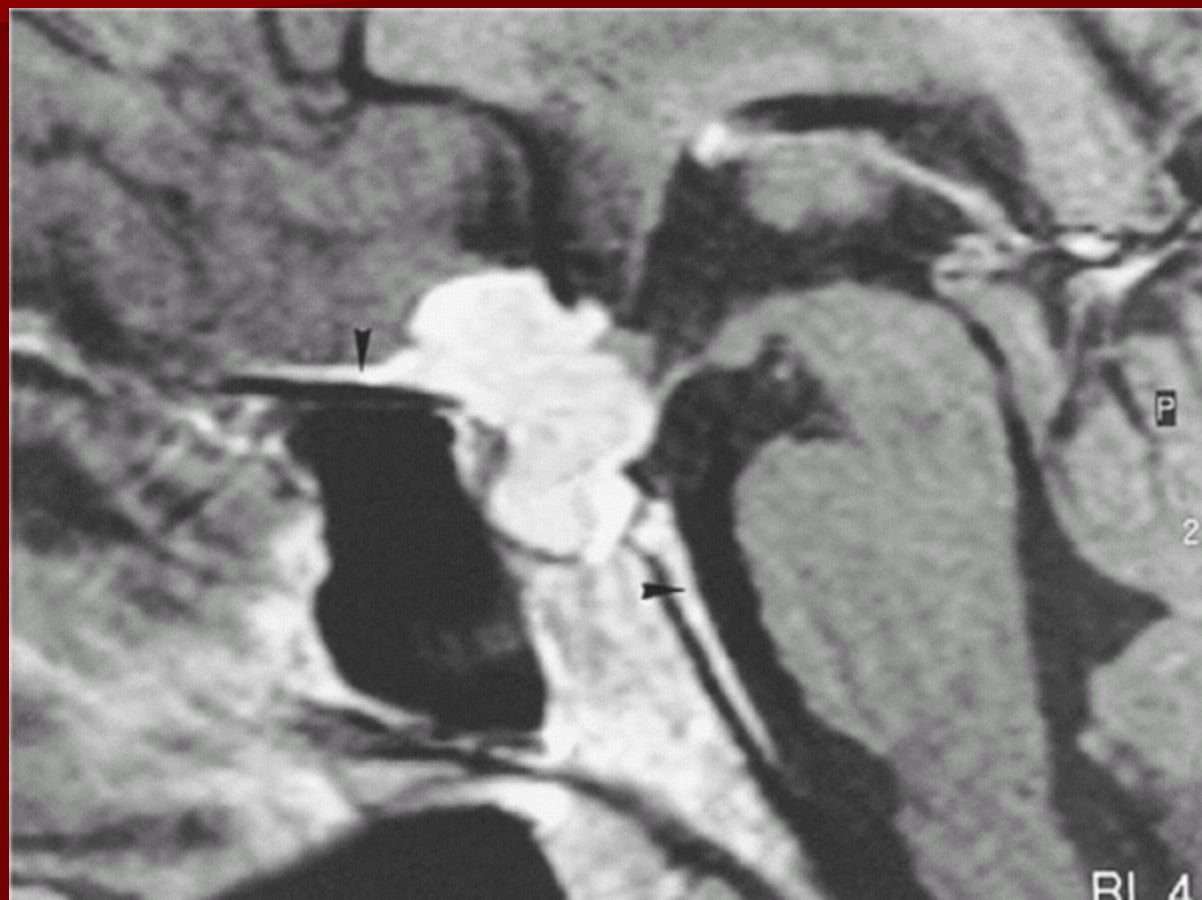
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