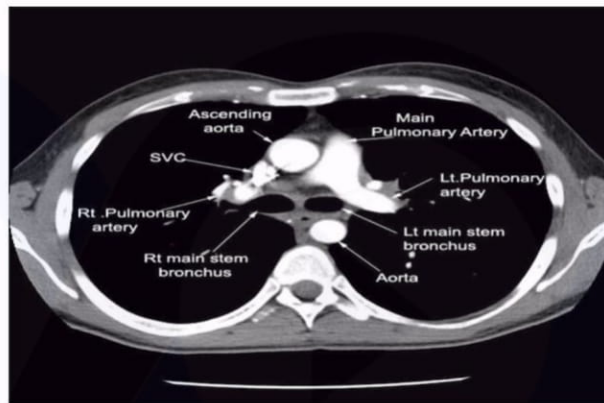


CT Scan Anatomy and Key Structures

00:00:13

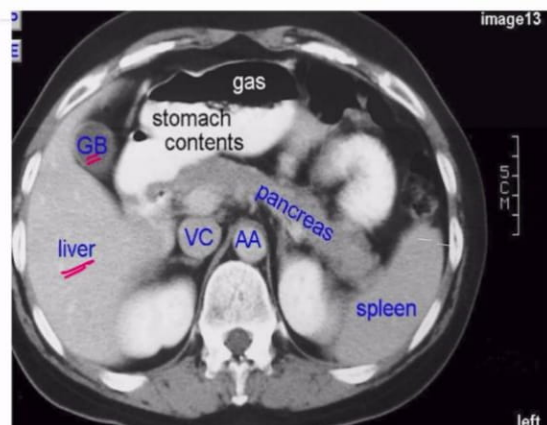
- **Mediastinum:**

- At the level of the neck vessels, the ascending aorta is close to the sternum on the right.
- The superior vena cava is posterior and to the right of the ascending aorta.
- The main pulmonary artery is to the left.
- The main pulmonary artery divides into the right and left pulmonary arteries.
- The descending aorta is to the right of the ascending aorta.



- **Abdomen:**

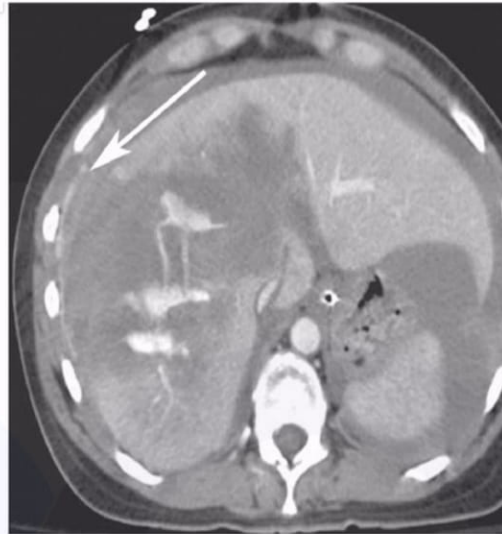
- The liver and gallbladder are on the right side.
- The spleen is on the left side.
- The right and left kidneys are visible.
- Triangular-shaped adrenal glands (suprarenal glands) are near the kidneys.
- The pancreas is present.
- The descending aorta is between the right and left crus of the diaphragm.
- The vena cava is to the right of the aorta.
- The portal vein is posterior to the neck of the pancreas.



CT Scan in Trauma

00:02:50

- **Hepatic Injury:** Contrast extravasation from the liver suggests hepatic injury, often with a "bear claw" appearance.



- **Splenic Injury:** Contrast blush from the spleen suggests splenic injury.

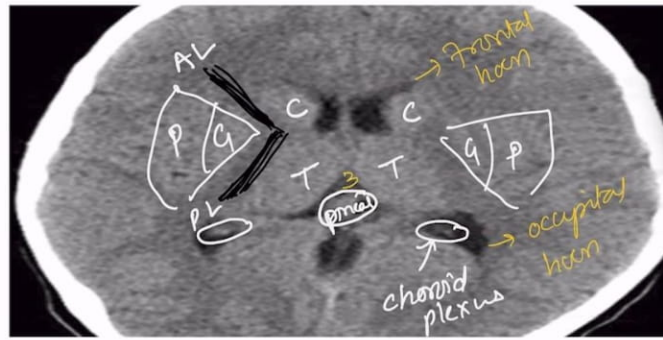


- **Blunt Trauma:** Contrast CT is used to identify the organ of injury by detecting contrast leaks.

