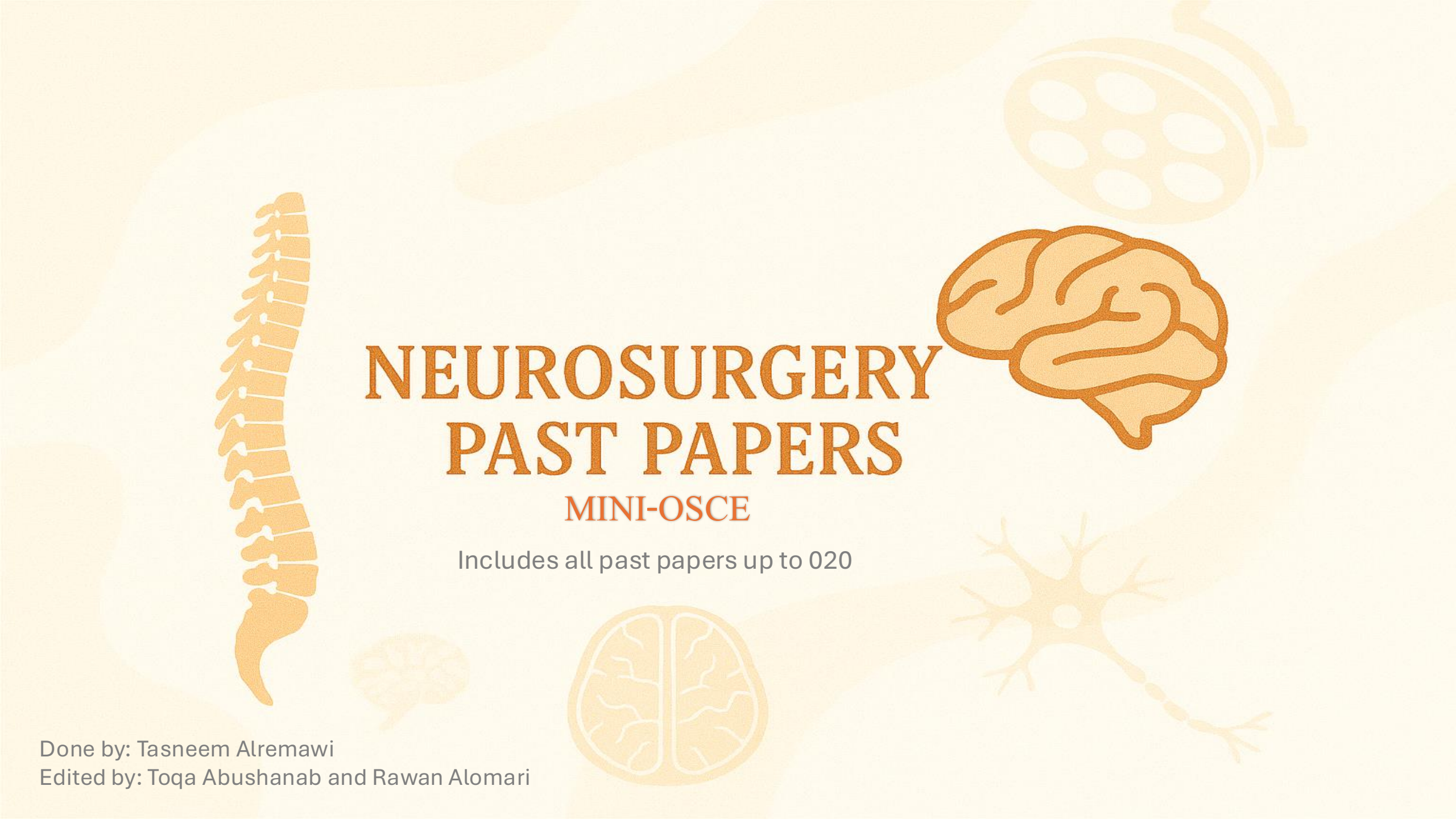




NEUROSURGERY PAST PAPERS

MINI-OSCE

Includes all past papers up to 020

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Edited by: Toqa Abushanab and Rawan Alomari

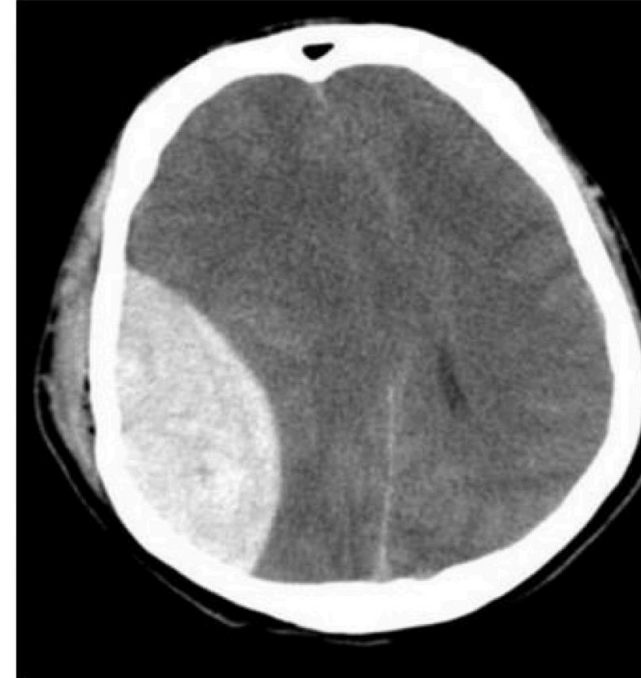
Q1.

What is diagnosis ?

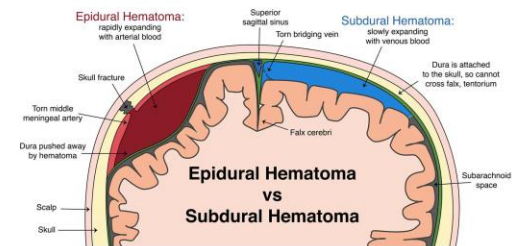
Acute epidural hematoma.

Definitive treatment?

Craniotomy & evacuation.



Hyperdense: acute
Isointense: subacute
Hypodense: chronic



Q.2

What is the diagnosis?

Lumber disc herniation with nerve root compression

What is your management?

conservative treatment (NSAIDs, physiotherapy) for 4–6 weeks. If symptoms persist, then surgical excision is planned (discectomy).

If the patient had a paresthesia, urinary retention, stool incontinence what we call this syndrome?

Cauda equina syndrome.



Lumbo-sacral MRI T2 sagittal and axial

Feature	Conus Medullaris Syndrome (CMS)	Cauda Equina Syndrome (CES)
Anatomical level	T12–L2 vertebral level (conus = end of spinal cord)	Below L2 (nerve roots of cauda equina)
Structure involved	Spinal cord (mainly sacral segments)	Peripheral nerve roots
Onset	Sudden, usually bilateral and symmetric	Gradual, usually unilateral and asymmetric
Motor weakness	Mild, symmetric lower limb weakness	Asymmetric, patchy lower limb weakness
Reflexes (general)	Ankle may be absent; knee usually preserved	Hyporeflexia or areflexia, especially ankle jerk
Sensory loss	Symmetric perianal (saddle) anesthesia	Saddle anesthesia , usually asymmetric
Pain	Mild or absent; localized lower back pain	Severe radicular pain in one or both legs
Bladder/bowel involvement	Early onset urinary retention or incontinence	May occur later; less consistent
Sexual dysfunction	Frequent and early	May occur, usually later

Q.3

What is the diagnosis?

meningioma

Where it is located?

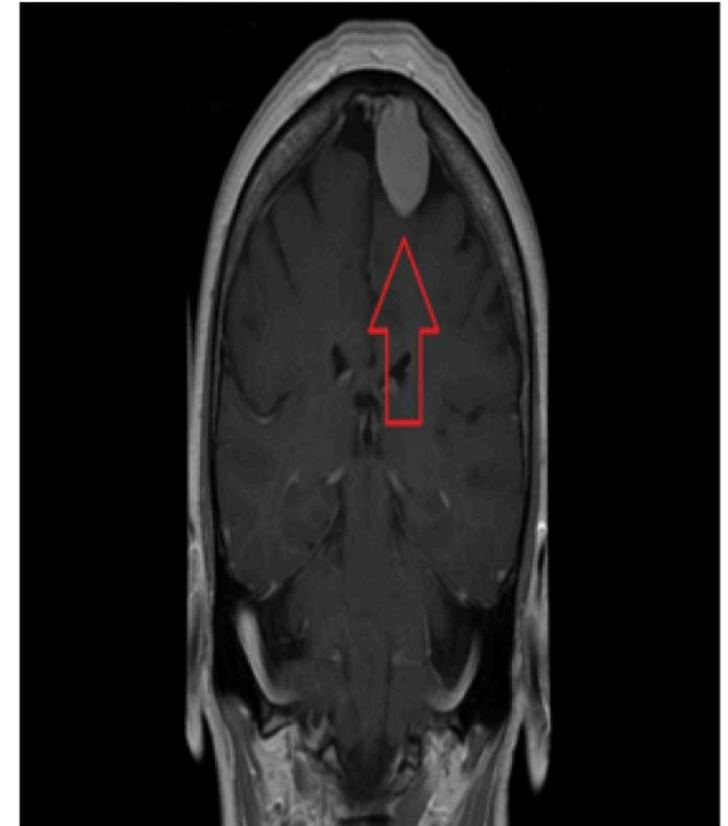
Extra-axial, (Dural tail)- over frontal convexity

Extra-axial : outside the brain parenchyma (neuro-axis)

Meningiomas usually arise from arachnoid cap cells and attach to the dura mater, producing a **dural tail**. In some cases, they are located along **the convexity dura**, as seen in this case.

Is it more common in females or males?

In females



Q.4

What is your spot Diagnosis?

Spina bifida aperta- myelomeningocele

How do you classify this Pathology?

According to :

- **The presence of spinous process: to spinal bifida **occulta & aperta** (cystica)**
- **Contents: to myelomeningocele and meningocele**

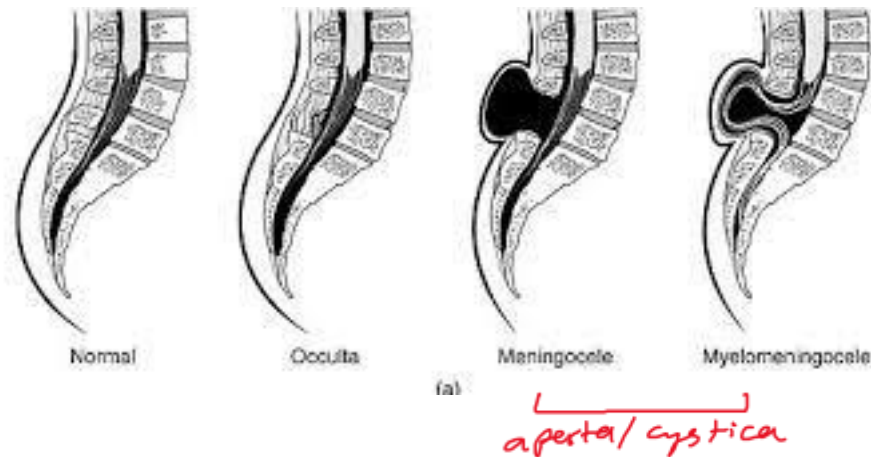
What is your next step of Management ?

Surgery to Prevent Deterioration



Early closure of MM defect is not associated with improvement of neurologic function, BUT evidence supports lower infection rate with early closure.

MM should be closed within 24 hrs whether or not membrane is intact (after ≈ 36 hrs the back lesion is colonized and there is increased risk of postoperative infection)



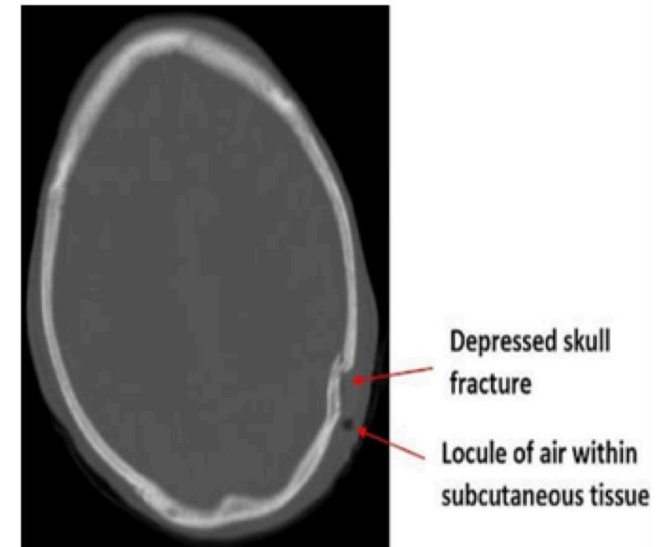
Q.5

1. What is your spot diagnosis?

Simple depressed skull fracture of the left parietal bone

2. What is the management?

Ranges from observation to surgery (elevation, cranioplasty)- depends on the clinical presentation



Surgery for depressed fractures falls into two categories; simple “**elevation**”; when there is only one fragment. or a more major surgery called “**craniectomy**” for depressed comminuted fractures.

Pond fractures of infants should not be touched. They will correct spontaneously with time.

CORRECTING DEPRESSED FRACTURES:

- If they are compound
- If they are depressed more than 1 cm
- If they are associated with neurological damage
- If they overlies important area
- If they might cause disfigurement (cosmetic)
- If they are accompanied by seizures

Q.6

1. What is your spot diagnosis?

Suprasellar mass (pituitary adenoma)

2. Mention 2 surgical procedures?

Trans nasal- trans sphenoidal or ethmoidal hypophysectomy.



Treatment of pituitary adenoma:

■ Medical

- Apoplexy (sudden expansion of mass due to hemorrhage or necrosis): rapid corticosteroid administration ± surgical decompression.
- Prolactinoma: dopamine agonists (e.g. bromocriptine). (PROLACTINOMA -NO SURGERY, if didn't cause mass effect)
- Cushing's: serotonin antagonist (cyproheptadine), inhibition of cortisol production (ketoconazole)
- Acromegaly: somatostatin analogue (octreotide) ± bromocriptine
- Endocrine replacement therapy

■ Surgical

- ❖ endoscopic trans-sphenoidal, trans-ethmoidal, and less commonly trans-cranial approaches (i.e. for significant suprasellar extension).

Q.7

What is the diagnosis?

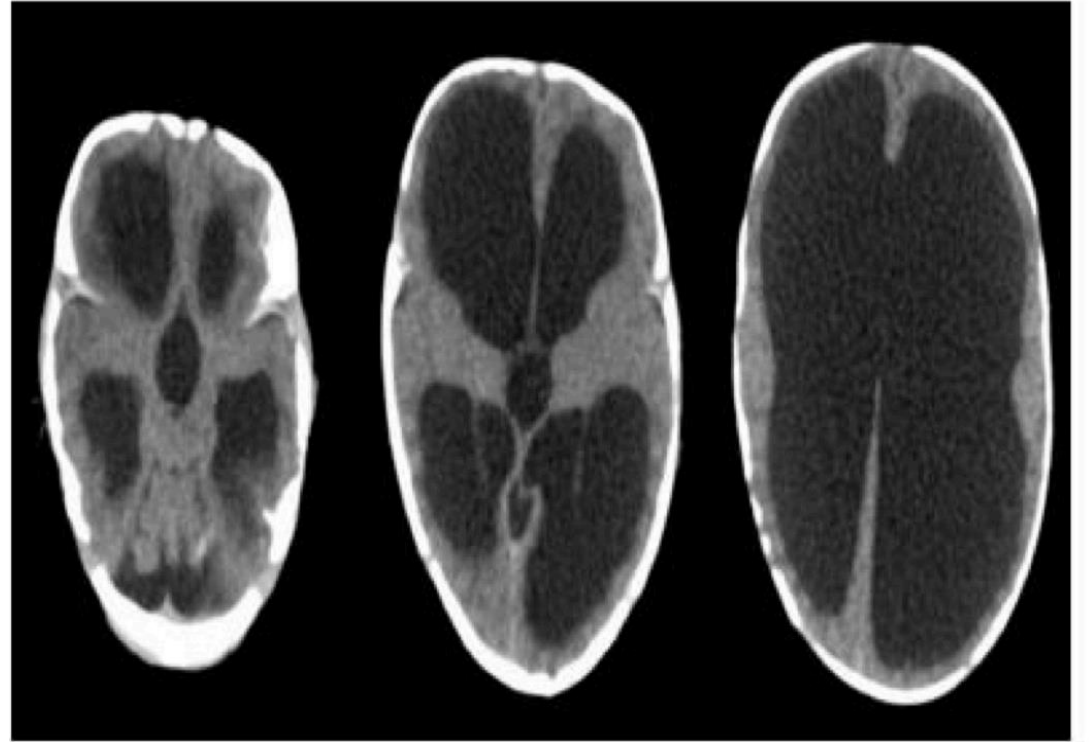
Hydrocephalus

What are the types of it?

Communicating and obstructive

What are the surgical procedures for it?

CSF diverting procedures; ETV/ VP shunt



TYPES OF HYDROCEPHALUS

Irrespective of the cause, there are usually two types:

Communicating hydrocephalus, when the problem lies at the level of the arachnoid granulation, and the ventricular system and its exits are free from obstructing agent. Here all the four chambers of the ventricular system are dilated and communicate with each other.

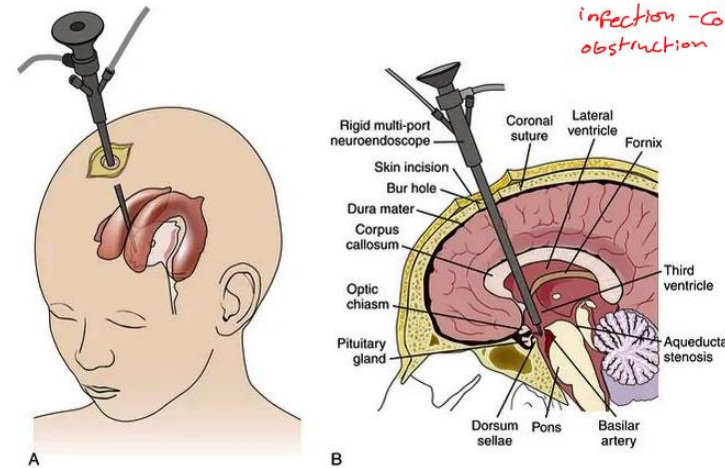
Non-communicating; when there is an obstruction within the ventricular system or at its exits into the subarachnoid space (Figure 67). Here the dilatation occurs only proximal to the site of obstruction, the rest of the ventricular system remains normal.

To differentiate between both types on a CT or MRI, one has to look at the 4th ventricle which is dilated in the communicating type and normal or even smaller in the non-communicating type.

Endoscopic Third Ventriculostomy(ETV)

for communicating

*Complications:
infection - commonest
obstruction*



Q.8

What is the name of the area that the tumor locate in?