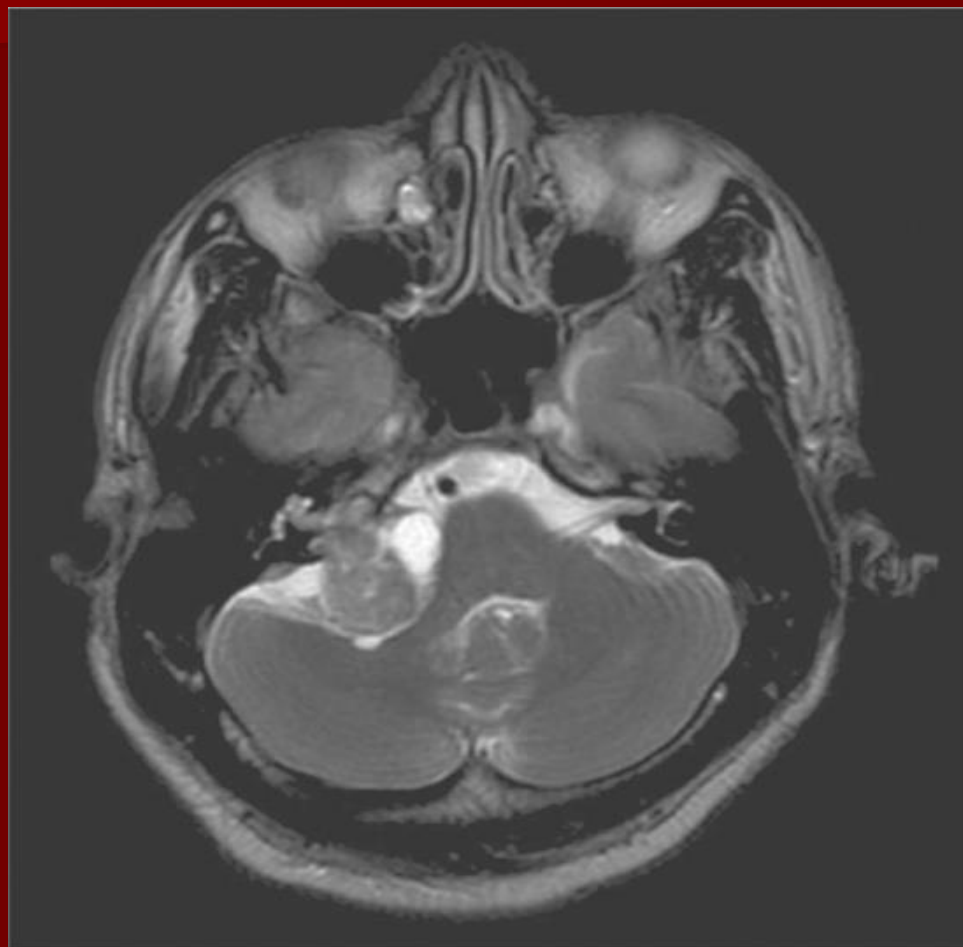