Neuroimaging – Basal Ganglia

00:04:02

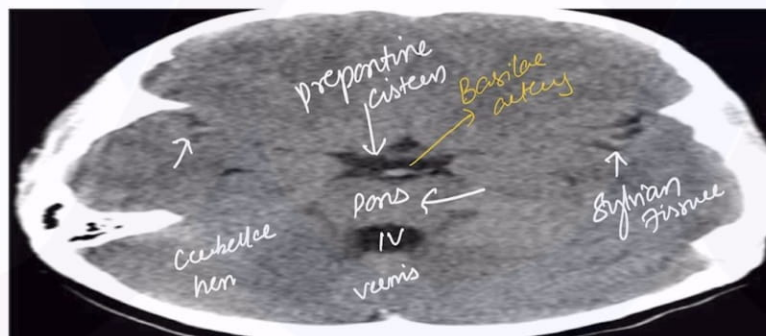
- The frontal horn of the lateral ventricle is visible.
- The occipital horn of the lateral ventricle is visible.
- The caudate nucleus abuts the frontal horn.
- The thalamus is on either side of the third ventricle.
- The lentiform nucleus has two parts: the putamen (outer) and globus pallidus (inner).
- The anterior limb of the internal capsule is between the caudate and lentiform nuclei.
- The posterior limb of the internal capsule is between the lentiform nucleus and the thalamus.
- The pineal gland is behind the third ventricle.
- The choroid plexus is within the occipital horns of the lateral ventricles.



Neuroimaging – Pons and Midbrain

00:06:01

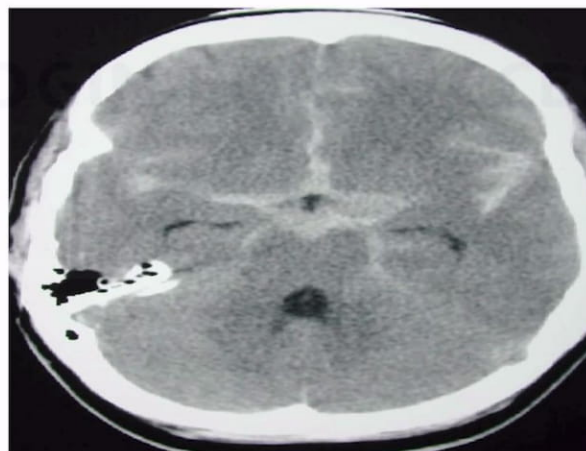
- The basilar artery is an important landmark to identify the pons.
- The prepontine cistern is the CSF space anterior to the pons.
- The fourth ventricle is the CSF space posterior to the pons.
- The Sylvian fissure or lateral sulcus is a large sulcus.



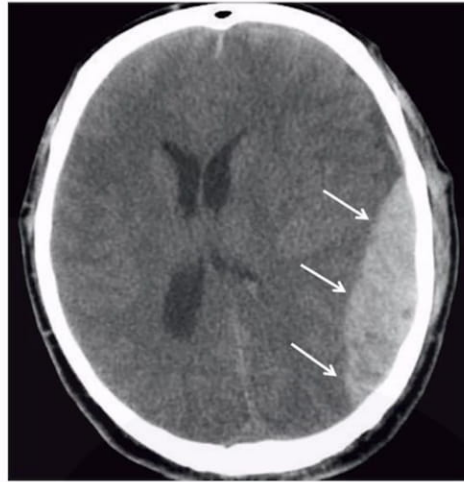
Neuroimaging – Head Trauma

00:07:04

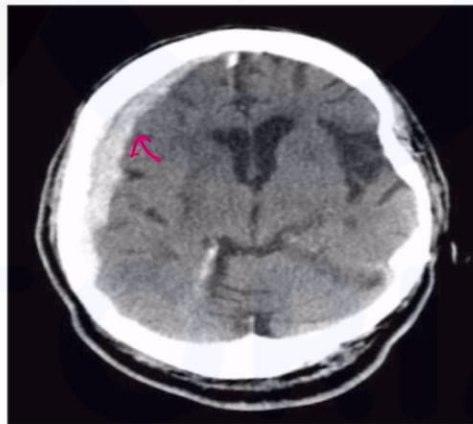
- **Subarachnoid Hemorrhage:** Hyperdense sulci, Sylvian fissures, and basal cisterns. A "star of death" appearance may be seen in the basal cisterns.