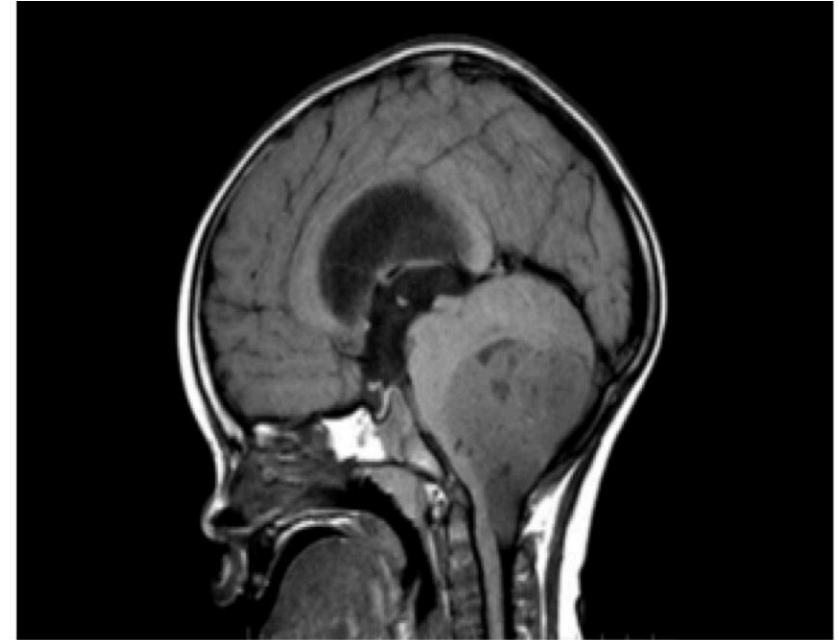
infratentorium.

Give 2 differentials?

Medulloblastoma and astrocytoma

What are the symptoms the patient suffer from?

Diplopia\ nystagmus (visual symptoms),
projectile vomiting (not preceded by nausea),
morning headache, seizures



Medulloblastoma

most common
infratentorial in
children

All are grade 4

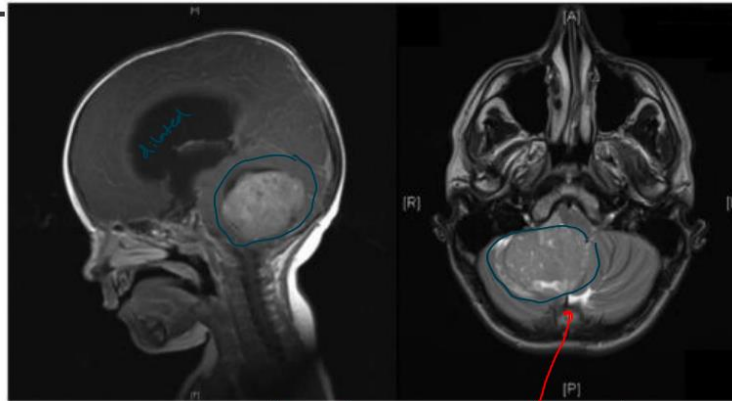
- Peak age is 5 years
- It is most common midline posterior fossa tumor *mc in children*
- All are highly malignant
- Spread by
 - CSF seeding *eg.ependymoma*
 - hematogenous spread

In most of the countries medulloblastoma is considered the most common brain tumor in children. However, in some other countries pilocytic astrocytoma is considered the commonest.

Treatment

medulloblastoma

- Treat hydrocephalus *as infratentorial*
- Surgery
- Neuraxis radiation *Brain + spinal cord*
CSF seeding
- Prognosis
 - 5 years survival is 40 – 60 %



headache, vomiting
fatigue, LOC 5 years

medulloblastoma

low in
Sagittal
infratentorial
mass
hyperintense
compressing
aqueduct

MRI T1 with contrast

obstructive
hydrocephalus

sudden deterioration!
EVD to LICF
the do elective
surgery
not to wait

Q.9

1. What is the diagnosis?

Lt fronto occipital chronic subdural hematoma

2. Definitive treatment?

Burr hole and drainage

3. Is there a midline shift?

Yes



Acute subdural hematoma – craniotomy (to find the bleeding vessel)

Chronic subdural hematoma- burr hole drainage

Q.10

1. What is your spot diagnosis?

Compound depressed skull fracture

2. Mention 3 absolute indications for surgery?

Compound fractures

Depressed more than 1cm

Associated with neurological damage

Over an important area

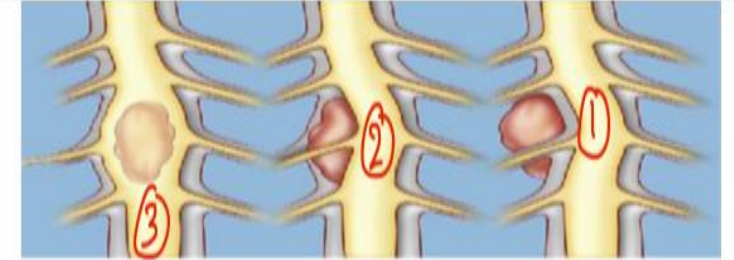
Cause disfigurement- cosmetic

Cause seizures

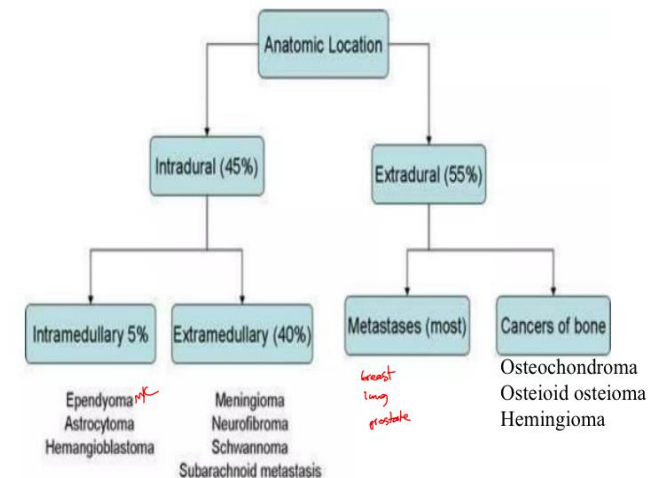


Q.11

How are spinal tumors classified according to the picture and give one example on each one:



1. Extradural: osteochondroma
2. Intradural extramedullary: meningioma
3. Intradural intramedullary: astrocytoma



Q.12

1. What is your spot diagnosis?

Spondylolisthesis

2. Staging system?

Myerding classification, according to the degree of displacement

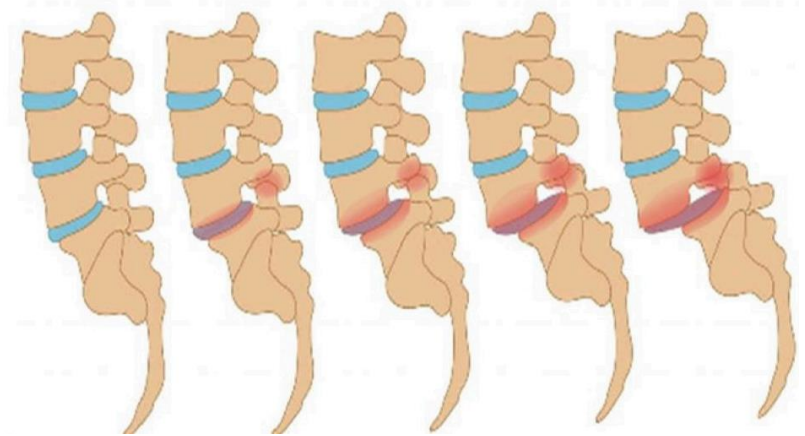
2. Mention 2 types?

Congenital

Traumatic

Degenerative

Spondylolisthesis could be congenital but may also result from stress fractures of the pars, spinal trauma or degenerative changes



Scottish dog appearance

Q.13

1. What is the diagnosis?

Burst fracture (stress fracture)

2. At which level?

L1

3. What is your management?

Bed rest, surgery



Burst fracture is caused by vertical compression

How to count vertebra:

- For lumbosacral sagittal cuts:

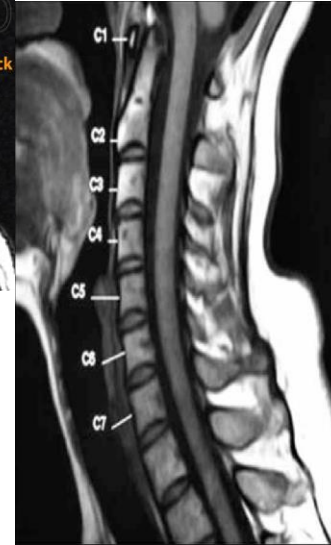
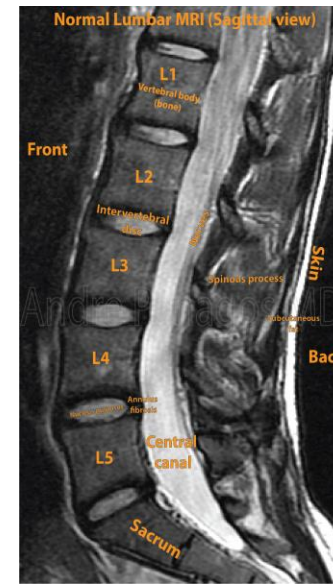
First identify L5 vertebra which is just above the largest intervertebral disc.

- For cervical cuts (spinal cord view):

First clear vertebra you see is C2

- For cervical cuts (lateral view):

First clear vertebra you see is C1



Difference between MRI T1 and T2 sequences:

T1 CSF is BLACK

T2 CSF is WHITE – contrast isn't used with it

Q.14

1. What is the diagnosis?

Lt frontoparietal acute subdural hemorrhage

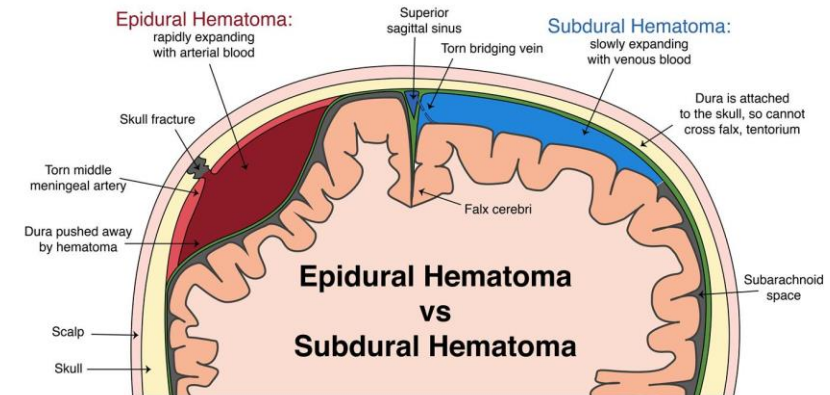
2. Mention differential diagnosis for this finding?

Brain hemorrhagic contusion

3. Management?

Craniotomy and evacuation

- Acute- craniotomy
- Chronic- burr hole



Q.15

1. What is this area called?

Suprasellar area

2. Mention 3 ddx?

Pituitary adenoma

Meningioma

Dermoid cyst

Cranipharyngioma

Hematoma

3. Mention 3 clinical manifestations?

Visual impairment (bitemporal hemianopia)

Endocrine dysfunction (galactorrhea, impotence if prolactinoma)

Headache and vomiting





Differential diagnosis ^{of} brain tumors

- vascular : hematoma <sup>← trauma history
non contrast</sup>, aneurysm AVM
- infection : abscess, tuberculoma ,
hydatid cyst Can be confused with glioblastoma
- ^{Common, filled with CSF} arachnoid cyst , dermoid and
epidermoid cyst

Q.16

1. What is the dx, what is the level and site?

Cervical disc prolapse, left side posteriolateral C6-C7

2. What is the dermatome affected?

Left C7, Middle finger (tip), back of arm + forearm, dorsum of hand.

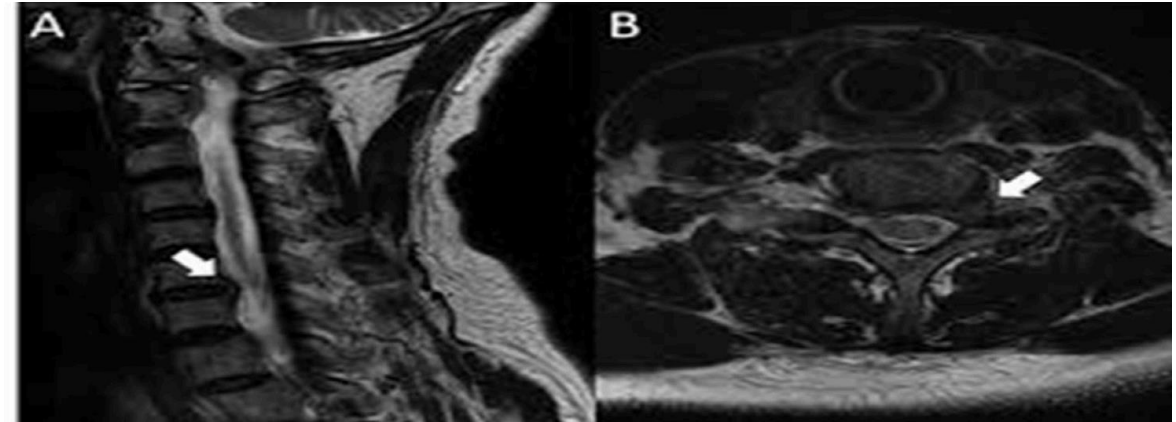
3. 3 Indications for surgery?

Myelopathy

Intractable pain

Focal neurological signs

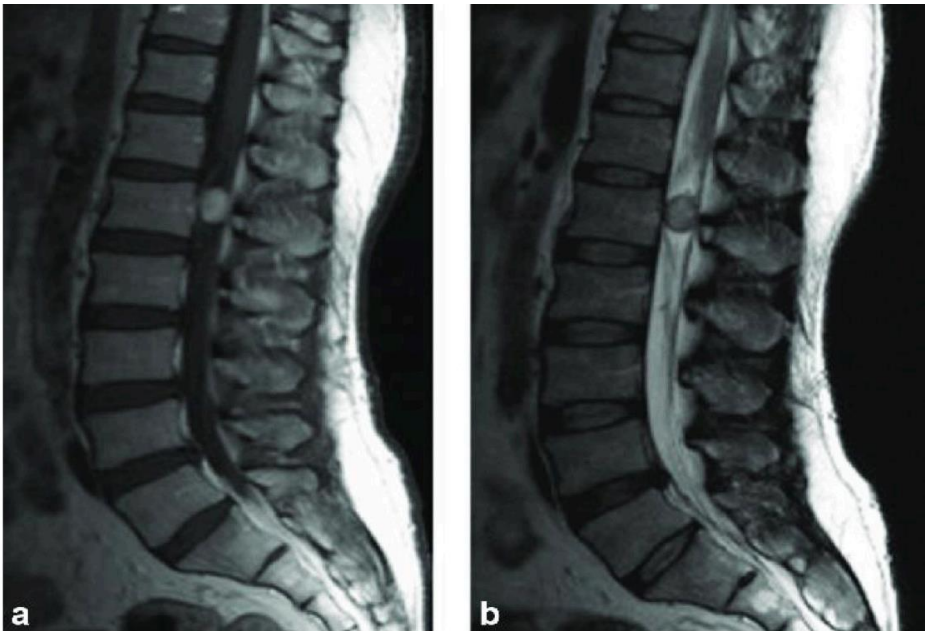
History of malignancy



Q.17

What is the lesion/ syndrome at this level?

Conus medullaris syndrome (at L1)



Feature	Conus Medullaris Syndrome (CMS)	Cauda Equina Syndrome (CES)
Anatomical level	T12–L2 vertebral level (conus = end of spinal cord)	Below L2 (nerve roots of cauda equina)
Structure involved	Spinal cord (mainly sacral segments)	Peripheral nerve roots
Onset	Sudden, usually bilateral and symmetric	Gradual, usually unilateral and asymmetric
Motor weakness	Mild, symmetric lower limb weakness	Asymmetric, patchy lower limb weakness
Reflexes (general)	Ankle may be absent; knee usually preserved	Hyporeflexia or areflexia, especially ankle jerk
Sensory loss	Symmetric perianal (saddle) anesthesia	Saddle anesthesia, usually asymmetric
Pain	Mild or absent; localized lower back pain	Severe radicular pain in one or both legs
Bladder/bowel involvement	Early onset urinary retention or incontinence	May occur later; less consistent
Sexual dysfunction	Frequent and early	May occur, usually later

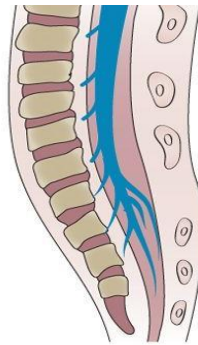
Q.18

Spot diagnosis?

Spina bifida occulta



Spina bifida occulta



Spina bifida occulta

Closed asymptomatic NTD in which some of the vertebrae are not completely closed

Q.19

1. What is the name of this syndrome?

Cauda equina syndrome

2. Mention 3 symptoms the pt could have?

Severe lower limbs pain (early)

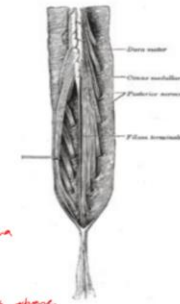
Bladder disturbance (late)

Saddle numbness



Cauda equina and conus medullaris syndromes:

- Patients with lesions affecting only the cauda equina can present with a polyradiculopathy with pain, radicular sensory changes, asymmetric lower motor neuron-type leg weakness, and sphincter disturbances.
- Lesions affecting only the conus medullaris cause early disturbance of bowel/bladder function, late in cauda equina



Cauda equina = below L1/L2, conus medullaris

Equina starts with pain then bladder Sx, opposite in conus

Feature	Conus Medullaris Syndrome (CMS)	Cauda Equina Syndrome (CES)
Anatomical level	T12–L2 vertebral level (conus = end of spinal cord)	Below L2 (nerve roots of cauda equina)
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Pain	Mild or absent; localized lower back pain	Severe radicular pain in one or both legs
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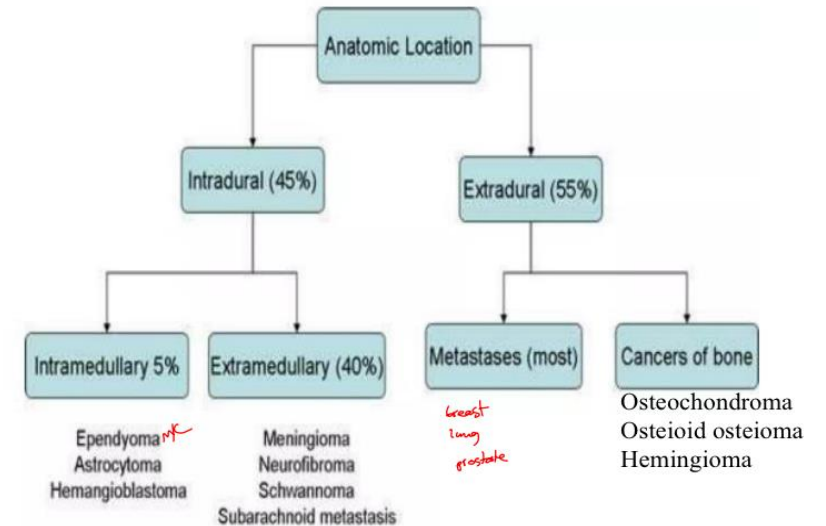
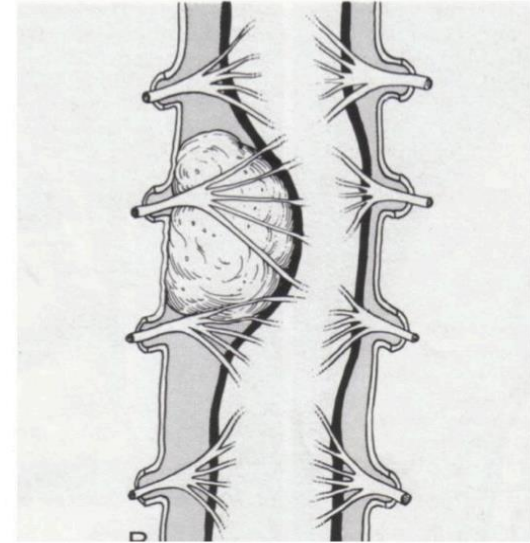
Q.20

1. What is the diagnosis?

Inteadural extramedullary tumour

2. 2 Differential diagnoses?