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# ***Infection***

**In acute meningitis CT and MRI are usually normal.**

**CT scan -done prior to lumbar puncture is only essential if theres evidence of raised intracranial pressure ,focal neurological signs or changes in conscious level .**

**The CT-scan may show hydrocephalus in such patients .**



## ***Encephalitis***

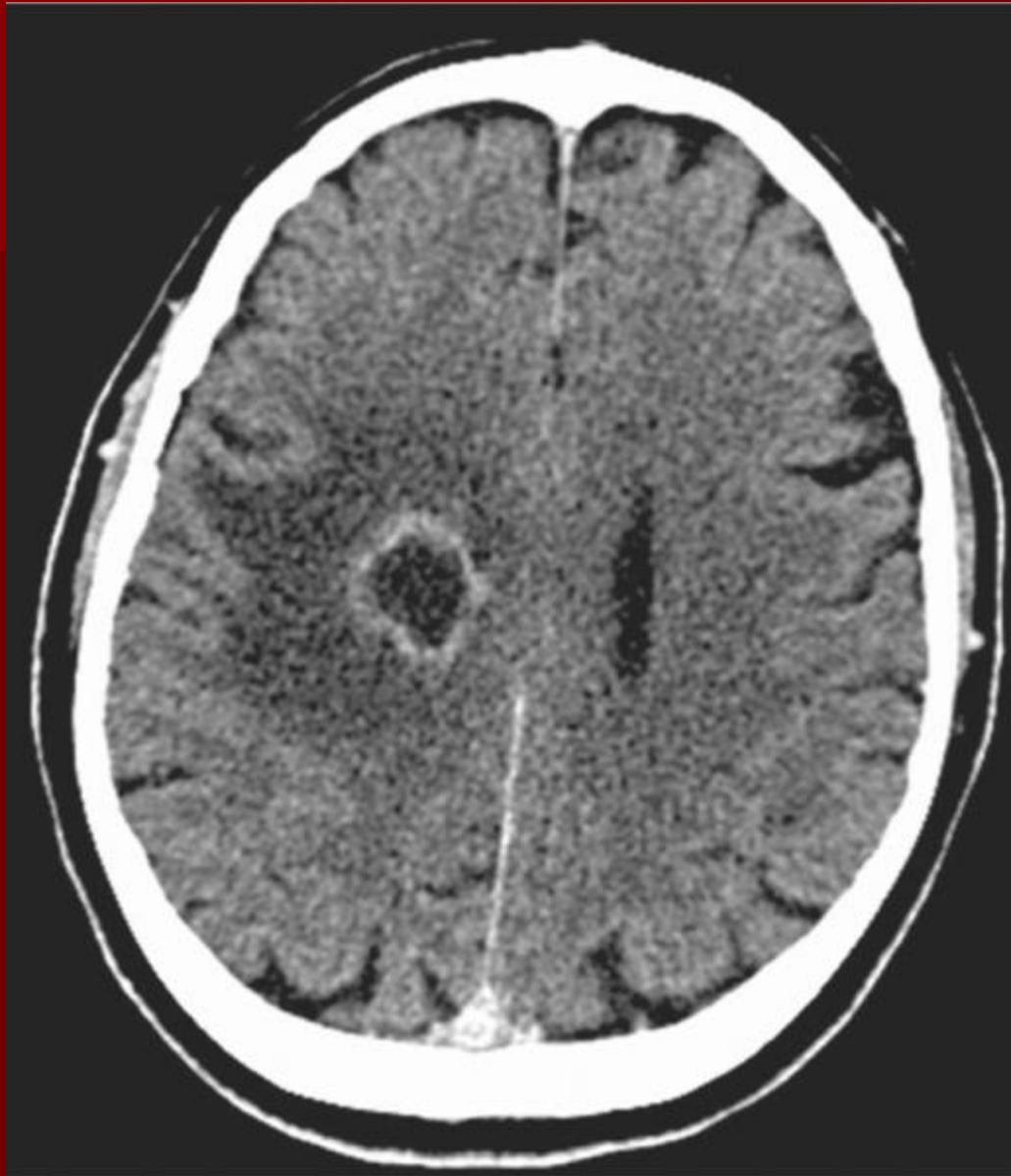
**Usually caused by virus, CT and MRI show unilateral or bilateral focal abnormal areas often in a characteristic distribution appearing as low attenuation on CT and high signal on T2 weighted MRI images.**