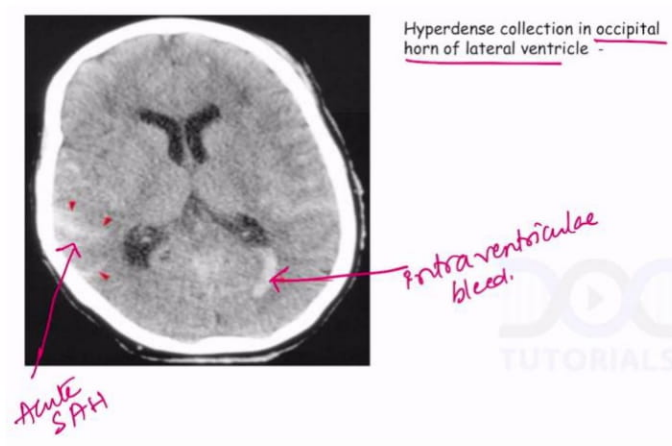
- **Epidural Hematoma:** Biconvex-shaped, does not cross suture lines. A "swirl sign," which is a hyperdense area within the hematoma, indicates active bleeding. Craniotomy done



- **Subdural Hematoma:** Concentric, concave-convex, crosses sutures but not the midline. Acute bleeds are hyperdense, as are chronic bleeds.



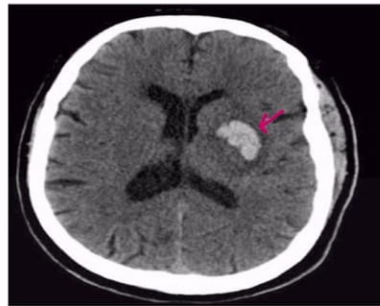
- **Intraventricular bleed:** Hyperdense collection within the occipital horns of the lateral ventricle.



Intracranial Hemorrhage

00:10:58

- **Hypertensive Bleeds:** Most commonly occur in the putamen due to ruptured Charcot-Bouchard aneurysms.

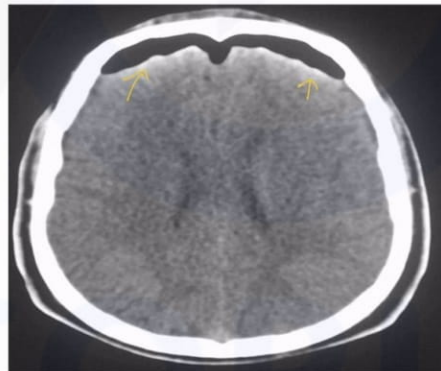


Hyperdense hemorrhage in Left Putamen - *hypertensive bleed.*

Rupture of Charcot Bouchard Aneurysm

*Non HTN pt
lobar Hg in young →*

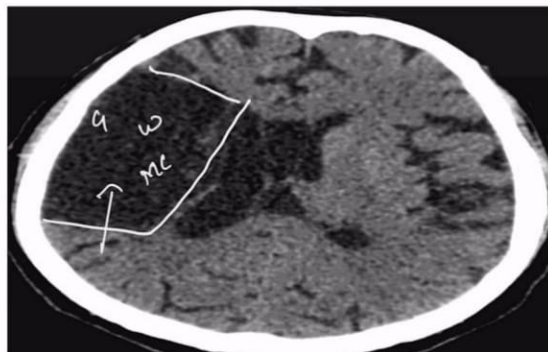
- **Lobar Hemorrhage:**
 - In young, non-hypertensive patients, consider arteriovenous malformation (AVM) rupture.
 - In elderly, non-hypertensive patients, consider cerebral amyloid angiopathy.
- **Tension Pneumocephalus:** Air accumulation will produce black areas giving a "Mount Fuji" sign.