Meningioma, schwannoma, neurofibroma



Q.21

- Mention 2 nerves exit from superior orbital fissure?

Oculomotor, trochlear, abducent

- Mention structure exit from foramen spinosum?

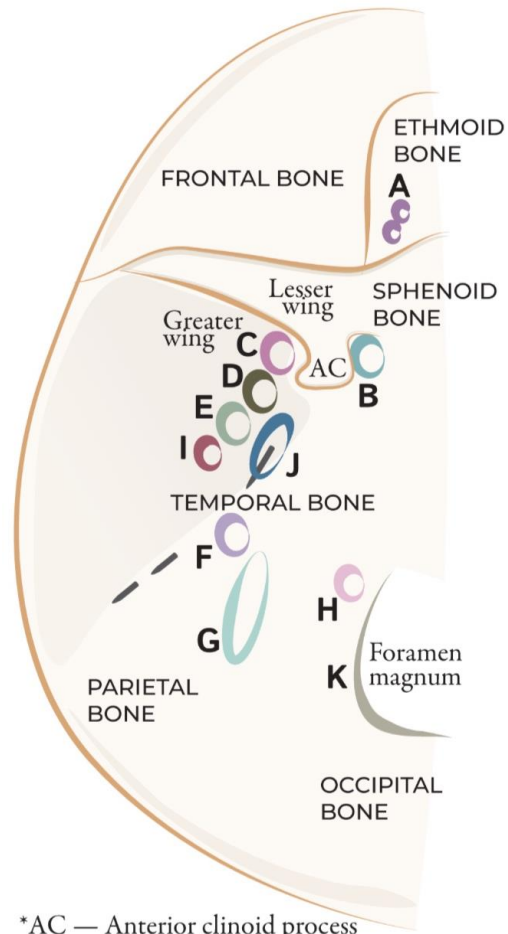
Middle meningeal artery

- Mention structure exit from foramen rotundum?

Maxillary division of trigeminal nerve



Skull Foramina



*AC — Anterior clinoid process

FORAMEN	CN	VESSEL
A. CRIBRIFORM PLATE	1	
B. OPTIC CANAL	2	Ophthalmic artery
C. SUP. ORBITAL FISSURE	3, 4, 5(1), 6	Superior ophthal. vein
D. FORAMEN ROTUNDUM	5(2)	
E. FORAMEN OVALE	5(3)	
F. INT. ACOUSTIC MEATUS	7, 8	Int. auditory artery
G. JUGULAR FORAMEN	9, 10, 11	Int. jugular vein
H. HYPOGLOSSAL CANAL	12	Venous plexus
I. FORAMEN SPINOSUM	MENINGEAL BRANCH 5(3)	Middle meningeal art.
J. CAROTID CANAL		Int. carotid artery
K. FORAMEN MAGNUM	11 (ASCENT)	Vertebral a. & spinal vessels

Foramen / Canal	Structures Passing Through
Cribriform plate (ethmoid)	Olfactory nerve branches (filaments)
Optic canal	Optic nerve, ophthalmic artery
Superior orbital fissure	Oculomotor nerve, Trochlear nerve, Ophthalmic nerve (frontal, lacrimal, nasociliary branches), Abducens nerve, Superior ophthalmic vein
Foramen rotundum	Maxillary nerve
Foramen ovale	Mandibular nerve, accessory meningeal artery, lesser petrosal nerve (occasionally), emissary vein
Foramen spinosum	Middle meningeal artery, middle meningeal vein, meningeal branch of mandibular nerve
Foramen lacerum	Deep petrosal nerve, greater petrosal nerve (note: internal carotid artery passes over it, not through it)
Carotid canal	Internal carotid artery, internal carotid plexus (sympathetic fibers)
Internal acoustic meatus	Facial nerve, Vestibulocochlear nerve, labyrinthine artery
Jugular foramen	Glossopharyngeal nerve, Vagus nerve, Accessory nerve, internal jugular vein (origin), inferior petrosal sinus, sigmoid sinus
Hypoglossal canal	Hypoglossal nerve, venous plexus
Foramen magnum	Medulla oblongata, spinal root of accessory nerve, vertebral arteries, anterior spinal artery, posterior spinal arteries, meninges

Q.22

1. What is this sign?

Battle's sign

2. What does it indicate?

Basal skull fracture



Basal skull fractures may cross foramina leading to injuries of cranial nerves (facial), or major vessels (carotid cavernous fistula). If these fractures reach the air sinuses of the skull they may be complicated by the escape of air intracranially (pneumocoele) or if the dura is injured it may lead to the leak of CSF to the outside; either via the nose (rhinorrhea) through frontal, or ethmoidal sinuses, or via the ear (otorrhea) through mastoid sinus or air cells. **Frontal basal skull** fractures may show themselves clinically by the presence of periorbital ecchymosis called “raccoon or panda eyes”, whereas **petrous temporal fractures** may show a bruising behind the ear over the mastoid called “Battle's sign”.

Q. 23 (pic of red eyes)

What are the findings?

Periorbital ecchymosis, racoon or panda eyes

Clinical significance?

Basal frontal skull fracture



Q.24

What is the CPP ?

Cerebral perfusion pressure = mean arterial blood pressure - intracranial pressure

[CPP=MAP-ICP] (in mm of Hg.)

Normal CBF with unit ?

The Cerebral Blood Flow is 800 ml/ min = 20% of the cardiac output.

$CBF = CPP / CVR$

Q. 25

What is the mechanism of early morning headache in brain tumor patient's ?

While sleeping, cortisol levels become low and hypoventilation occurs leading to increase in PaCO_2 which will result in dilatation of the cerebral vessels and hypotension then the ICP will increase.

Q. 26

2 complications of VP shunt:

Infection and blockage

Example of Pure sensory cranial nerve :

olfactory nerve

Mention one Sign used for the diagnosis of lumbar PID
(prolapsed intervertebral disc) :

+ve straight leg raise test

Pure Sensory	Olfactory, Optic, Vestibulocochlear
Pure Motor	Oculomotor, Trochlear, Abducens, Accessory, Hypoglossal
Mixed	Trigeminal, Facial, Glossopharyngeal, Vagus

Mixed -1975 (10,9,7,5) 🤔

The test is considered positive when the sciatica is reproduced between 10 and 60 degrees of elevation. A positive straight leg test is sensitive, but not specific for herniated disc. Sciatica is the PAIN 🤔 along the sciatic nerve (L4–S3) or its branches (tibial or common peroneal).

Q. 27

1- What is this?

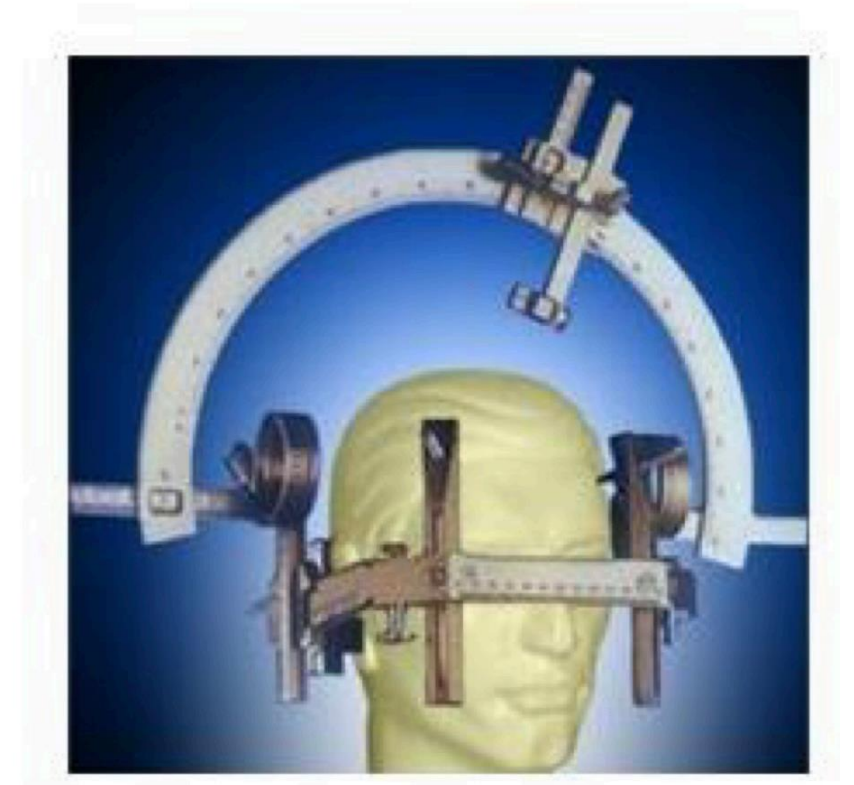
Stereotactic frame

2- Mention its uses ?

1-biopsy

2-deep brain stimulation in case of movement disorder

3- Gamma knife radiosurgery (avm, tumors (small vestibular shwannoma), trigeminal neuralgia).



Q.28

What is the type of enhancement?

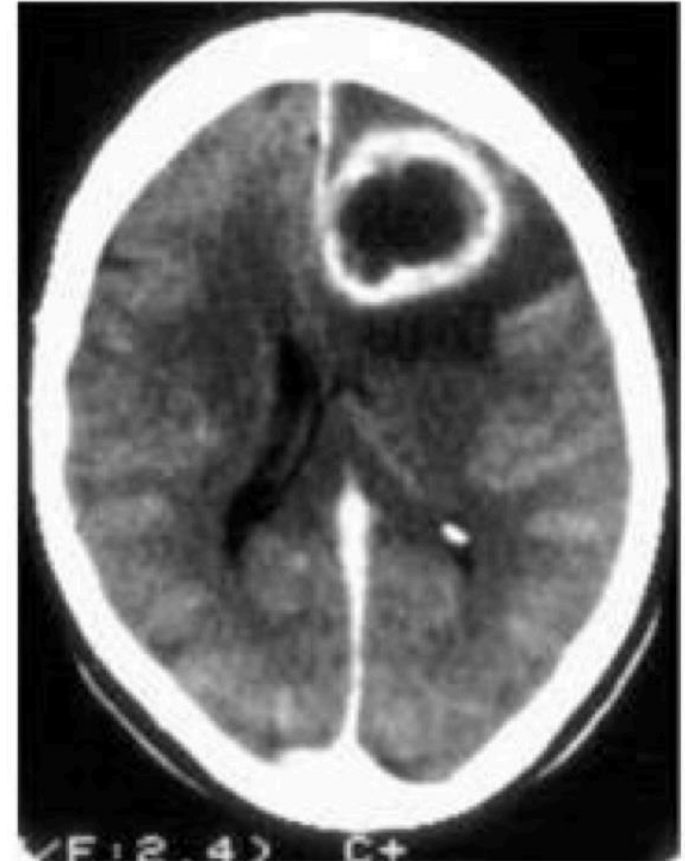
Ring enhancement

3 differential diagnosis?

GBM (Glioblastoma multiforme)

Metastasis

Resolving hematoma



Q.29

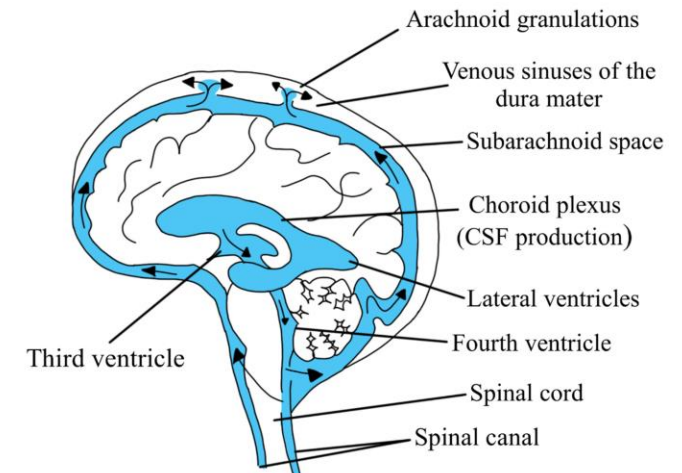
What is Acetazolamide and mention one indication for it in neurosurgery?

Carbonic Anhydrase inhibitor, used in cases of increased ICP (Pseudotumor cerebri) to decrease CSF production

Q.30

Write the pathway of CSF from secretion to absorption:

Formed by choroid plexus (mainly) > Lateral ventricles > Foramen of Monroe > 3rd ventricle > Aqueduct of Sylvius > 4th ventricle > Foramen of Magendie and Luschka > Subarachnoid space over the brain and spinal cord > CSF is reabsorbed by arachnoids villi into the superior sagittal sinus



Q.31

True or false and correct the false statement:

Meningioma is the most common primary tumor in adults	False	Glioblastoma Multiforme is the most common primary tumor in adults
Craniopharyngioma is a kind of tumor that can cause drop mets	False	Medulloblastoma is a kind of tumor that can cause drop mets
Functioning pituitary adenoma is mostly a macroadenoma	False	Functioning pituitary adenoma is mostly a microadenoma
Battle sign is a sign of hydrocephalus	False	Battle sign is a sign of basal skull fracture

Q. 32

Mention 4 congenital anomalies (related to CNS abnormality)

- 1.aqueductal stenosis
- 2.spina bifida
- 3.chiari malformation
- 4.dandy-walker malformation
5. anencephaly
- 6.arachnoid cysts

GCS-questions

Glasgow Coma Scale (GCS)

Response	Criterion	Score
Eye-opening response (E)	Eye-opening spontaneously	4 points
	Eye-opening to sound	3 points
	Eye-opening to pain	2 points
	No response	1 point
Verbal response (V)	Orientated	5 points
	Confused	4 points
	Inappropriate words	3 points
	Incomprehensible sounds	2 points
	No response	1 point
Motor response (M)	Obeys command	6 points
	Localises to pain	5 points
	Withdraws to pain	4 points
	Abnormal flexion to pain (decorticate)	3 points
	Abnormal extension to pain (decerebrate)	2 points
	No response	1 point

Categories of brain injuries depending on GCS:

a) Mild, (GCS 14-15).

b) Moderate (GCS (9-13), needs ICU monitoring.

c) Severe (GCS ≤ 8), needs intubation.

- Take the highest response from either side for each component.
- Write as **E(-) + V(-) + M (-) = -/15**.
- In cases of intubation or tracheostomy, write V (T), here verbal response =1 and write the total score with +T.

Q. 33

GCS for patient Open eye to painful stimuli

Inappropriate words Decerbrate on both sides:

$$E2+V3+M2=7/15$$

Q. 34

30 years old male with a past history of laryngeal cancer and permanent tracheostomy, Presented to the emergency department following a fall. There was no sensory or motor response in his right leg. Opens his eyes to verbal command, localizes the pain.

Calculate GCS and degree of severity:

E3+V1T+M5= 9/15 +T, Moderate severity

Next step:

Emergent non-contrast brain CT

Type of spinal injury:

Incomplete

No mention of left leg or upper limb involvement (hemicord lesion)

Q. 35

Calculate GCS for this patient open left eye
spontaneously incomprehensible sound Localize to
pain right side Decorticate left side:

$$E4+V2+M5=11/15$$

Q. 36

Patient open his eyes to painful stimulus, produce words, moves to localized pain.

A. GCS?

E2+V3+M5=10/15

B. Classification?

Moderate.

C. Management?

ATLS+Urgent CT (intubation or CT).

Q. 37

Glasgow Coma Scale;

One eye opens to pain

The other eye does not open

One side withdraws from pain

The other side decorticate position

Patient is confused

$$E2 + V4 + M4 = 10/15$$

Q. 38

Opens lt eye to painful stimuli

Rt eye no response

Incomprehensible sounds

Localizes pain:

GCS:E2+V2+M5= 9/15

Q. 39

Calculate GCS for this patient

Open eyes to pain

Incomprehensive sounds

Decorticate on right side

Decerebrate on left side

$E2+V2+M3=7/15$

Q. 40

Calculate GCS for this patient

open eye to pain

incomprehensive sound

Decerebrate right side

Decorticate left side:

$$E2+V2+M3=7/15$$

Q41.

Glasgow coma for a Patient his eye open in response to speech, confused, decelerate and decorticate in response to pain:

$$E3+V4+M3= 10/15$$

Q. 42

Calculate GCS for this patient

open eye to speech

confused

Decerebrate right side

Decorticate left side

$E3+V4+M3=10/15$

Q. 43

Hx of 30 years old male patient came after falling down:

His eyes do not respond to verbal or pain stimulations , produces sounds, extension of arms in response to pain and there is NO movement or sensation in lower limbs, on Examination, doctor noticed bruises in his lower back, absent cremastic reflex, anal examination reveals weak anal tone.

1) Calculate GCS:

E1+V2+M3=5/15

2) What is the severity according to GCS?

Severe

3) What is your next step in management: (MCQ)

a) Intubation b) urgent head CT

Q. 44

GSC

Open eyes to pain

Localizes to pain

Confused and disoriented:

$E2+V4+M5=11/15$

Q. 45

GCS to a patient with one eye fixed dilated not responding to light, the other eye responds to pain, the patient was decerebrate and talk in incomprehensive words.

$E2 + V3 + M2 = 7/15$

Q. 46

Calculate GCS for this patient Eyes opening in response to
pain stimulus Inappropriate words
Decerebrate left side

$$E2+V3+M2 = 7/15$$

Q.47

Patient opens his eye in response to pain and in verbal response has inappropriate words and in motor response has decorticate, calculate the GCS for this pt?

$$E2+V3+M3=8/15$$

Q. 48

1- What is phenytoin?

Anticonvulsant

2- Mention three side effects ?

Gingival hyperplasia

Vitamin b12 deficiency which lead to disc prolapse Neural tube defect (also in Folate deficiency)



- Causes of spina bifida: (1st - family history, 2nd - folic acid deficiency)*
- MM Familial disorder*
- Nutritional deficiency of Folic Acid
supplementation of folic acid at a dose of 4 mg/day in women with a history of children with MM *1-2% rate* reduced the risk of recurrence by approximately 70% *OS. in normal population* (Lumley et al. 2001).
 - Medications like. Anticonvulsants (valproate) *Leads to folic acid deficiency*
 - Conditions like: Diabetes, obesity and fever *Smoking, alcohol* also increases the chances of delivering of a baby with a spina bifida

Q. 49

Mention 2 tumors that show ossification/ calcification ?

meningioma (contains Psammoma bodies)

oligodendroglioma (Often calcified)

ganglioma

Mention 2 causes for communicating hydrocephalus?

infection

subarachnoid hemorrhage



Investigation

■ Skull X-RAY

- **calcification** : Oligodendroglioma , meningioma craniopharyngioma and ependymoma
- **hyperostosis** of skull
- **bone destruction** : mets , chordoma , craniopharyngioma
- **erosion** of sella tursica
- **signs of ICP**
- **midline shift** of pineal gland if calcified

Q. 50

What is this sign ?

Hair tuft (hypertrichosis)

What it's clinical importance ?