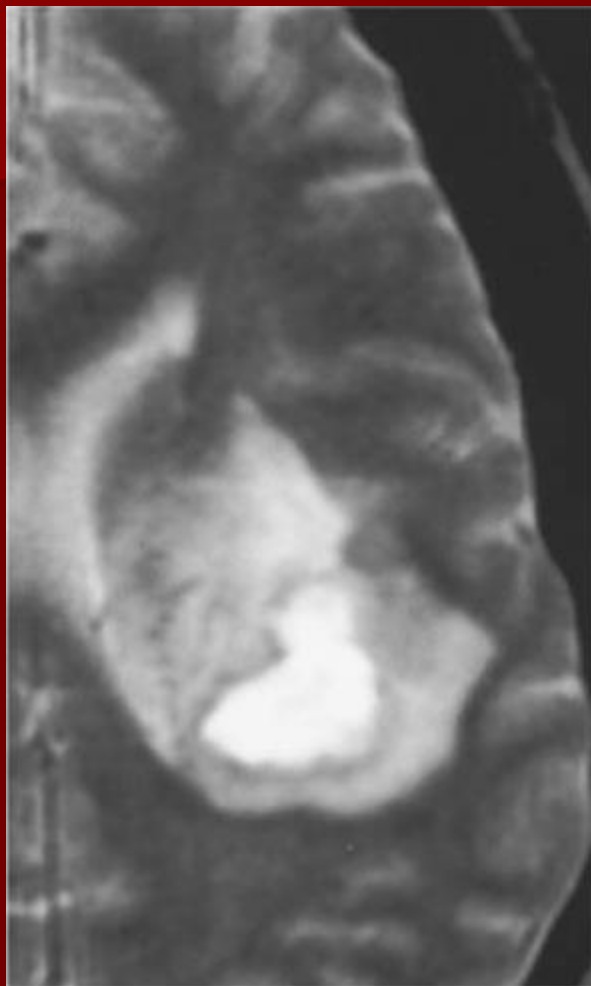
# Abscess

***An abscess* can caused by pyogenic, tuberculous, fungal or parasitic organism.**

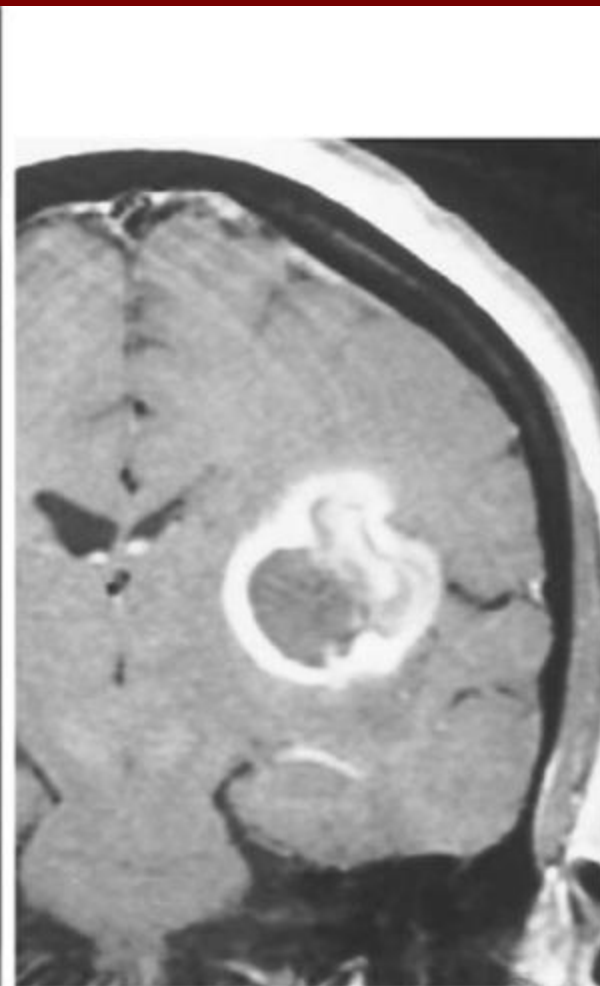
**Necrosis and pus formation occure in center of the abscess which appears as low density lesion in CT –scan .**

**The wall of abscess enhances with contrast and may be surrounded by oedema giving ring enhancement pattern ,similar changes seen in MRI**