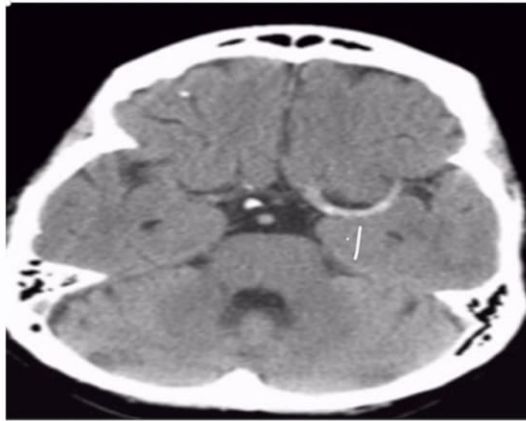
Cerebral Infraction

00:13:03

- **Middle Cerebral Artery (MCA) Infarct:** Wedge-shaped, in the MCA territory.
 - **Chronic Infarct:** Dilatation of the adjacent ventricle (due to gliosis).

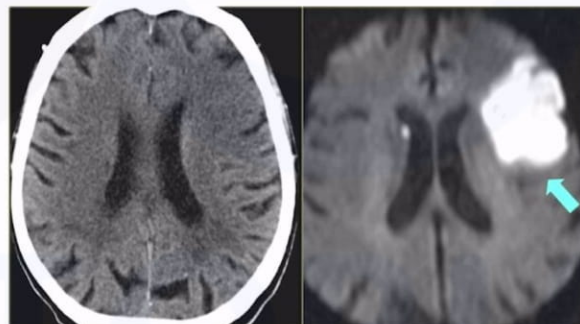


- **Acute Infarct:** May cause effacement of sulci and ventricles. Hyperdense MCA sign may indicate thrombus.



- **Acute Infarct Imaging:**

- Non-contrast CT is the first investigation for hemiplegia/stroke to rule out haemorrhage.
- A normal CT should be considered as a **potential ischemic stroke**.
- Diffusion-weighted imaging (DWI) on MRI is the most sensitive for acute infarct.
- Hyperdense areas can signify acute hemorrhagic stroke.



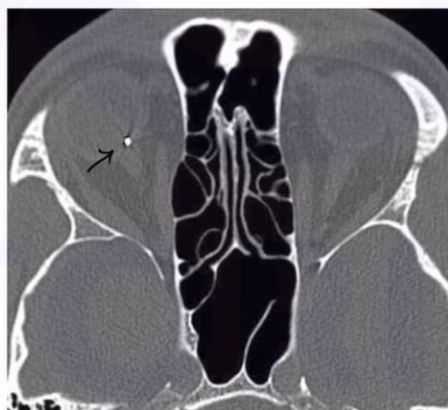
- **Lacunar Infarcts:** Small hyperdense areas in the basal ganglia region, caused by lipohyalinosis.



- **Thyroid Ophthalmopathy:** Fusiform enlargement of extraocular muscles, especially the inferior and medial rectus, with tendon splitting.



- **Optic Glioma:** Fusiform enlargement of the optic nerve. Associated with Neurofibromatosis type 1 (NF1).
- **Intraocular Foreign Body:** CT scan is the investigation of choice. MRI is contraindicated for metallic foreign bodies.



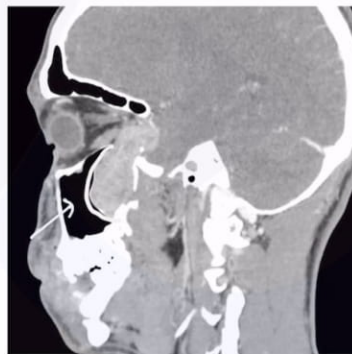
- **Retinoblastoma:** Intraorbital calcification.



- **Carotid Body Tumour:** Splaying of the external and internal carotid arteries, giving a "lyre sign". Can have a "salt and pepper" appearance on MRI.