Indicates spinal bifida occulta or tethered cord syndrome

Note: not the same picture



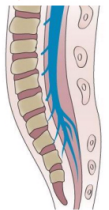
SPINA BIFIDA OCCULTA (SBO)

considered normal variation, asymptomatic, incidental finding mostly

Reported prevalence range of SBO:
☺ 5-30% of North Americans (5-10% is probably more realistic).

The defect may be palpable, and there may be overlying cutaneous manifestations

Often an incidental finding, usually of no clinical importance when it occurs alone.



Spina bifida occulta

Closed asymptomatic NTD in which some of the vertebrae are not completely closed

it is considered clinically significant in two conditions:

1- if there is skin stigmata (hemangioma, dermoid sinus, hair tuft (thick not any normal hairs))

2- associated spinal cord abnormality (tethered cord) is



Q. 51

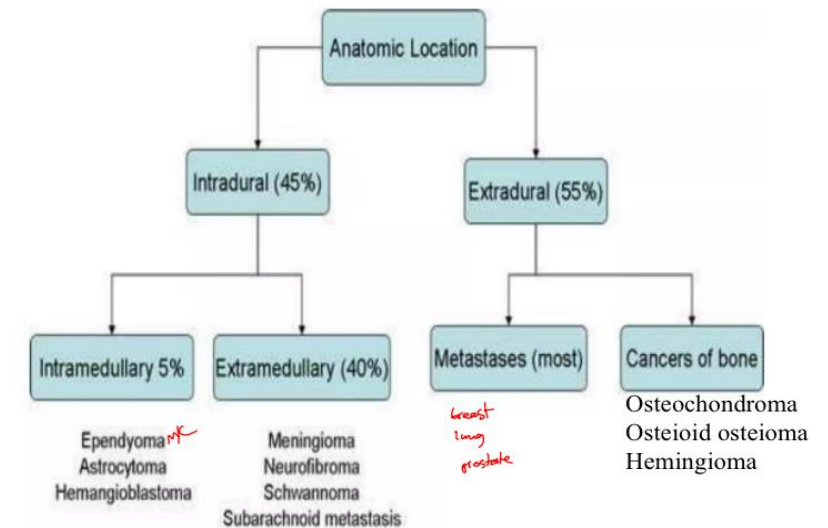
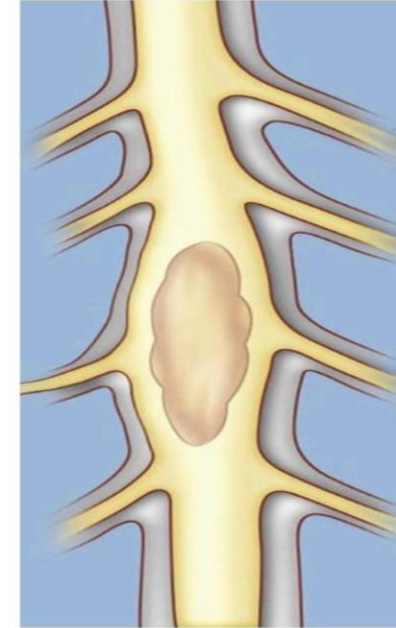
What is the classification of this tumour?

Intradural extramedullary

Write two ddx?

Ependymoma

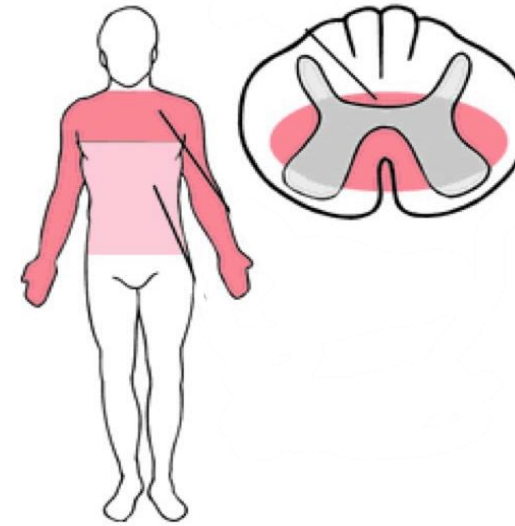
Astrocytoma



Q. 52

This pt complains from upper limb weakness and sensory loss, what is this syndrome?

Central cord syndrome



B .Incomplete Spinal Cord Injuries

1.central cord syndrome:

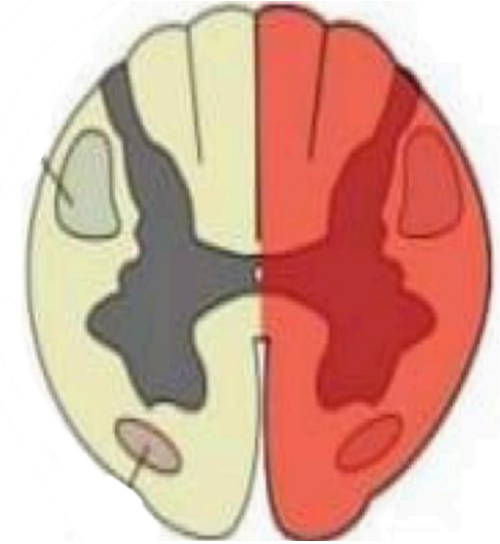
- caused by severe **neck hyperextension**.
- more **arm weakness than leg weakness**
- variable sensory deficits
- mostly pain and temperature** (because the lateral spinothalamic tract fibers cross just ventral to the central canal)
- This is sometimes referred to as
 - dissociated sensory loss
 - present in a **cape** like distribution.



Mention 3 clinical presentations with this syndrome:

Ipsilateral loss of vibration, proprioception & light touch

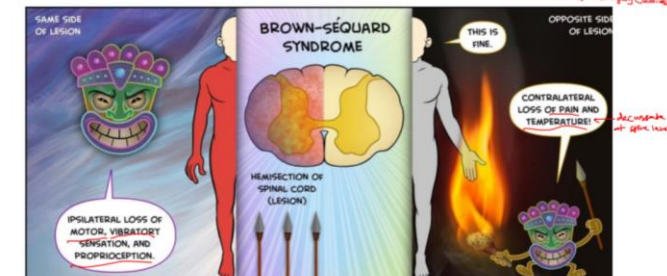
Contralateral loss of pain & temperature



Hemi trans section of S.C



- Contra lateral :** loss of pain and temperature sensation occurs below the level of the lesion.



Q. 54

1- What Is The Name Of This Pathology?

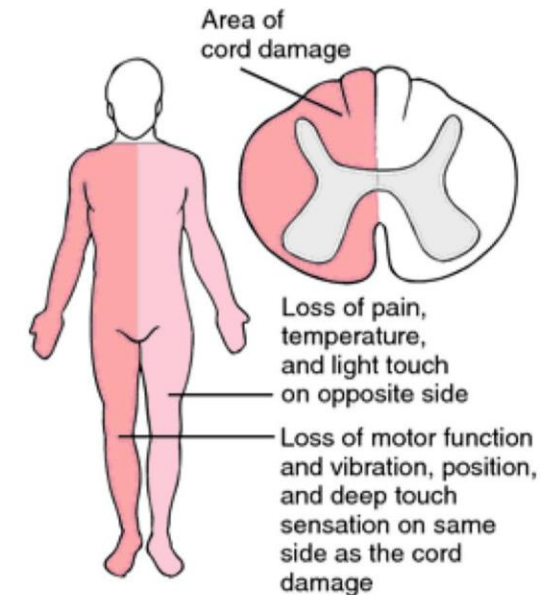
Brown Sequard Syndrome

2- Mention 3 Spinal Tracts That Are Affected In This Pathology ?

1- Spinothalamic Tract

2- Corticospinal Tract (Anterior & Lateral)

3- Dorsal Column



Q. 55

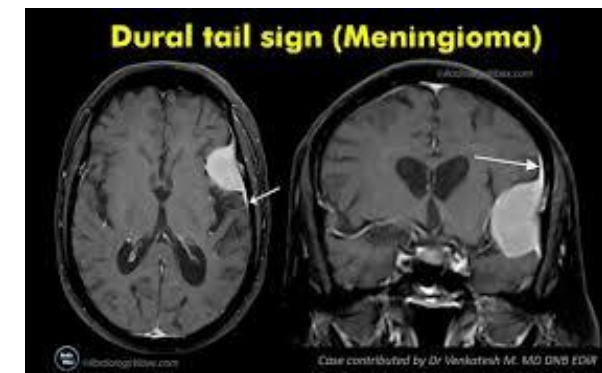
Fill in the gaps:

The vessel affected in epidural hematoma is **middle meningeal artery**

2- the artery may injured in endoscopic third ventriculostomy (ETV) is **basilar artery**

3- psammoma bodies found in **meningioma**

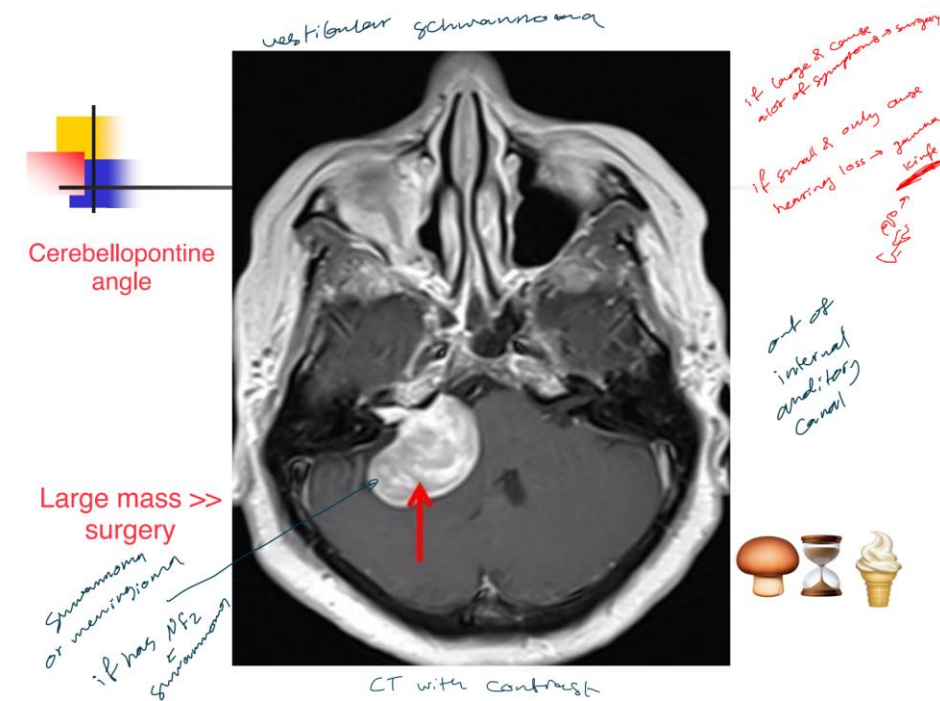
4- tumor has dural tail sign is **meningioma**



Q. 56

Dumbbell shape tumour (hourglass)?

Vestibular schwannoma (acoustic neuroma)



Q. 57

Patient present with dizziness, vertigo and hearing loss in his right ear what is the most probable diagnose ?

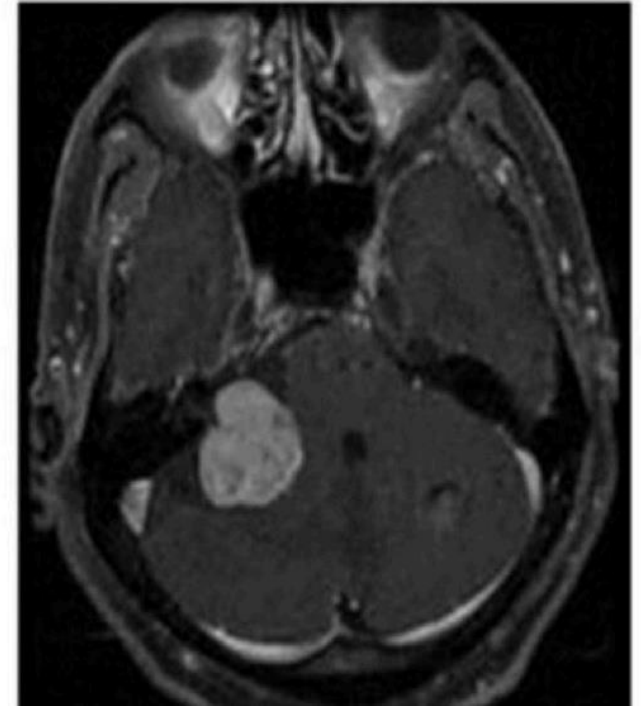
Vestibular schwannoma

Give 3DDX ?

Epidermoid cyst

Dermoid cyst

Meningioma



Q. 58

What is the anatomical site of the lesion ?

Right cerebellopontine angle

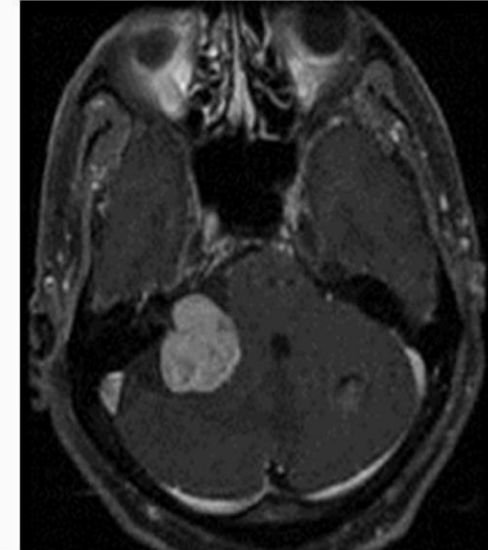
Write down 3 dd ?

Meningioma

Dermoid cyst

Hematoma

Epidermoid cyst



Axial brain MRI T1 with contrast

Q. 59

Mention 3 complications of this procedure:

Infections

Blockage (mechanical failure)

Functional failure



Shunt complications

Shunt complications and failures remain a significant problem in treating hydrocephalus.

- (1) mechanical failure of the device,
- (2) functional failure because of too much or too little flow of CSF (malfunction), and
- (3) infection of the CSF or the shunt device.

Q. 60

1- What is this?

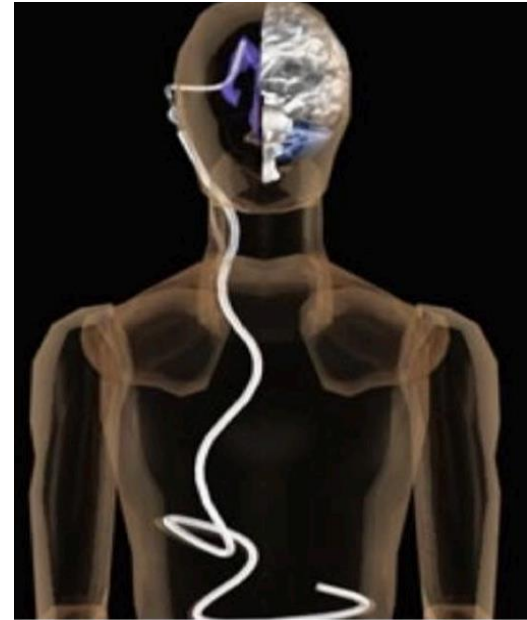
Ventriculo peritoneal shunt

2- Mention 3 complications of it?

Obstruction

infection

hemorrhage

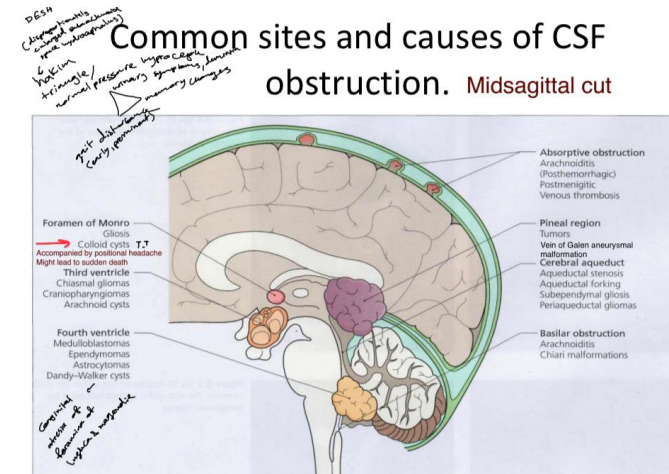


What is your diagnosis?

Mention 2 surgical procedures:

Endoscopic third ventriculostomy

Obstructive (non-communicating): Tumors, Chiari malformation, Dandy-Walker malformation, Aqueduct stenosis
Communicating (non-obstructive): Infection, Hemorrhage



Q. 62

What is the site of fenestration in this procedure ?

The floor of 3rd ventricle

The artery affected ?

Basilar artery



Q. 63

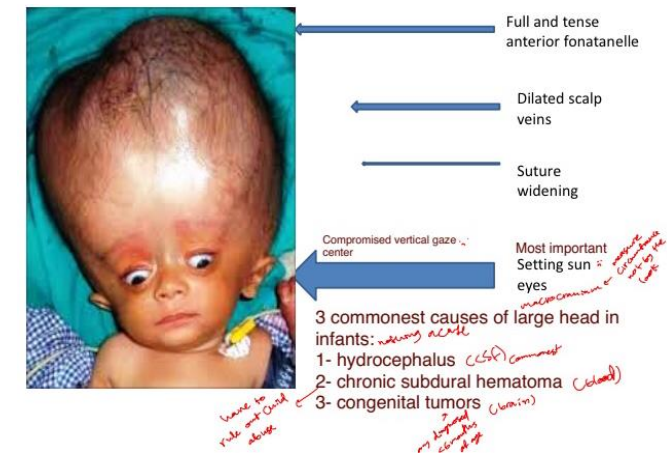
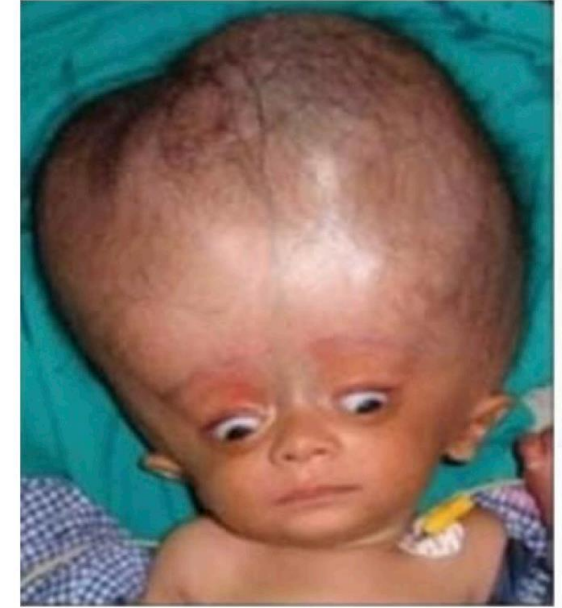
1. Mention 2 signs:

Sun-setting eyes

Dilated scalp veins

2. Pathogenesis of Sun-setting sign:

Increased intracranial pressure (ICP) → compression of the dorsal midbrain, particularly the vertical gaze centers → paralysis of upward gaze → eyes deviate downward, giving the characteristic “sun-setting” appearance.



Q. 64

Diagnose:

Lumbar disc prolapse

Site:

L5-S1

2 Indications for Surgery:

Progressive neurological deficit

Intractable pain

Cauda equina syndrome

Spinal instability / unstable fracture



Q. 65

Type of fracture:

Burst fracture

Level:

C5

Three complications:

Nerve root compression

Vascular injury

Limb weakness



Q. 66

Most tumor associated with ossification ?