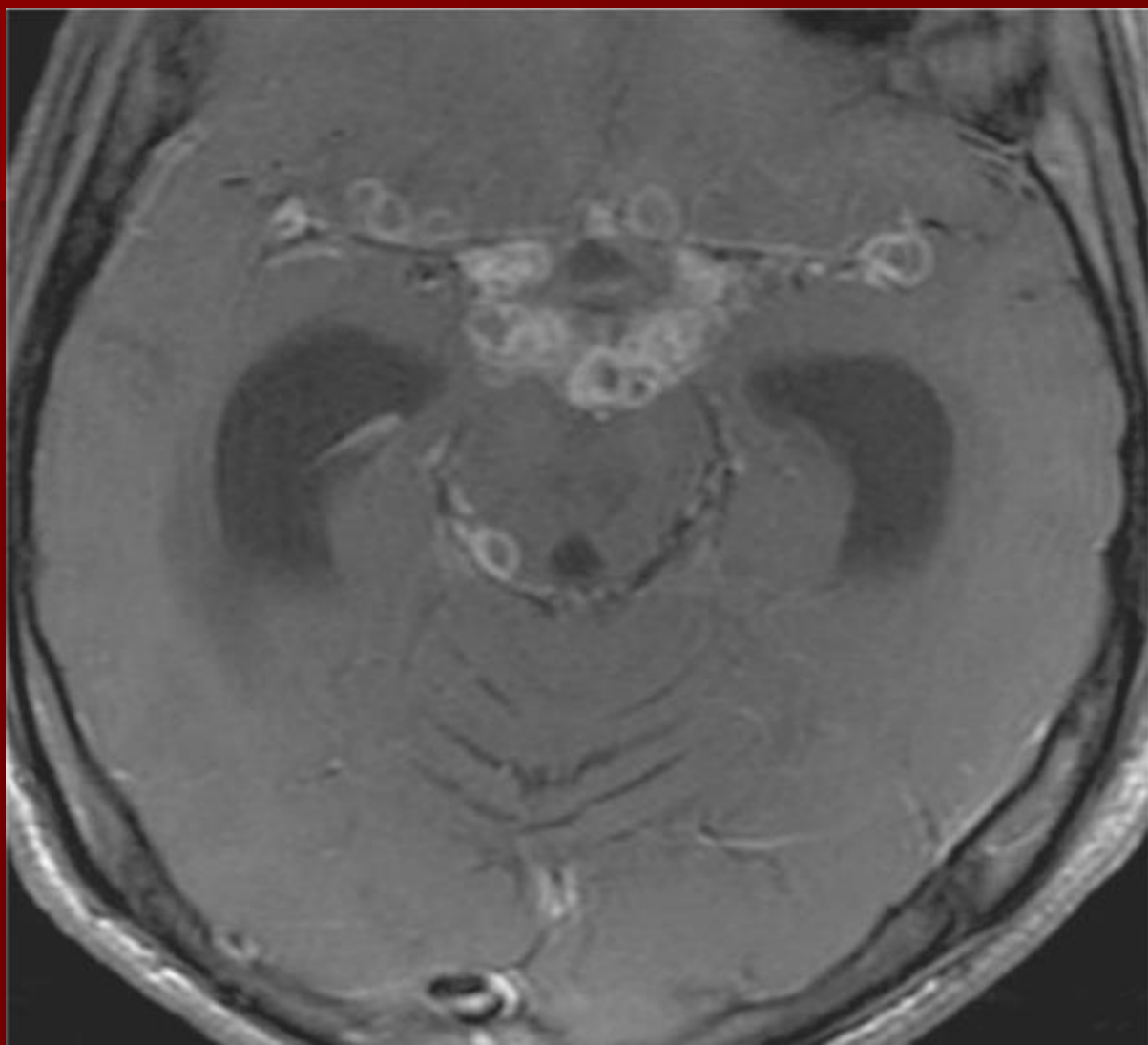


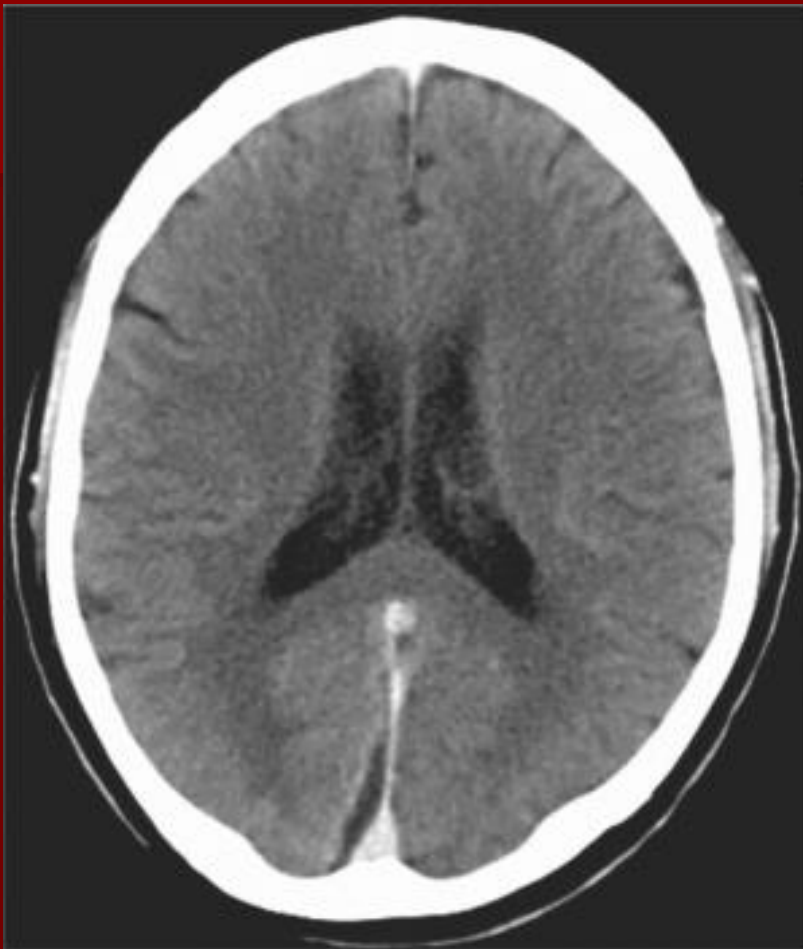