- **Juvenile Nasopharyngeal Angiofibroma:** Causes a "Holman Miller sign" or "antral sign," with unequal maxillary antra due to anterior bowing of the posterior wall.



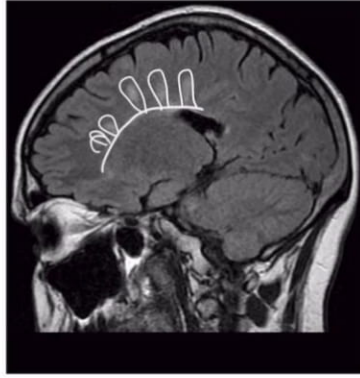
- **DOUBLE DENSITY SIGN** seen in allergic fungal sinusitis



Multiple Sclerosis

00:21:08

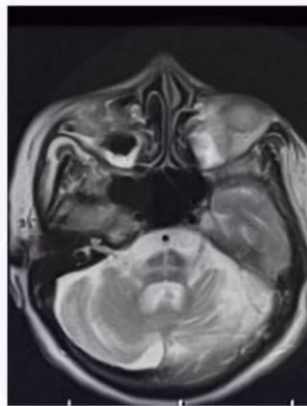
- Periventricular white matter hyperintensities, perpendicular to the ventricles, involving the corpus callosum.
- "Dawson fingers" are these hyperintensities projecting from the ventricles.
- Horseshoe or open ring enhancement patterns on MRI.
- MRI FLAIR is the preferred investigation.



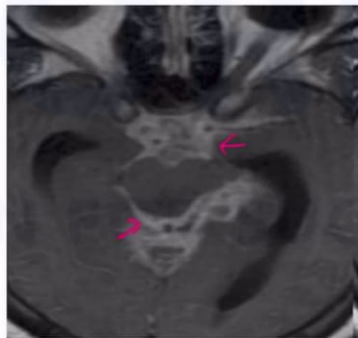
Other Neurological Conditions

00:22:28

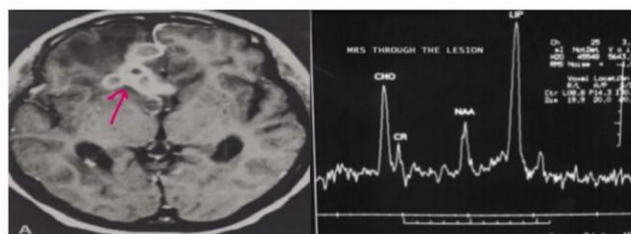
- **Multi-System Atrophy (type c):** "Hot cross buns" sign in the pons.



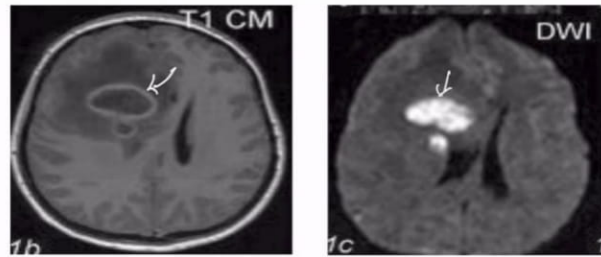
- **Tuberculosis Meningitis:** Basal exudates, hydrocephalus, and infarcts.



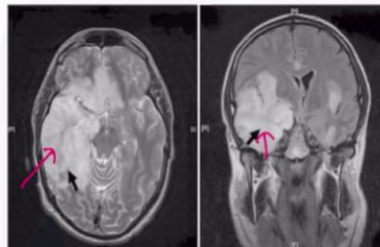
- **Tuberculoma:** Conglomerate ring-enhancing lesions with a lipid/lactate peak on MR spectroscopy.



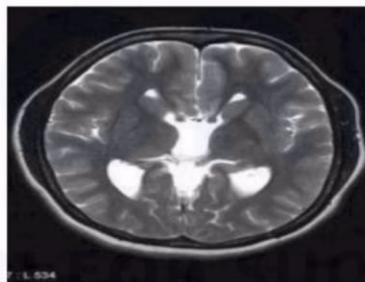
- **Cerebral Abscess:** Ring-enhancing lesion with diffusion restriction.
- **Toxoplasmosis:** Ring-enhancing lesion in AIDS patients.
- **Cryptococcus:** Bubble-like appearance on MRI in AIDS patients.