Meningioma

(have psammoma bodies)

2ddx for tumor cause calcification ?

Oligodendroglioma

ganglioma



Investigation

■ Skull X-RAY

- **calcification** : Oligodendroglioma , meningioma
craniopharyngioma and ependymoma
- **hyperostosis** of skull
- **bone destruction** : mets , chordoma ,
craniopharyngioma
- **erosion** of sella tursica
- **sings of ICP**
- **midline shift** of pineal gland if calcified

Q. 67

What is dexamethasone?

A steroid

One use in neurosurgery?

For vasogenic edema

Type	Pathophysiology	Common Causes	Imaging Features	Treatment
1. Vasogenic	Disruption of the blood–brain barrier (BBB) → leakage of plasma into ECF	- Brain tumors (esp. metastases, glioblastoma)- Abscess- Trauma- Inflammation (encephalitis)	- Affects white matter - Enhances with contrast - Often around lesions (perilesional)	- Corticosteroids (e.g. dexamethasone)- Osmotherapy (mannitol, hypertonic saline)- Treat underlying cause
2. Cytotoxic	Failure of Na⁺/K⁺ ATPase pump → water influx into intracellular compartment (neurons & glia)	- Ischemia (stroke)- Hypoxia- Toxins (e.g. cyanide)- Early phase of trauma	- Affects gray and white matter - Diffuse swelling- No enhancement	- Maintain perfusion and oxygenation- Avoid hypotonic fluids- Osmotherapy (if ↑ICP)
3. Interstitial	CSF transudation across ependymal lining into periventricular white matter	- Obstructive hydrocephalus - ↑CSF pressure due to blockage	- Periventricular hypodensity around ventricles- Enlarged ventricles	- CSF diversion (e.g. VP shunt)- Treat cause of hydrocephalus
4. Osmotic	Plasma becomes hypo-osmolar → water shifts into brain cells	- Rapid dialysis - SIADH- Hyponatremia- Water intoxication	- Diffuse cerebral swelling	- Correct osmolarity slowly - Hypertonic saline (carefully)- Avoid rapid shifts

Q. 68

Dx?

Ancephaly

Prevention:

**Periconceptional folic acid
supplementation**

- **4-mg daily** starting at least 1 month before conception and continue through the first trimester.



Q. 69

Dx?

Spondylolithesis at L5-S1 vertebra

Clinical picture:

- Back pain and leg pain
- Sciatica
- Lumbar canal stenosis

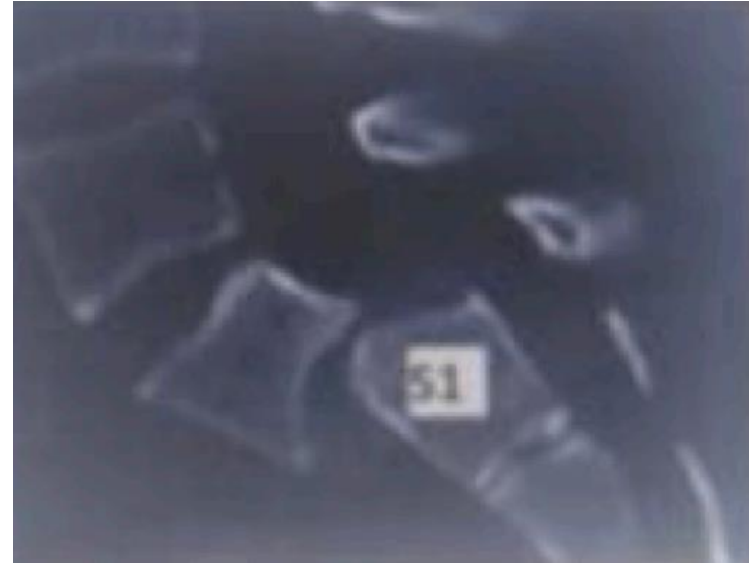
S1 compression:

Pain that from lower back → posterior thigh → calf → lateral foot/heel

Sensory loss at lateral foot & little toe

weak plantar flexion (calf muscles)

hypo or areflexia at ankle



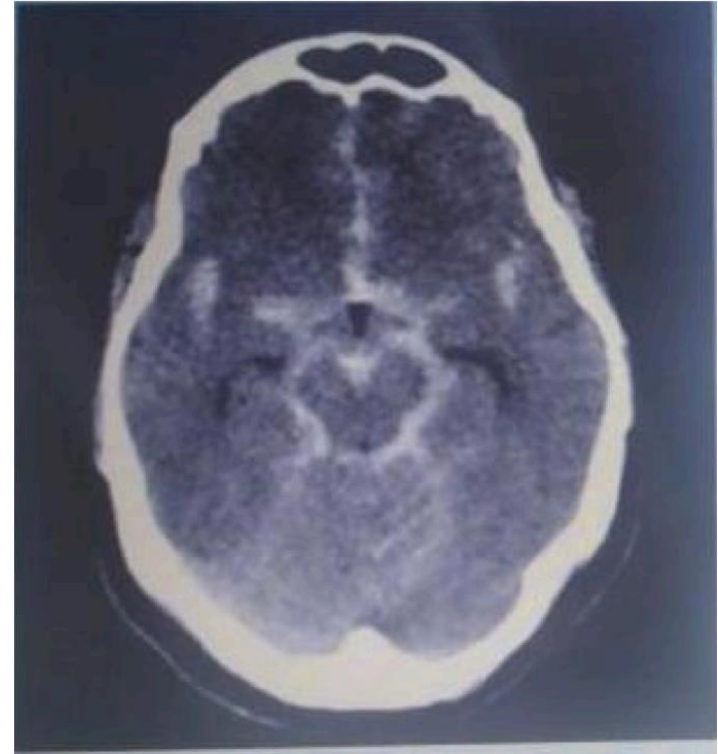
Q. 70

1- Dx :

Acute spontaneous SAH

2-gold stander investigation :

Digital subtraction angiography
(DSA)



Q. 71

Dermatome affected?

L4 (Medial leg & medial knee)

Reflex affected?

Knee jerk



Testing for lumbar nerve root compromise

Nerve root	L4	L5	S1
Pain			
Numbness			
Motor weakness	Extension of quadriceps	Dorsiflexion of great toe and foot	Plantar flexion of great toe and foot
Screening examination	Squat and rise	Heel walking	Walking on toes
Reflexes	Knee jerk diminished	None reliable	Ankle jerk diminished

Q. 72

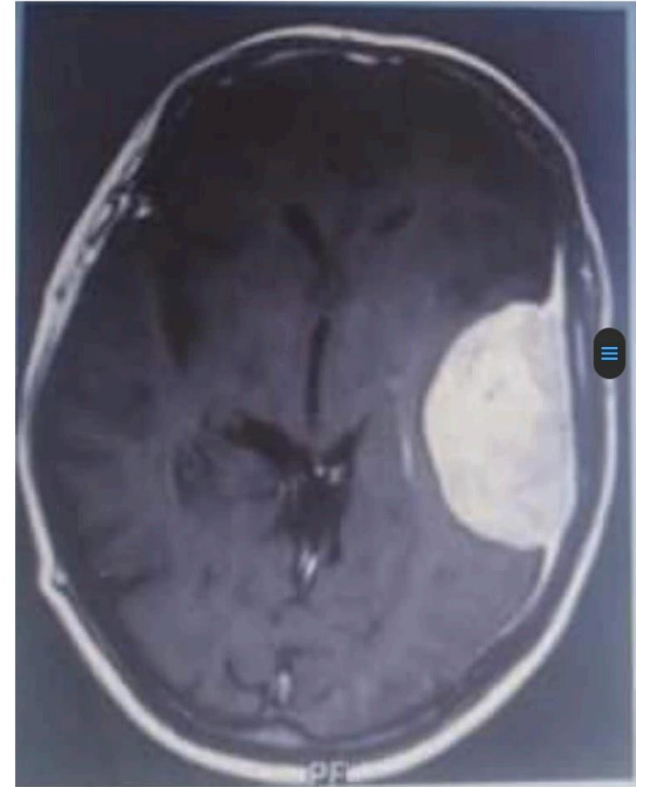
Lesion enhanced regularly after IV contrast administration

1-most likely Dx if this tumor is slowly growing :

Meningioma

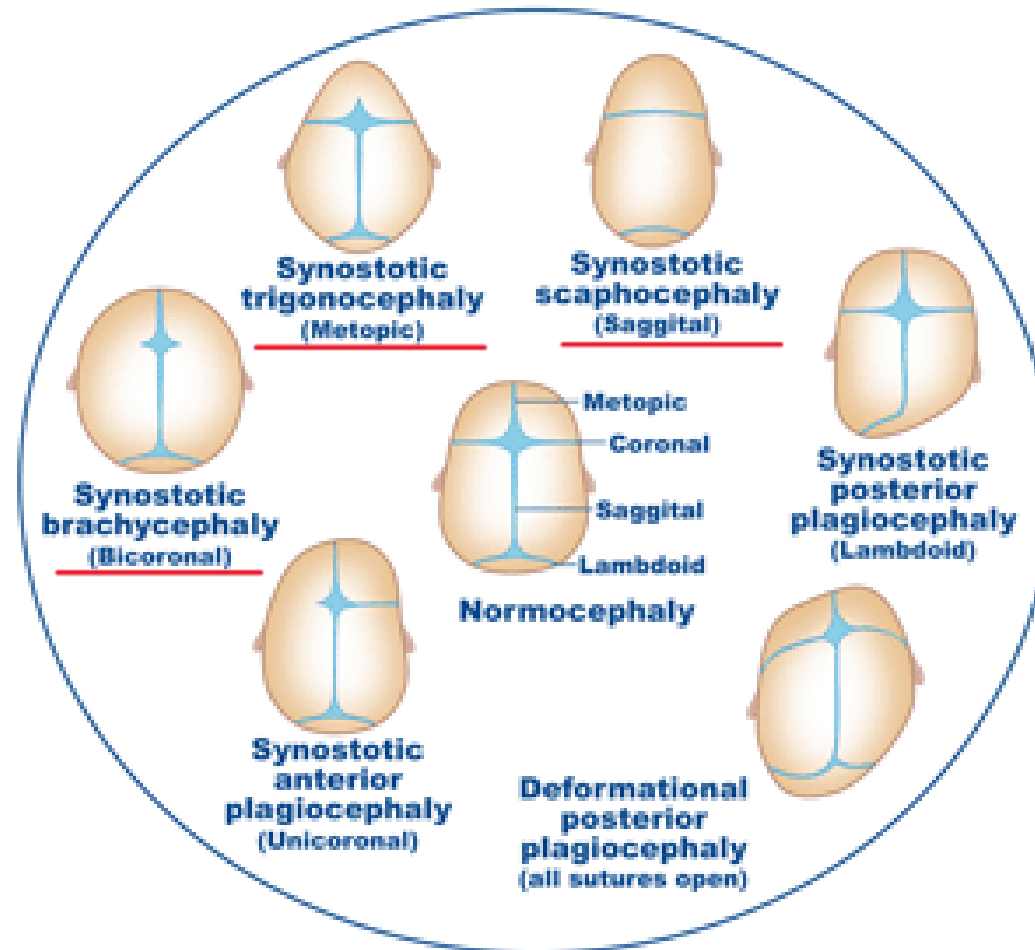
2-this tumor originate from :

Arachnoid cap cells



Craniosynostosis

Premature closure of one or more cranial sutures, leading to abnormal skull shape and sometimes raised intracranial pressure.



Q. 73

What is the name of this abnormality
and what is the suture?

Trigonocephaly craniostosis
Metopic suture



Q. 74

What is the name of this abnormality and what is the suture?

Brachycephaly
lambdoid sutures



Q. 75

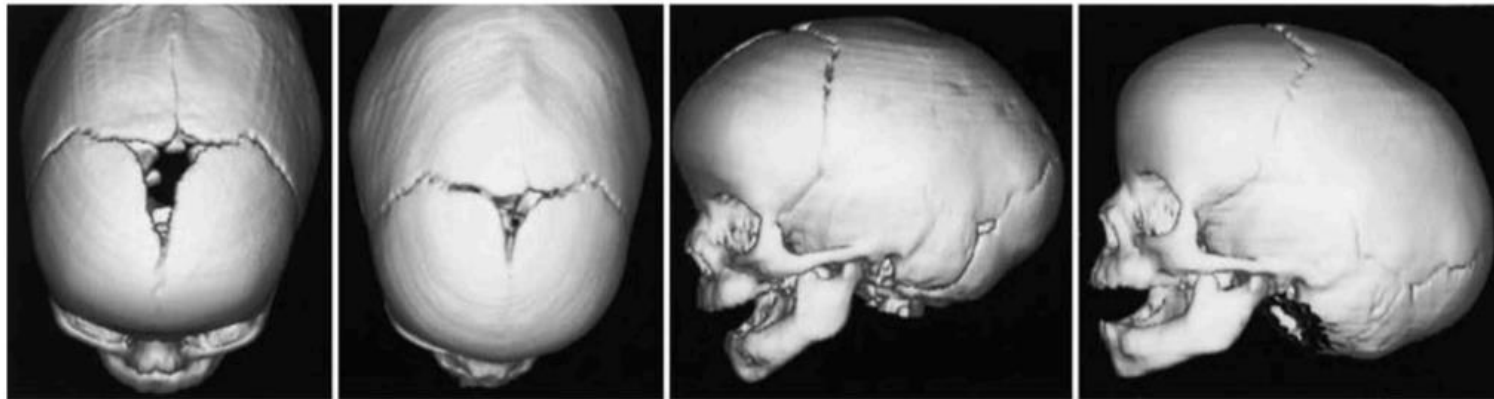
radiographic pictures of a skull with craniosynostosis

Dx:

Scaphocephaly

Affected skull suture :

Sagittal



Q. 76

What are the types of brain edema and the cause of each:

- Vasogenic: BBB breakdown → tumors, abscess, trauma
- Cytotoxic: Cellular swelling → ischemia, hypoxia, toxins
- Interstitial: CSF accumulation → hydrocephalus
- Osmotic: Hypoosmolar plasma → hyponatremia, water intoxication
- Mixed: Combination → severe trauma or stroke

Type	Pathophysiology	Common Causes	Imaging Features	Treatment
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Q. 77

1. Devices for ICP Monitoring

Invasive:

Intraparenchymal sensor

Subdural sensor

Epidural sensor

Non-invasive:

Optic nerve sheath diameter (ultrasound)

Ophthalmodynamometry / retinal venous outflow pressure (VOP)

Tympanic membrane displacement

2. Indications for ICP Monitor Insertion

Diagnosis of increased ICP

Guide treatment decisions and monitor efficacy

Q. 78

Patient with HTN and DM came to ER after RTA with direct trauma to head and orbital area with chest injury and hypotension, O2 sat 60% He open his eyes when the doctor calls him, obeys command, disoriented to time place and person

1-What is the GCS?

E3+V4+M6=13/15

(if you don't write /15 the answer is WRONG)

2-What is the classification of injury according to GCS?

Moderate

3-What is the Appropriate first measure to be taken MCQ?

Managing his airway at 1st

continue

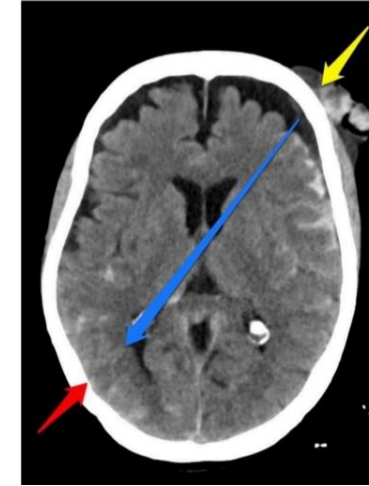
4 -What is th diagnosis according to these CT scan?

Hemorrhagic contusion coup counter- coup

OR

Post traumatic contusion coup counter coup

تابع لسؤال RTA
كانت صورتين لمقطعين CT واحد فوق و واحد تحت
وكل صورة فيها contusion بجهة عكس الثانية مش
نفس الصورة هاي



In **acceleration-deceleration** injuries, the brain moves inside the skull due to inertia and then recoils back once it hits the skull from the inside.

The injury, which occurs at the site of impact, is called **Coup injury** whereas the injury, which occurs due the recoil, is called **Counter-coup injury**.

These injuries are usually contusions. Therefore, most of them are found **in the poles of the lobes of the brain**, mainly frontal and temporal.

The movement of the brain to and from, will also results in the under surface of both frontal and temporal lobes “rubbing” against the rugged surface of the anterior and middle cranial fossae resulting also in injuries to the under surface of the brain which is usually more severe, it also can be accompanied with **diffuse axonal damage**.

Q. 79

1-What is malformation shown in this MRI?

Dandy walker malformation

2-Give 2 differential diagnosis?

Arachnoid cyst

Cerebellar hypoplasia

Persistent Blake's cyst

Dandy walker variant



3-Mention two ways of spread of brain tumor to the spinal cord?

Hematogenous spread

Direct invasion CSF (leptomeningeal spread)

Drop metastasis

Lymphatic is WRONG answer

Q. 80

What is diagnosis and location?

Right Fronto-Parieto-occipital Chronic Subdural Hematoma

(Every word is important)

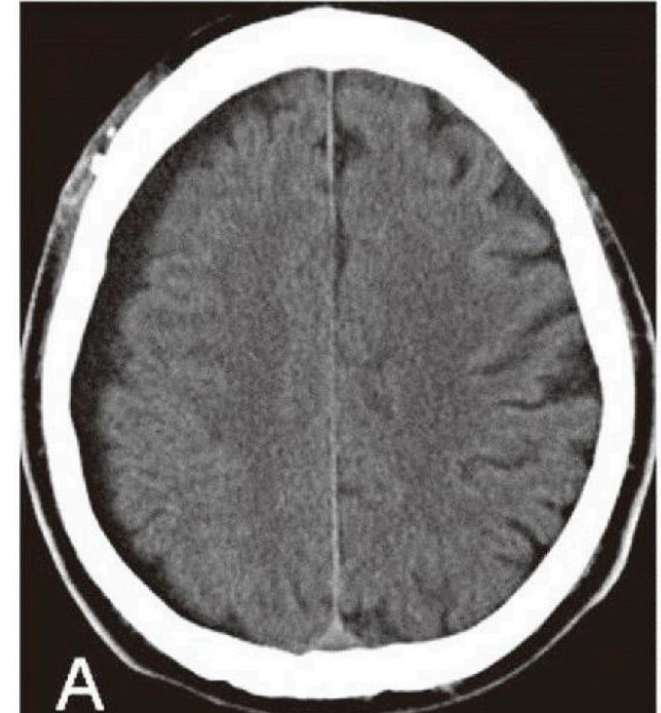
What is the timing?