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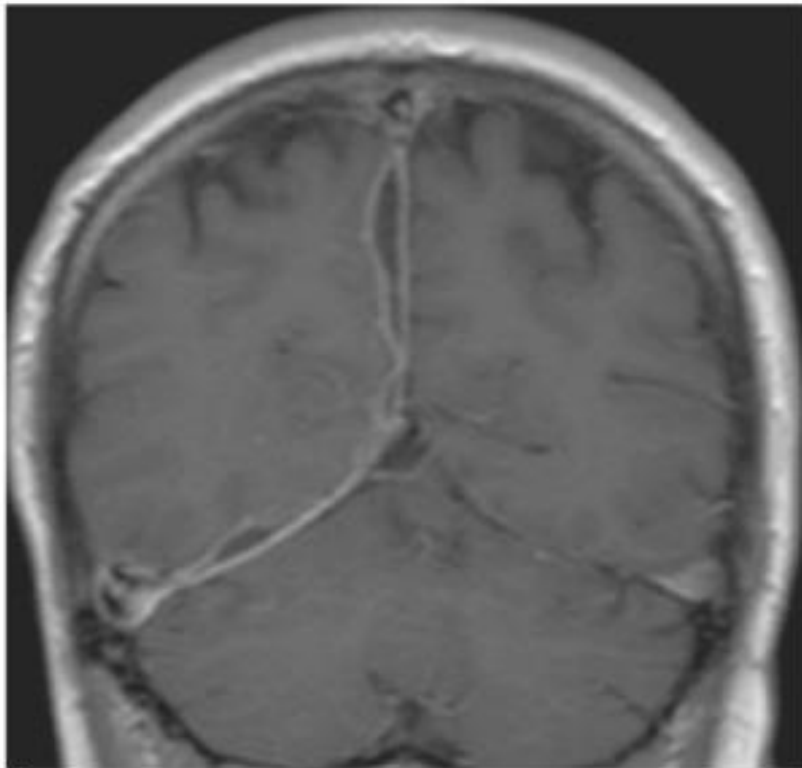