- **Herpes Simplex Encephalitis:** Temporal lobe involvement in a febrile patient.



- **Autoimmune/Limbic Encephalitis:** Temporal lobe involvement in cancer patients.
- **Agenesis of Corpus Callosum (aicardi syndrome):** "Racing car sign" on MRI, with increased CSF spaces. "Moose head" or "Viking helmet" appearance on coronal MRI.



- **Progressive Supranuclear Palsy:** Hummingbird sign on sagittal MRI, Mickey Mouse appearance on axial MRI. midbrain atrophy seen

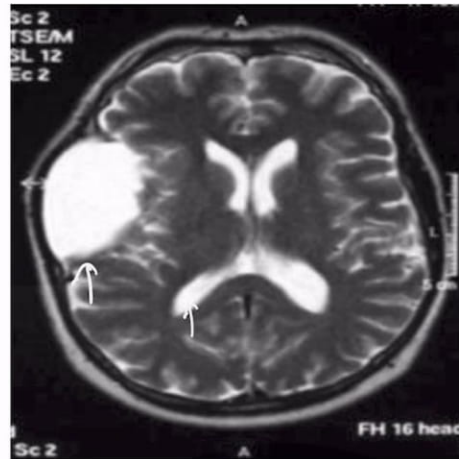


Humming bird sign



Mickey Mouse sign

- **Arachnoid Cyst:** Cystic lesion at the Sylvian fissure, not connected to the ventricle.

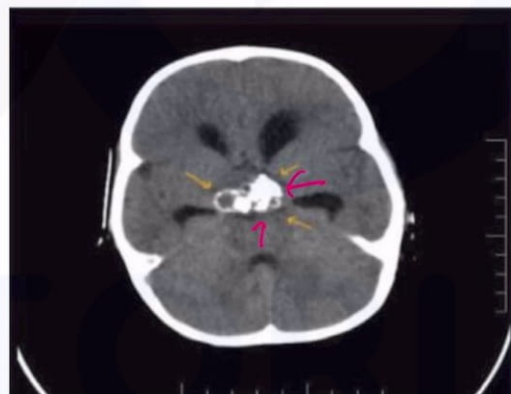


- **Schizencephaly:** Cystic lesion at the Sylvian fissure connected with the ventricle.

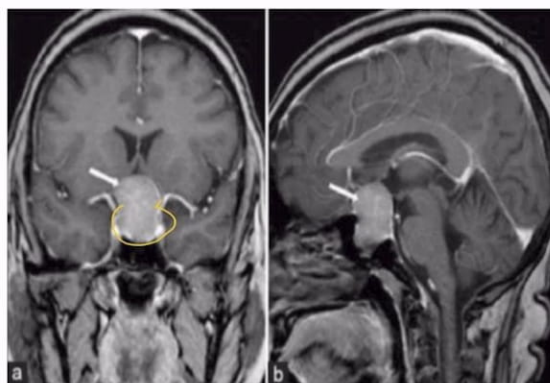
Brain Tumors

00:30:01

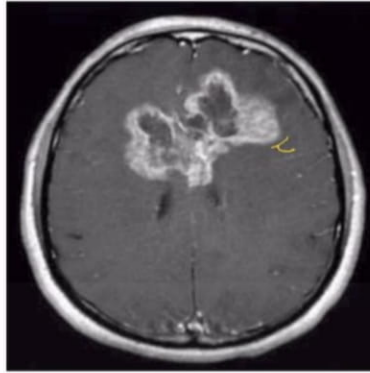
- **Craniopharyngioma:** Suprasellar calcification and solid-cystic lesion. T1 hyperintense due to protein-rich content.



- **Pituitary Macroadenoma:** Solid lesion in the sella, with "figure of eight" or "snowman" appearance.



- **Glioblastoma Multiforme (GBM):** Thick, peripheral enhancing lesion with central necrosis, crossing the corpus callosum. Butterfly glioma.