>14 days

What is your next step in management:(MCQ)

A) Craniotomy

B) Burr hole



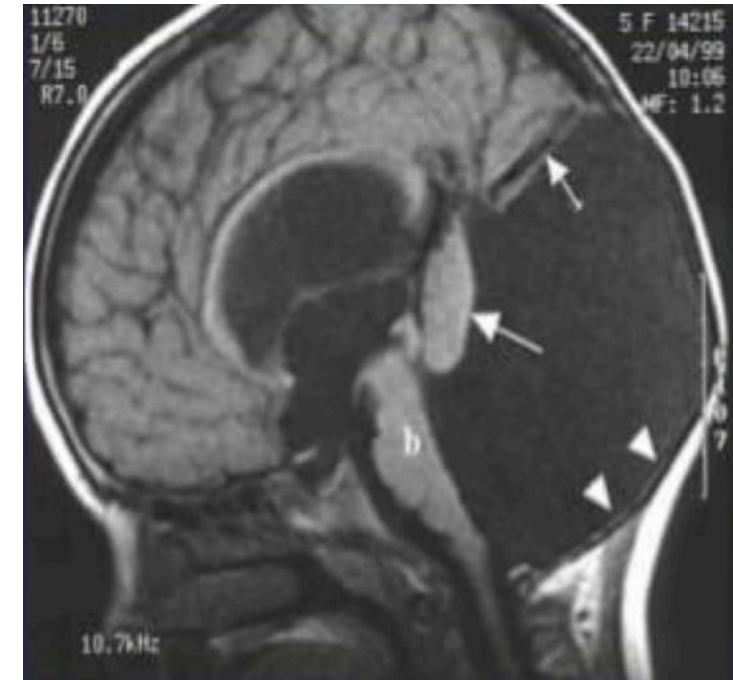
Q. 81

Dx?

Dandy-walker syndrome

2 Ddx?

1. Arachinoid cyst
2. Persistant Blake's pouch cyst.
3. Dandy walker varient



Dandy walker syndrome classic triad :

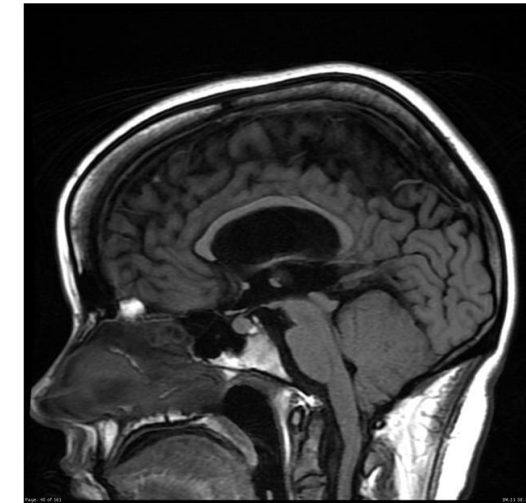
- **Hypoplasia or agenesis of the cerebellar vermis.**
- **Cystic dilatation of the 4th ventricle.**
- **Enlarged posterior fossa** with upward displacement of tentorium.



Dandy-walker malformation

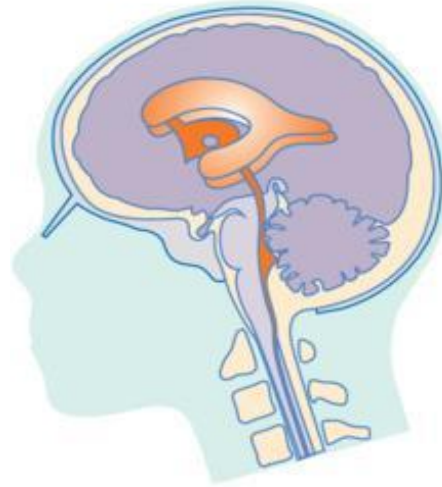
Chiari malformation type II

- Herniation of **cerebellar vermis, tonsils, brainstem**, often with **myelomeningocele**

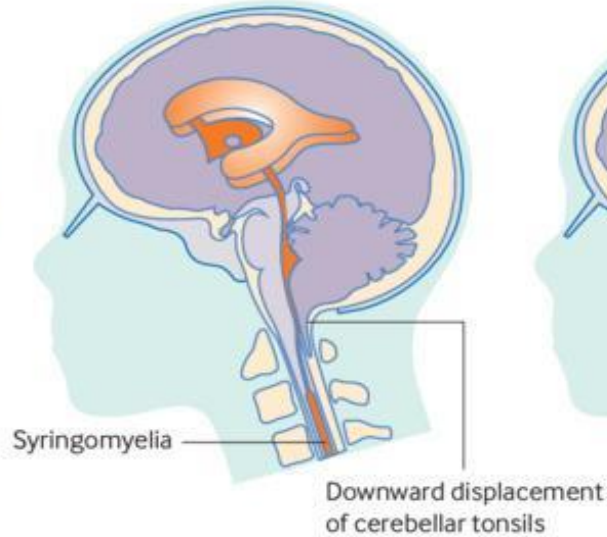


Chiari malformation type II

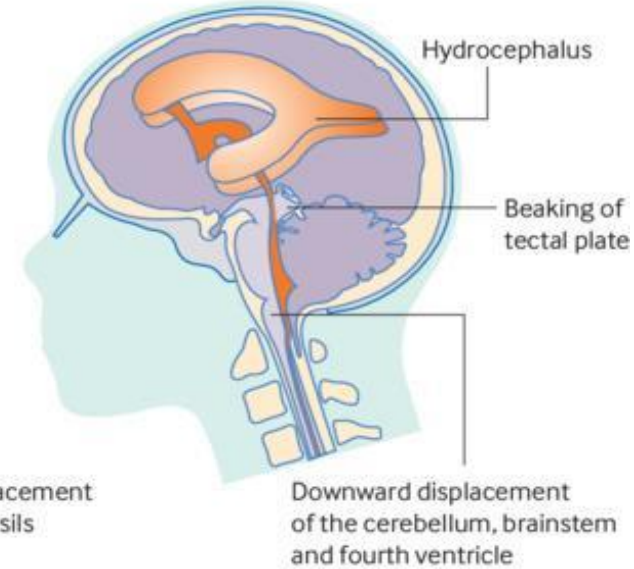
Normal



Chiari 1 malformation



Chiari 2 malformation



Chiari 1	• Downward displacement of medulla and cerebellar tonsils • Syringomyelia
Chiari 2 (Arnold-Chiari Malformation)	• Herniation of the cerebellar tonsils • Hydrocephalus • Kink in the medulla • (Myelo)meningocoele • Syringomyelia

Q. 82

Mention 2 ICP monitoring devices:

- Intraventricular catheter (EVD)
- Intraparenchymal sensor
- Subarachnoid bolt / screw
- Epidural sensor

Q. 83

Indications for monitoring ICP:

- Severe traumatic brain injury: GCS 3–8 + abnormal CT or normal CT with ≥ 2 : age >40 , SBP <90 , motor posturing
- Post-op neurosurgery at risk of raised ICP
- Hydrocephalus
- Cerebral edema (e.g., Reye syndrome)

Q. 84

1- What is (Acetazolamide)?

Carbonic Anhydrase Inhibitor

2- Mention one indication to use this medication in neurosurgery?

used in case of increased ICP especially glaucoma (it decreases CSF production in choroid plexus)

Q. 85

Picture of subarachnoid hemorrhage in a man with no history of head trauma.

Dx:

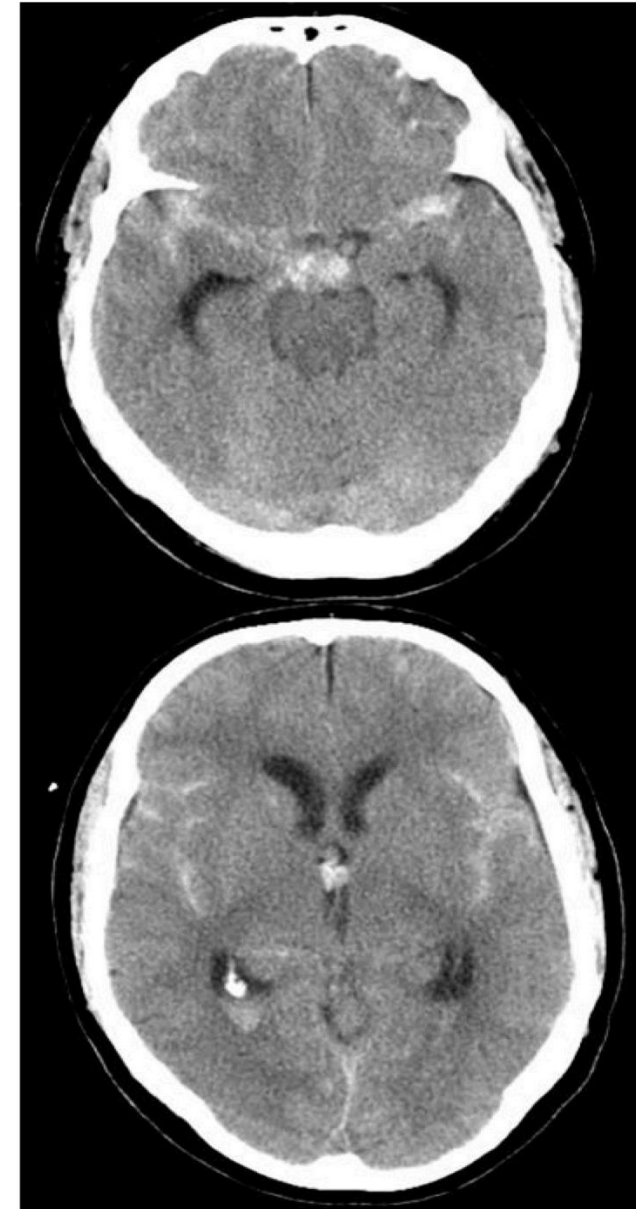
Spontaneous acute subarachnoid hemorrhage

Possible causes :

Ruptured arterial aneurysm, AV malformation

Gold standard investigation:

Digital subtraction angiogram (DSA)



Q. 86

Mention 2 differences between neurogenic and vascular claudication:

Cause: Neurogenic = lumbar spinal stenosis, Vascular = peripheral arterial disease

Relief: Neurogenic = sitting or spinal flexion, Vascular = rest regardless of posture

Pulses: Neurogenic = normal, Vascular = diminished/absent

Walking distance: Neurogenic = variable, Vascular = fixed and reproducible

Evaluation	Vascular	Neurogenic
Walking distance	Fixed	Variable
Palliative factor	Standing	Sitting/bending
Provocative factor	Walking	Walking/standing
Walking uphill	Painful	Painless
Bicycle test	Positive (painful)	Negative
Pulse	Absent	Present
Skin	Loss of hair; shiny	-
Weakness	Rarely	Occasionally
Back pain	Occasionally	Commonly
Back motion	-	Limited
Pain character	Cramping—distal to proximal	Numbness, aching—proximal to distal
Atrophy	Uncommon	Occasionally

Comparison of symptoms in neurogenic and vascular claudication

Symptoms	Neurogenic	Vascular
Quality	Pain/numbness/tingling	Cramping/tightness
Increased with walking	Yes	Yes
Relieved walking flexed with a cart	Yes	No
Relieved standing erect	No	Yes
Relieved sitting/lying	Within minutes	Immediate
Increased walking uphill/upstairs	No/less	Yes
Increased walking downhill	Yes/more	Yes
Increased biking/back flexed	No	Yes
Increased biking/back extended	Yes	Yes

Q. 87

Female presented with infertility, visual defect and galactorrhea:

A- What's the best neuroimage?

Brain MRI

B- Which hormone should be measured?

Prolactin.

C- On visual examination which finding you will find and explain why?

Bitemporal hemianopia due to mass effect of prolactinoma compressing the optic chiasm.

D- mention two lines of treatment?

- **Medical therapy (bromocriptine) D2 agonist**
- **Resection of the adenoma trans sphenoidal.**

Q. 88

30 year old male fell from the 3rd floor then came to the ER:

A- mention the radiological findings?

Acute left subdural lesion in the frontal –parietal area with midline shift

B- name the neuroimage type?

Axial brain CT

C- approach to treatment in ICU?

Airway, breathing & circulation management, ICP monitoring if needed.



Q. 89

60 year old male heavy smoker has history of shortness of breath with new back pain:

A- what's the most probable diagnosis?

Bone metastatic tumor.

B- describe what you see?

Thoracolumbar sagittal MRI T2 shows osteolytic lesion extradural compressing the spinal cord at one of the cervical vertebra.

C- mention other differential diagnosis that cause myelopathy?

Meningioma

Disc herniation

Neurofibroma

Lipoma

Shwanoma



Q.90

Patient open eyes on painful stimuli, incomprehensible words, flexes his left elbow on pain stimulus. He has bradycardia, hypertension, and irregular breathing.

A- Calculate the Glasgow coma scale?

$$\text{GSC} = \text{E}(2) + \text{V}(3) + \text{M}(3) = 9/15$$

B- Determine which type of head injury according to Glasgow coma scale?

Moderate .

C- Management in ICU:

ABC approach, ICU monitoring

D- What is the cause of his vital signs and irregular breathing –

Cushing's triad.

Cushing's Triad

A physiological reflex to brainstem compression and raised ICP:

- Hypertension → to maintain cerebral perfusion pressure
- Bradycardia → baroreceptor reflex due to systemic hypertension
- Irregular respiration → brainstem (medullary) dysfunction

Q. 91

A- what's the name of his eye's sign?

Sunset eyes.

B- mention three physical findings when examining the head?

1- dilated scalp veins

2- fontanelle bulge, tense

3- Shiny Skin

4-increased head circumference

C- the most common type of hydrocephalus in pediatrics?

congenital aqueduct stenosis

D- mention two surgical treatments?

VP shunt, Endoscopic third ventricostomy

E- what is the best diagnostic method to diagnose hydrocephalus?

Brain MRI



Q. 92

A- what is the name of this device?

Ventricular peritoneal shunt

B- what are the names of its components?

1- ventricular catheter

2- shunt valve

3- peritoneal catheter

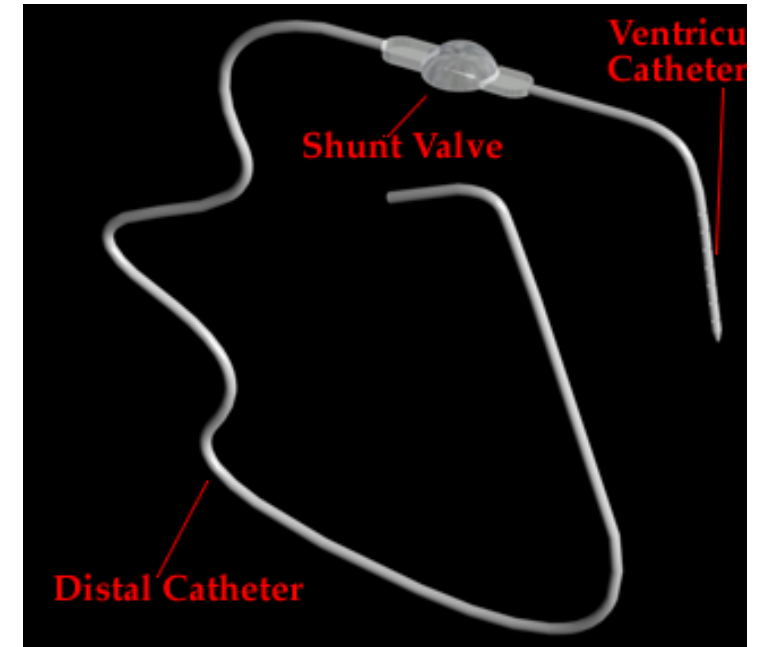
4- reservoir

C- Mention one indication:

Hydrocephalus

D- complications:

Bleeding, infection, shunt obstruction.



Q. 93

A- What is the name of this image?

Axial brain CT showing acute subarachnoid hemorrhage.

B- what is the cause of this pathology?

Ruptured aneurysm, AVM or trauma.

C- Management?

Aneurysm- clipping and endovascular coiling

Trauma – conservative, monitoring.

Symptoms?

Headache , LOC, meningism

Grading system?

Hunt + hess, WFNS



The Hunt and Hess grading system

Grade	Clinical manifestation
Grade 1	Asymptomatic or minimal headache and slight nuchal rigidity
Grade 2	Moderate to severe headache; neck rigidity; no neurologic deficit except cranial nerve palsy
Grade 3	Drowsy; minimal neurologic deficit
Grade 4	Stuporous; moderate to severe hemiparesis; possibly early decerebrate rigidity and vegetative disturbances
Grade 5	Deep coma; decerebrate rigidity; moribund

The WFNS grading system

	ICS	MOTOR
Grade 1	15	No motor deficits
Grade 2	13-14	Without deficit
Grade 3	13-14	With focal neurological deficit
Grade 4	7-12	With or without deficit
Grade 5	3-6	With or without deficit

The Fischer scale

GRADE	SUBARACHNOID BLEED
Grade 1	No subarachnoid (SAH) or intraventricular hemorrhage (IVH) detected
Grade 2	Diffuse thin (<1 mm) SAH. No clots
Grade 3	Localized clots and/or layers of blood >1 mm in thickness. No IVH.
Grade 4	Diffuse or no SAH. ICH or IVH present

Q. 94

A- Describe the image and what you see?

coronal brain MRI T1 with contrast showing homogeneous circular hyperintense mass located intradural extramedullary at the superior lt parasagittal margin.

B- management?

Craniotomy and total excision.



Q. 95

A- what is the dermatome affected?

L5 (Lateral thigh → lateral leg → dorsum of foot → big toe).

B- what are clinical signs you can see?

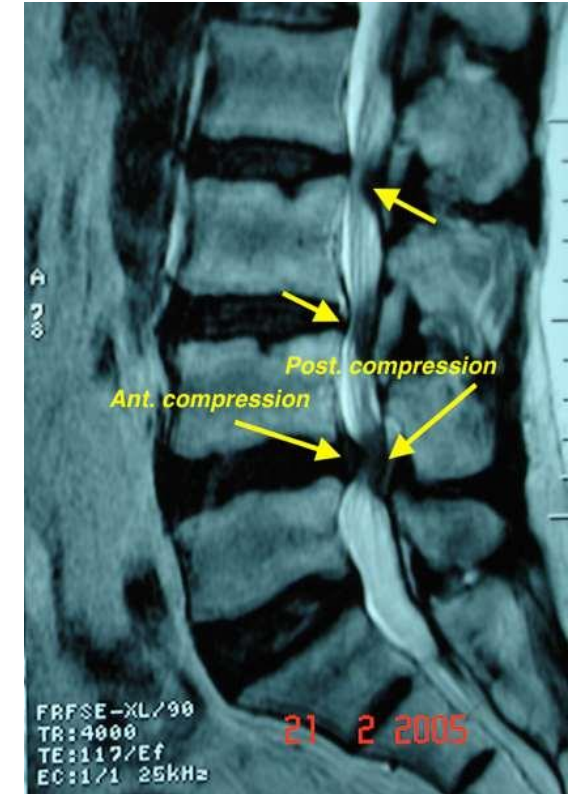
Focal weakness, sensory loss, cauda equina.

c- Symptoms?

neurogenic claudication, low back pain, lower limb weakness.

D- management?

Decompression (laminectomy).



Q. 96

A- describe what you will see in the physical exam for this pt?

Hyperreflexia, +ve Hoffman, clonus, spasticity, babinski (upper motor neurone lesion)

B- what questions you will ask the pt?

Weakness, parasthesia, urinary incontinance, rigidity

C- what is the name of the test shown and how to do it?

Hoffman, Hold the patient's middle finger and briskly flick the distal phalanx into flexion.

D- What is the name of the surgery done?