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# **Multiple sclerosis**



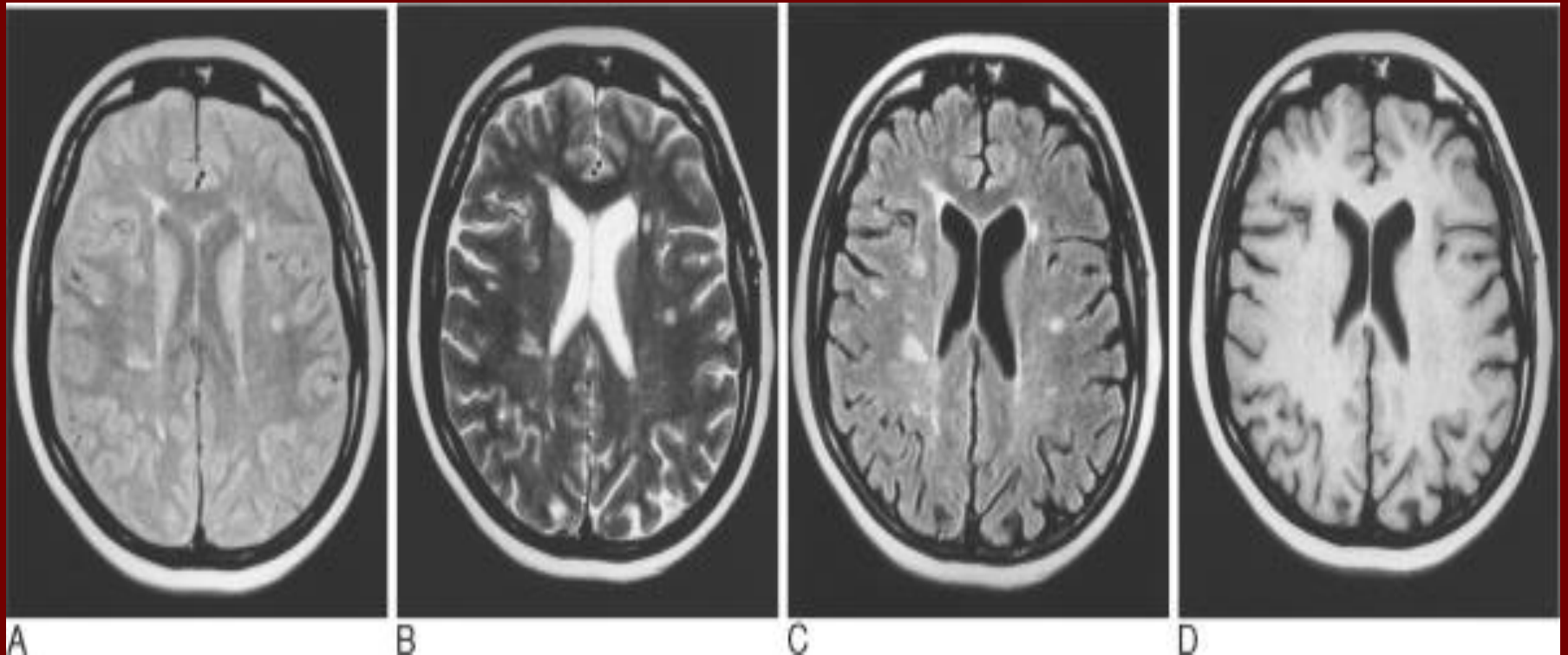
## ***Multiple sclerosis***

**Disease of young adult characterise by disseminated plaques of demyelination and gliosis,their site usually in periventricular,optic pathway,brainstem,cerebbelar white matter and pudence and spinal cord.**

**CT :- may show no abnormality but sometime low density areas may seen in acute stage**

**MRI :- is far most sensitive than CT in demonstration of MS plaques, the characteristic appearance is that of periventricular nodular hyperintense lesion on T2-weighted images.**

**Patient with multiple sclerosis with plaques of demyelination shown on (A) fast spin-echo (FSE) proton density; (B) FSE T2; and (C) FSE FLAIR. There is no discernible abnormality on T1-weighted images without contr**



# Ageing

**Changes in CT and MRI are**

**1- Atrophy of brain occurs resulting in dilatation of ventricle and cortical sulci .**

**2- Ischemia gives rise to low attenuation areas in deep white matter .**

# **Dementia**

**In Alzheimer s disease ,the commonest form of dementia**

**CT and MRI shows dilated ventricles,widening cortical sulci and ill defined white matter abnormalities .**

**Atrophy of temporal lobe occurs before generalized atrophy .**



# Normal 65 year old