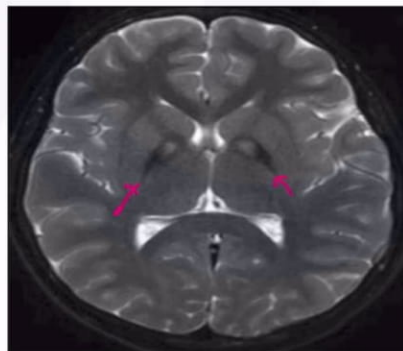


- **CNS Lymphoma:** Can cross the corpus callosum, especially in AIDS patients.

Degenerative Conditions

00:34:13

- **Pantothenate Kinase-Associated Neurodegeneration (PKAND):** "Eye of the tiger" appearance in the globus pallidus. (Haller-Venkovits disease)

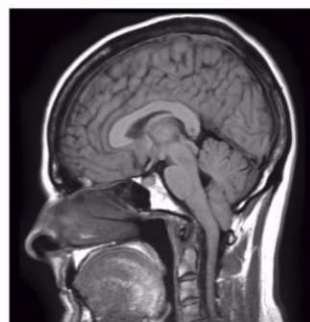
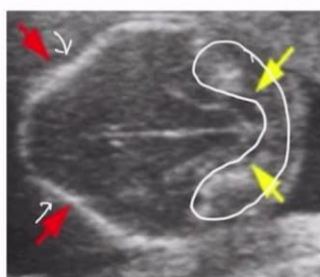


- **Metachromatic Leukodystrophy:** Degraded, laminated, Tigroid or "leopard skin" appearance of white matter.

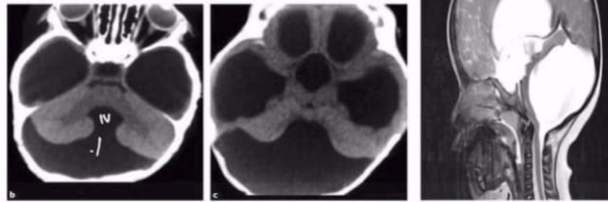
Congenital Malformations

00:35:45

- **Chiari Malformation:**
 - Cerebellar tonsillar herniation through the foramen magnum.
 - Banana sign: cerebellum wrapping around brainstem.
 - Lemon sign: anterior pinching and bossing of the frontal bone.
 - Small posterior fossa.



- **Dandy-Walker Malformation:** Agenesis of the cerebellar vermis with communication between the fourth ventricle and cisterna magna. Large posterior fossa.



Other

00:37:57

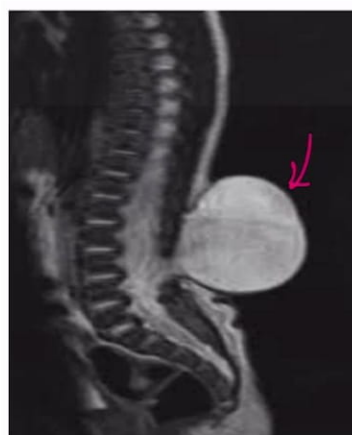
- **Orbital Floor Fracture:** Herniation of orbital contents into maxillary antrum, best viewed with Waters view X-ray. "Teardrop fracture."



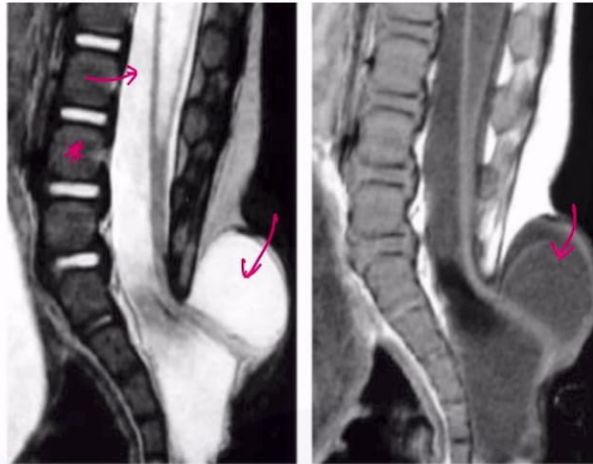
- **Syringomyelia:** Cystic area within the spinal cord, appears white on T2-weighted MRI and dark on T1-weighted MRI. associated with chiari 1