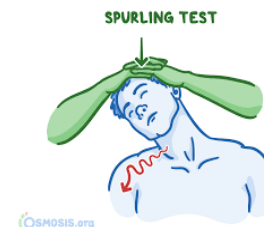
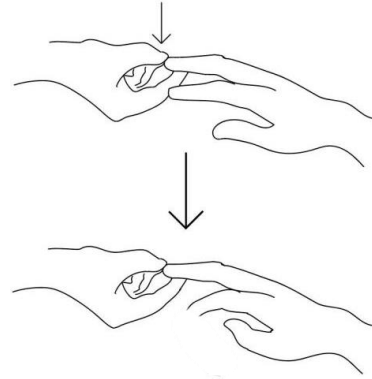
ACDF (anterior cervical discectomy and fusion)

E- Complications of the surgery?

Dysphagia, hoarseness of voice, nerve damage, hematoma.

F- what is the provocative sign that you may find?

Spurling's test (laterally flex the patient's neck toward the symptomatic side + apply axial compression, +ve in arm pain/numbness).



Q. 97

A- what is the name of this test?

Straight leg raise test

B- is it passive or active?

Passive

C-when is it called positive?

when the sciatica (pain along sciatic nerve) is reproduced between 10 and 60 degrees of elevation.

D- if positive what does that mean?

Indicates lumbosacral radiculopathy, sciatica nerve root compression, L5-S1 or L4-L5 herniation.

E- what is the best image to do?

Lumbosacral MRI



Q. 98

A- Describe what you see?

Dilated left pupil directed outward and downward.

B- what is the diagnosis?

Uncal herniation, causing 3rd nerve palsy

C- how to treat the pt?

Decompressive craniotomy and ICP reduction

D- what is the best image to do to confirm the diagnosis?

Brain MRI



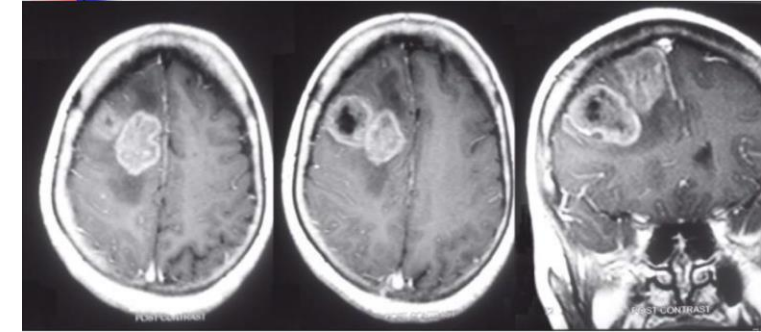
Types of herniation:

- **Subfalcine (cingulate)**
 - Beneath falx cerebri, ACA syndrome, midline shift
- **uncal**
 - ipsilateral fixed dilated pupil, contralateral hemiparesis
 - uncus displaced ↓ through supratentorial space
 - CN III palsy (ptosis, deviated outward/down)
- **central**
 - diencephalon/midbrain/pons moves downward from supratentorial through tentorial incisura
 - coma, respiratory arrest, loss of brainstem reflex
- **tonsillar**
 - cerebellar tonsils/pons/medulla downward through foramen magnum
 - PCA compression
 - manifestations of brainstem/cerebellar compression
- **upward**
 - superior cerebellar hemispheres/vermis upward from posterior fossa through tentorial incisura
 - PCA & SCA compression
- **external**
 - brain tissue through calvaria via skull bone defect (usually post-traumatic or post-surgical)

Q. 99

A-Describe the finding in the image?

Axial brain MRI with contrast showing rt frontalparietal heterogeneous irregular lesion with ring enhancement and central necrosis with hypodense edema around.



B- what is the diagnosis?

Glioma (Glioblastoma multiforme)

C- what is the possible grade?

Grade 4

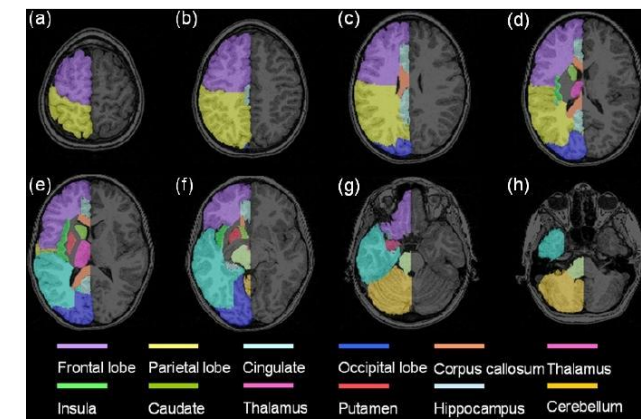
D- what would the pt complain of?

Morning headache, N&V, visual problems, focal neurological deficit, epilepsy, personality changes, lt side weakness, dysphasia

E- how to treat the pt?

Steroids for the vasogenic edema

Craniotomy and total excision +/- radio and chemotherapy



Q. 100

Ddx?

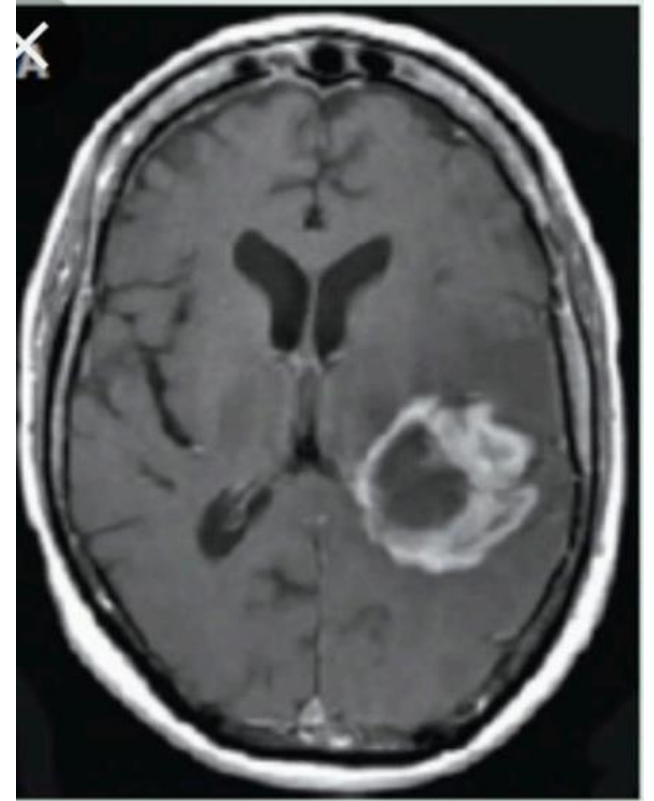
GBM

lymphoma

Abscess

Mets

Resolving hematoma



Q. 101

A- name the sign the pt has?

Foot drop

B- name four useful physical exams you can do for this pt?

1. Gait, heel walk test
2. Planter reflex test (Babinski)
3. Straight leg rising test
4. Sensory and motor exam of lower limbs
5. Reflexes (knee and ankle)

C- which nerve root it affected?

L5

D- what is the best investigation?

Lumbosacral spine mri



Q. 102

This a few hours old newborn who was delivered by C/S, he was diagnosed antenatally to have this congenital anomaly. He is unable to move his lower limbs spontaneously. His head circumference is 40:

1- What is the diagnosis?

Myelomeningocele with chiari malformation type 2

2- Mention 2 risk factors associated with this anomaly?

Family history of MM, Folic acid deficiency, Anticonvulsants (valproate), DM, obesity, fever

3- What will happen to neurological function after doing surgical repair to this baby?

It will not improve but decrease risk of infection and meningitis



- Normal head circumference for full-term infants is 33-36 cm at birth.
- Incidence of hydrocephalus is 85-90% of all cases of myelomeningocele.

Q. 103

1- Describe the image A and image B?

A: T2 Sagittal MRI to cervicothoracic area

B: T2 axial MRI

2- name the findings in each picture?

A: Canal stenosis and herniation at C6/C7

B: left Lateral Disc herniation

3- What you need to ask the patient?

Weakness, paraesthesia, rigidity, urinary incontinence.

4- Mention two provocative signs that you may find?

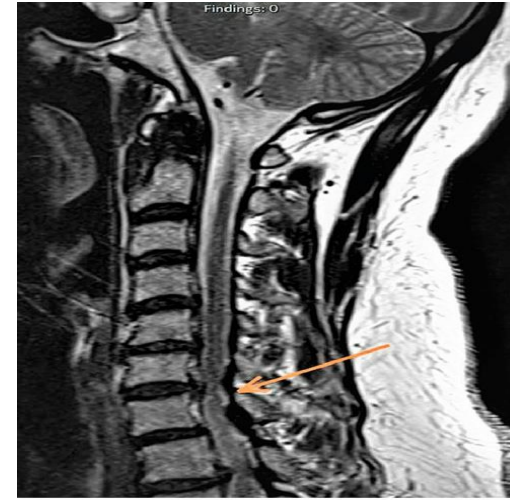
spurling's test, Lhermitte's sign

5- What is the name of the surgery?

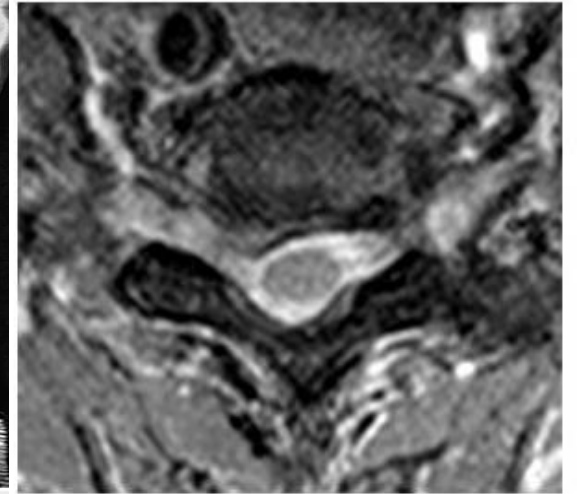
Anterior cervical discectomy with fusion (ACDF)

6- name 2 complications ?

Dysphagia, hoarseness



A



B

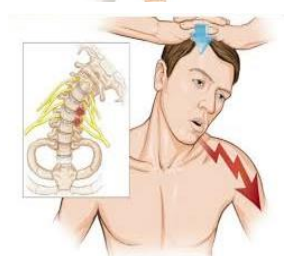
Lhermitte's Sign

Neck flexion causes a sudden electric shock-like sensation down the spine, indicating cervical spinal cord (dorsal column) involvement. Seen in MS, B12 deficiency, and cervical myelopathy.



Spurling's Test

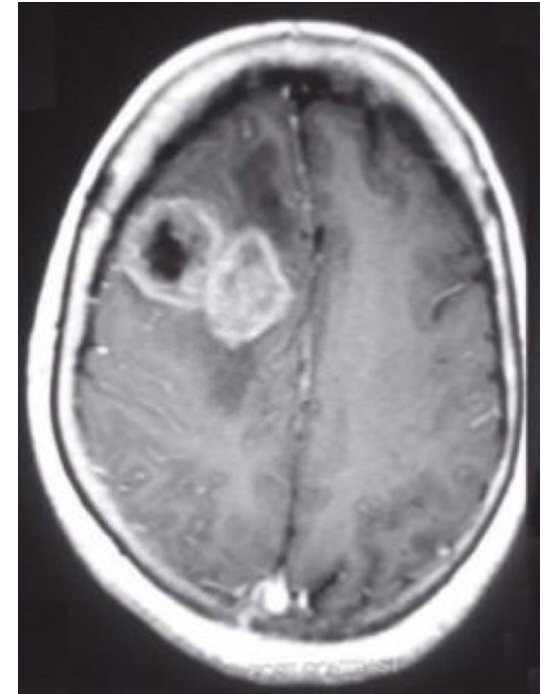
Neck extension + lateral flexion + pressure reproduces radicular arm pain, suggesting cervical nerve root compression. Common in disc herniation and spondylosis.



Q. 104

1- describe the findings in the picture?

T1 Brain MRI with contrast that shows intraxial mass with heterogenous enhancement in the right frontoparietal lobe with central necrosis and hypodense edema around



2- The patient will complain of ?

left sided weakness, personality and behavioral problems, Symptoms of raised ICP (morning headache, projectile vomiting, visual problems), seizures, dysphasia

3- What is the diagnosis?

Glioblastoma multiform

4- What is the treatment ?

Steroid for vasogenic edema

Total surgical resection of tumor and post op chemotherapy and radiotherapy.

Q. 105

A 44-year-old patient presented with progressive lower back pain of 1 year duration radiating to his right lower limb. This is his picture (in the original picture, the mass was more white):

1. Describe what you see in the picture?

A sagittal cut lumbosacral MRI T1 sequence with contrast, it shows a hyperintense oval-shaped intradural extramedullary mass at the level of L5.

2. Mention other symptoms that this patient might complain of?

Lower limb weakness & paraesthesia, urinary incontinence, cauda equina syndrome.

3. Give 2 possible diagnoses for this patient

Meningioma, neurofibroma, schwannoma

4. How would you treat this patient?

Surgical excision via laminectomy



Q. 106

a 56 year old lady present with low back pain, examination shows she has myelopathy.

A- Describe?

Sagittal cervical spine mri t2 shows intradural extramedullary irregular hypointense mass compressing the spinal cord.

B-Most likely diagnosis?

Meningioma.

C-Other 3 myelopathy signs of lower limb?

Hyperreflexia, clonus, spasticity

D-what does this sign indicate (babinski sign)?

UMNL.



Q. 107

A 68 year old pt has a history of lung cancer had a seizure recently, his MRI was shown (pt is right handed).

A- Describe MRI findings?

There is a mass with irregular borders in the the lt frontoparietal area.

B- Diagnosis?

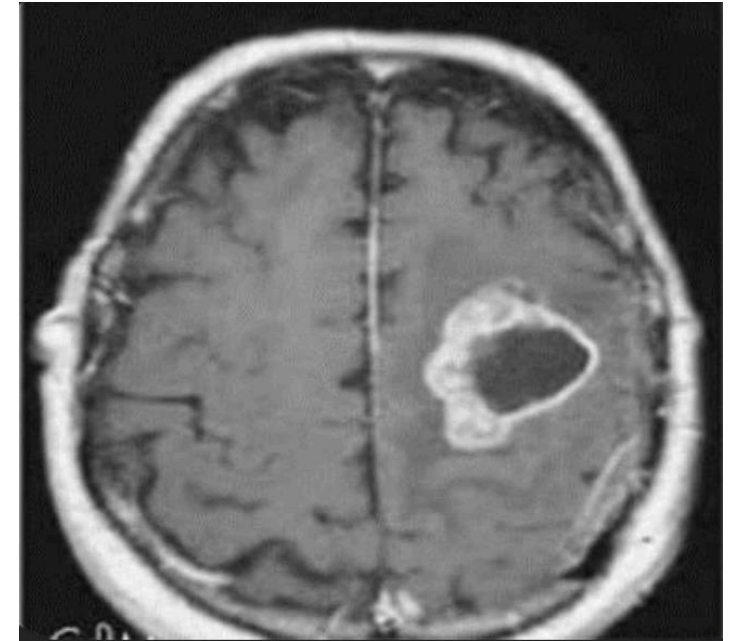
Brain metastasis

C-Other finding on p/e?

Neurological deficit, personality changes, Aphasia, epilepsy, visual impairment, vomiting, headache

C- What are the lines of treatment for this pt?

Total surgical excision + radiotherapy, chemotherapy .



Q. 108

patient comes to ER after RTA, open eyes on painful stimuli, incomprehensible words, flexes his left elbow on pain stimulus.

1- What is the diagnosis ?

Acute epidural hematoma

2- Calculate the Glasgow coma scale?

E(2) + V (3) + M (4) =9/15

3- Determine which type of head injury according to Glasgow coma scale?

moderate

4- What is treatment?

Craniotomy to evacuate clot (within the first 6 hours after injury)

5- Mention three measures you would do in the ER?

Admission, ABC, CT



Q. 109

A 65 year old pt came to hospital after he fell from stairs, on examination, he was flexing his hands and produce inappropriate words and open eyes to pain:

A-Calculate his GCS?

$E(2) + V(3) + M(3) = 8/15$

B-Mention 4 acute complications of his condition ?

Hydrocephalus, herniation, hemorrhage, parenchymal damage

C-Describe what you see on his CT scan?

his ct scan is showing left side frontal parietal acute subdural hematoma

With midline shift and effacement of sulci and gyri (high icp)

D-What is the best surgery for this pt?

Craniotomy and evacuation.



Q. 110

A pt came with low back pain. Five days later he had urinary incontinence. MRI picture were shown.

A-Describe MRI pic?

A. Sagittal Lumbosacral MRI t2 with Disc herniation in L5/S1

B.axial MRI with lt posteriolateral herniation

B- mention 5 specific questions for his case?

Saddle anesthesia, sensory loss, weakness, urinary incontinence, trauma

C-What's the best surgical intervention?

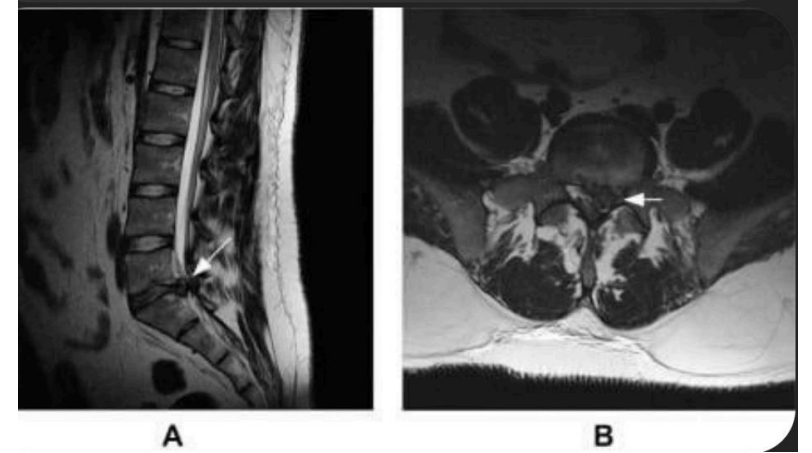
Discectomy via laminectomy

D- mention two signs seen on examination?

+ve Straight leg rising test, Reduced ankle reflex

E- which dermatome, reflex are affected?

S1 posterior thigh and calf , Lateral foot &sole, Ankle reflex



Q. 111

Pt came to hospital due to severe headache. her vitals were BP 180/110. Her labs show Na levels of 122.

A-Describe changes on CT?

Hyperdense lesion on the left temporal area circular in shape and there's acute subarachnoid hematoma.

B-What is the most common cause in her case?

Aneurysm rupture

C-What is the next step in confirming diagnosis?

Cerebral angiography (DSA) /LP

D_What are the explanations of her vitals and labs?

BP high to compensate for ICP, and hyponatremia due to SIADH or cerebral salt wasting.



Q. 112

1- name the pics:

A.Meningocele

B.Myelomeningocele

2- prognosis after surgery?

Same, no improvement but we do the surgery to prevent infections and meningitis

3- associated with?

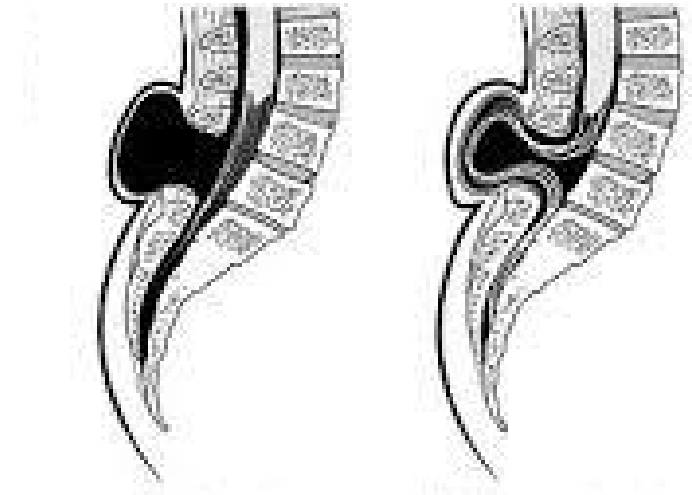
Hydrocephalus

4- Percentage?