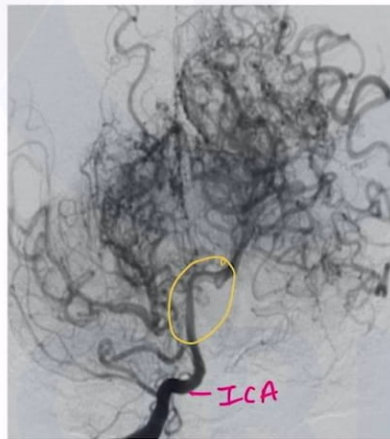
- **Meningocele:** Cystic area with no neural elements.



- **Myelomeningocele:** Cystic area in the spinal cord with neural elements. Associated with Chiari type 2 malformation.



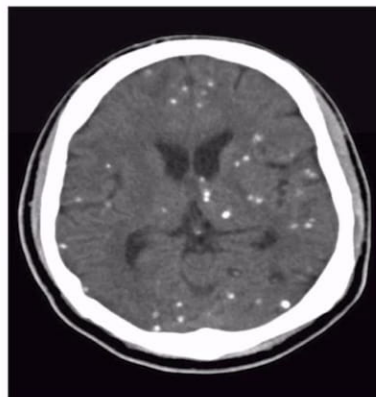
- **Moya Moya Disease:** Puff of smoke appearance on angiography due to chronic vasospasm of the internal carotid artery.



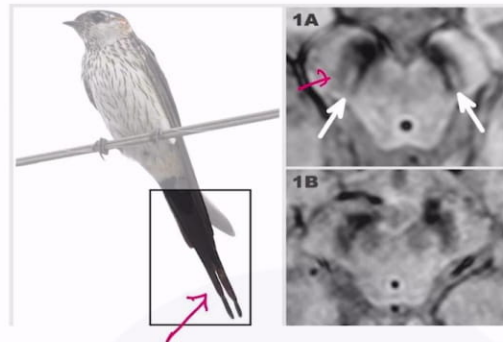
Important Radiology Sings

00:41:08

- **Neurocysticercosis:** starry sky appearance on CT brain.



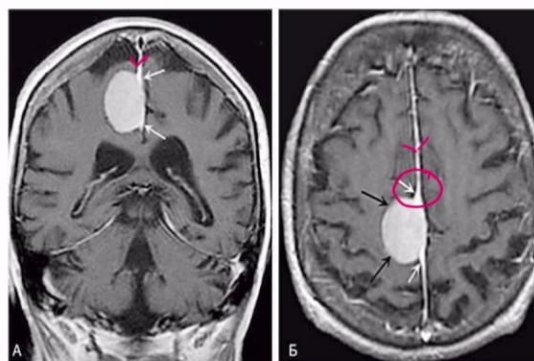
- **Acute Hepatitis:** starry sky appearance on ultrasound of the liver.
- **Burkitt's lymphoma:** Starry sky appearance on histopathology.
- **PSGN:** starry sky on immunofluorescence
- **Parkinson's Disease:** Absent swallow tail sign of the substantia nigra on MRI.



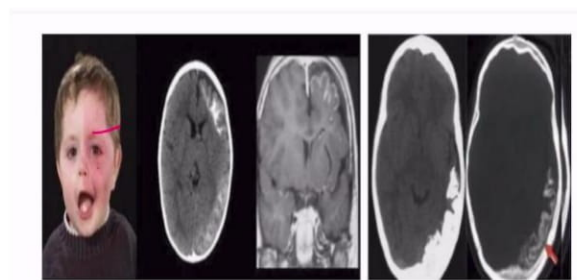
- **Wilson's Disease:** "Face of the giant panda" sign on MRI, with copper deposition in the midbrain, sparing red nucleus



- **Meningioma:** Dural tail sign, "mother-in-law" sign (early enhancement and delayed washout).



- **Sturge-Weber Syndrome:** Leptomeningeal vascular malformation and tram-track calcifications.



- **Lissencephaly:** Figure of eight appearance of the brain due to a rudimentary Sylvian fissure with no gyri.



TUTORIALS

LOGIN FOR SUCCESS