85%-90%.

5- which syndrome is it associated with?

chiari type 2 malformation (arnold).



MMC and hydrocephalus

- Incidence of hydrocephalus is 85-90% of all cases of myelomeningocele.
- Usually it is a part of type 2 (arnold)- chiari malformation.
- May not be apparent after birth immediately, may be seen as far as 2 years ,but most cases will need shunt by the age of 6 months.

Finding	Chiari type 1 (see below)	Chiari type 2 (see page 230)
caudal dislocation of medulla	unusual	yes
caudal dislocation into cervical canal	tonsils	inferior vermis, medulla, 4th ventricle
spina bifida (myelomeningocele)	may be present	rarely absent
hydrocephalus	may be absent	rarely absent
medullary "kink"	absent	present in 55%
course of upper cervical nerves	usually normal	usually cephalad
usual age of presentation	young adult	infancy
usual presentation	cervical pain, suboccipital H/A	progressive hydrocephalus, respiratory distress

Q. 113

A case of RTA presented with the sign in the pic, open eyes spontaneously, not oriented to place, obeys commands.

1- What is the GCS, and type of injury?

E(4)+V(4)+M(6) =14/15, mild

2- whats the pathology?

basal skull fracture

3- mention the sign and other signs can be associated with it?

Battle's sign/ subconjunctival hemorrhage, racoon eyes, rihinorrhea, otorrhea.

4- Basal skull fracture scenario causing facial nerve palsy?

when the basel fracture cross the stylomastoid foramen cause injury to the 7th CN nerve.

5- tests to confirm that the leak is csf?

B2 Transferrien, Glucose test

6- management?

admit for observation and if the patient deteriorates do CT scan to rule out hematomas. Basal skull fractures should be covered with antibiotics and the nose and ear should be observed for CSF leak



1. Laboratory Tests (to confirm fluid is CSF)		
Test	Sensitivity / Specificity	Notes
β 2-transferrin	Highly specific	Present almost exclusively in CSF, perilymph, and aqueous humor
β -trace protein	Very sensitive	Useful if β 2-transferrin not available
Glucose testing (CSF has higher glucose than nasal secretions)	Low specificity	Can be misleading if blood contamination

Q. 114

Newborn with defect shown in the image. head circumference is 39, with paraparesis.

1- What is the diagnosis?

myelomeningocele

2- Describe the head circumference and explain why?

Large head circumference, 85-90% of myelomeningocele cases are associated with hydrocephalus, due to Chiari type 2 malformation, where the hind brain herniation obstructs CSF flow at foramen magnum

3- Mention two risk factors?

Family history of myelomeningocele, folic acid deficiency

4- What is the name of surgical procedure?

Myelomeningocele repair

5- mention 2 indications?

1-prevent infection. 2- cosmetic



Q. 115

Patient presented with severe back pain of 1 week duration radiating to the left leg.

1-Mention 5 specific questions you would ask the patient?

Weakness, sensory loss, pain, urine incontinence, trauma

2- Mention two signs you expect to see in physical exam.

+ve Straight leg raise test, decreased or absent knee reflex

3- Describe what you see in image a and b.

A: sagittal lumbosacral T2 mri, L3-L4 disc herniation

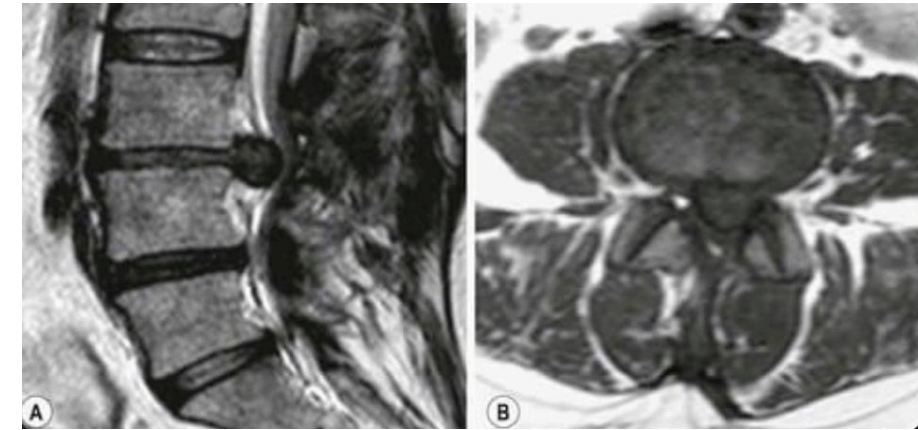
B: axial spine mri T2, central disc herniation

4. What is the dermatome affected?

L4, anterior thigh, knee

5- What is the management?

Discectomy via laminectomy



Q. 116

Patient presented with headache and seizures, he is a smoker, diagnosed with lung cancer 4 years ago.

1- What is the most likely diagnosis?

Brain metastasis

2- Describe what you see?

Axial brain mri T1 with contrast showing irregular heterogenous mass with ring enhancement and central necrosis in the Lt temporal lobe

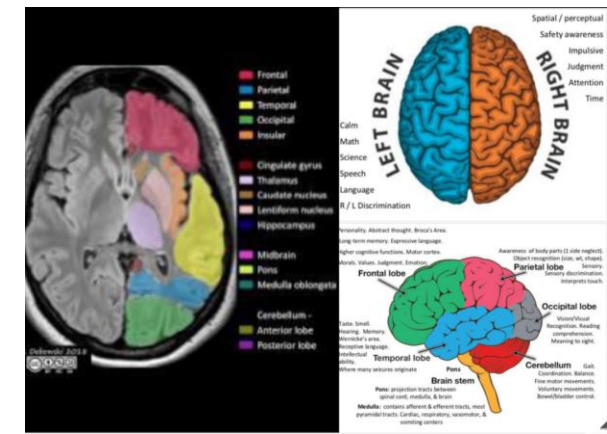
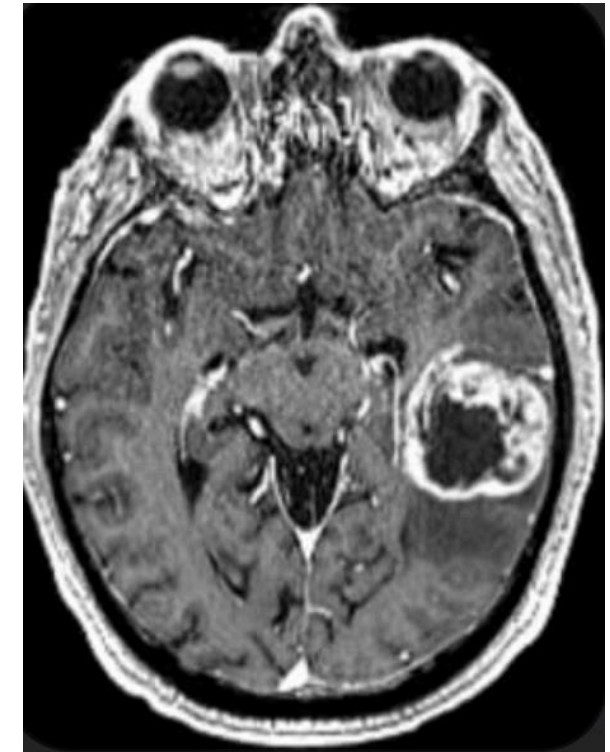
3. Mention neurologic abnormalities the patient may have according to his lesion?

Agraphia, acalculia, aphasia, neurological deficit, epilepsy, headache, vomiting

(masses in the left hemisphere for rt handed pt causes brocas aphasia)

4. Mention the lines of management?

Surgical excision craniotomy with chemo, radiotherapy



Q. 117

30 year old Female patient presented with headache and galactorrhea. MRI is shown

1- What is the diagnosis?

Prolactinoma

2. What is visual defect you expect to be present in this patient? Why?

Bitemporal hemianopia, because the mass compresses the optic chiasm

3. Mention laboratory investigations you would order for diagnosis?

serum prolactin levels, β -hCG (exclude pregnancy), **TSH + Free T4** (exclude hypothyroidism), **Renal function** (Urea/Creatinine) (exclude CKD)

4. What is the first line treatment?

Bromocriptine

5. What is the surgical management approach?

Trans nasal trans sphenoidal resection



Q. 118

An infant with head circumflex 40, had vp shunt before and now this is the presentation:

1- Dx?

Obstructed vp shunt

2- Investigations?

Brain MRI, Shunt tap and CSF analysis and culture, Shunt series X-rays (skull, neck, chest, abdomen)

3- Mention 5 signs of hydrocephalus?

Setting sun eyes, shiny skin, dilated scalp veins, increased head circumference, full anterior fontanelle, suture widening

4- Most common cause of hydrocephalus in peds?

Congenital aqueduct stenosis



Q. 119

Patient presented with hearing loss:

1- Radiological findings?

Axial brain MRI T1 with contrast, showing bilateral heterogeneous hyperintense lesions at cerebellopontine angles with the Lt being bigger

2- Type of lesion?

Bilateral vestibular schwannoma (acoustic neuroma)

3- Name of the sign?

Café au lait spot

4- Name of the syndrome?

Neurofibromatosis 2

5- Which cranial nerve should be tested?

CN 8&7

facial nerve lies very close in the cerebellopontine angle → at high risk of damage during tumor growth or surgery.



Risk Factors

1. no genetic predisposition except in certain inherited syndromes
 1. **NF1** : optic nerve glioma , peripheral neurofibroma
 2. **NF2** : bilateral acoustic neuroma , multiple meningioma
 3. **Tuberous sclerosis** : subependymal glioma
 4. **Li-fraumeni disease**: glioma , ependymoma and medulloblastoma
 5. **Von hippel lindau disease**: hemangioma and hemiangioblastoma

Bilateral vestibular schwannoma is diagnostic for NF 2. NF2 is an autosomal dominant tumor predisposition syndrome characterized by bilateral vestibular schwannomas and other intracranial and intraspinal tumors. It can have cutaneous café au lait spots.

Q. 120

Newborn with lesion in his back and he is unable to move his legs voluntarily:

1.Diagnosis?

Myelomeningocele

2.Which one represents the patient's findings A or B?

B

3.What is this associated with + percentage?

Hydrocephalus, 85-90% association

4.The name of the syndrome?

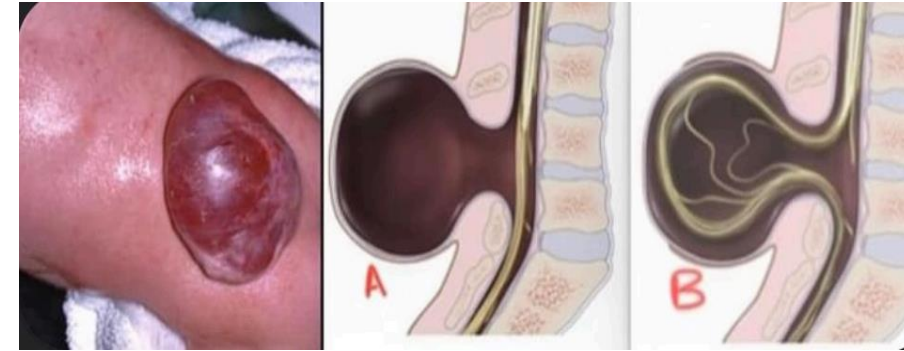
Arnold chiari syndrome (chiari malformation type 2)

5.What can you do to help this lady while pregnant?

Intrauterine Myelomeningocele surgical repair

6.What advice would you give to avoid this problem in the future?

Planned pregnancy with folic acid supplementation 3mo before pregnancy.



Q. 121

A 60 year old patient with frequent falls due to paralysis, with heart disease on aspirin, presented with headache.

1. Describe image findings?

Bilateral frontal (mention lobes it encompasses) **hypodense subdural lesion**

2. Diagnosis?

Chronic bilateral subdural hemorrhage

3. Risks?

Drugs (antiplatelets/ anticoagulants), Falls (paralysis), old age, liver disorders

4. What other symptoms the patient may suffer from besides mentioned?

Confusion, cognitive deficits (impaired memory), hemiparesis, seizures, papilledema (blurry vision)

5. Treatment?

Burr hole and evacuation (hematomas which have produced neurological damage or thicker than 1 cm should be treated surgically by evacuation)



Q. 122

Lady presented with neck pain radiating to the right upper limb, as well as difficulty walking that started a year ago:

1. Describe what you see in the picture?

A sagittal cervical spine MRI (T2) Showing C5-C6 disc prolapse

2. What are 4 questions that you should ask this specific patient?

Any Sensory loss, weakness, gait, urinary incontinence, trauma, pain

3. Mention 4 signs of myelopathy?

Positive Hoffmann's test, Babinski, Clonus, Hyperreflexia, Spasticity

4. At what level is the upper motor neuron affected in this patient?

Below C6

5. Name the surgical approach used to treat this patient & mention 2 complications.

ACDF, hoarseness & dysphagia



Q. 123

A 50 yo patient presented with severe sudden headache:

1- What is the finding in the CT?

Hyperdense subarachnoid hemorrhage in the lt middle cerebral artery area

2- Imaging modality for definitive diagnosis?

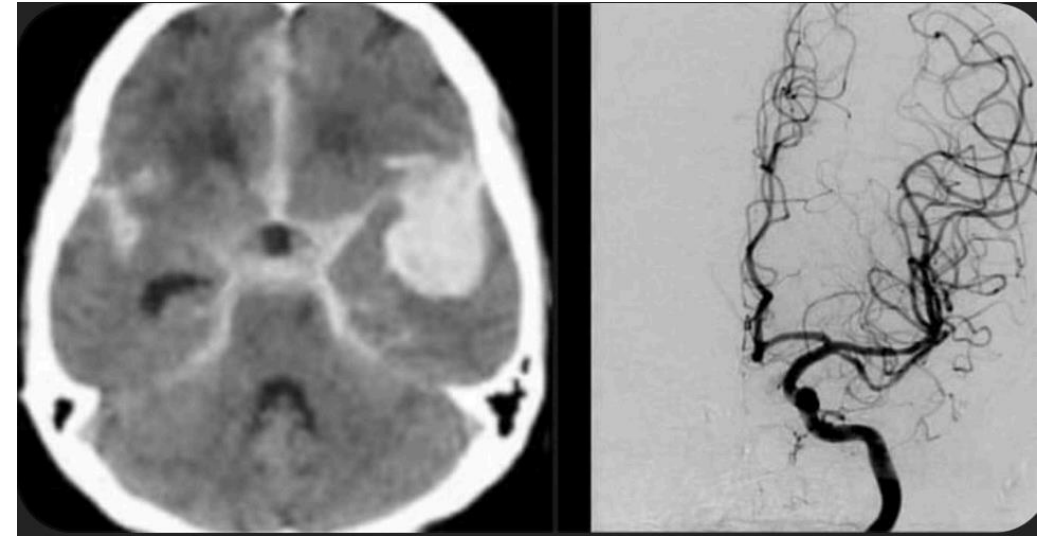
(DSA) digital subtraction angiography

3- Cause?

Ruptured aneurysm

4- Treatment?

Surgical Clipping via craniotomy or Endovascular coiling,
Nimodipine (prevent vasospasm), Control ICP



Coiling	Clipping
Small neck aneurysm (<4 mm)	Broad neck / complex aneurysm
Posterior circulation	MCA or surgically accessible sites
Older / high surgical risk	Younger patients (durable)
Less invasive, faster recovery	With hematoma needing evacuation

Q. 124

1- what is the test? What does it indicate?

Spurling's test, indicates cervical cord compression

2- which nerve root is affected ?

C6

3- which dermatome is affected and myotome?

Dermatome: Lateral arm foramen and thumb

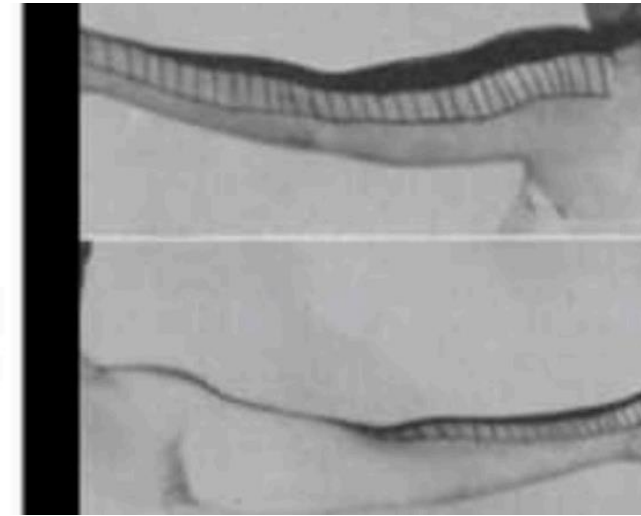
Myotome: arm flexion, wrist extension

4-Reflex affected?

Brachioradialis reflex

5- surgery?

ACDF (Anterior Cervical Discectomy and Fusion)



Lhermitte's Sign

Neck flexion causes a sudden electric shock-like sensation down the spine, indicating cervical spinal cord (dorsal column) involvement. Seen in MS, B12 deficiency, and cervical myelopathy.



Spurling's Test

Neck extension + lateral flexion + pressure reproduces radicular arm pain, suggesting cervical nerve root compression. Common in disc herniation and spondylosis.



Q. 125

The patient opens his eyes on painful stimulus, inappropriate words, extend both hands on painful stimulus:

1-Type of head injury depending on GCS, why?

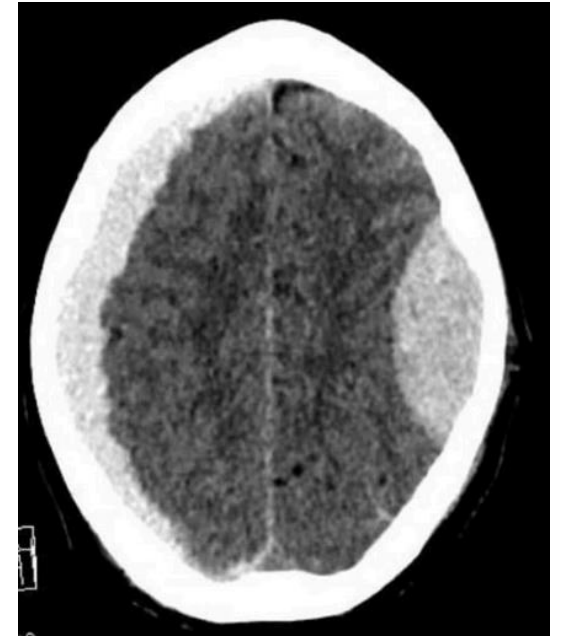
Severe head injury

GCS= E2+V3+M2=7/15

2-Describe the CT findings?

There's in the Rt-side hyperdense lesion that extends from frontal-parietal-occipital, crescentic in shape, suggests acute subdural hematoma.

In the Lt. side there's an oval hyperdense lesion in the parietal lobe that suggests acute epidural hematoma.



Q. 126

A 72-year-old man was brought to the emergency department with sudden severe headache and progressive drowsiness after collapsing at home.

- Describe what you see?

Right eye is dilated, directed downwards and outwards, with ptosis



-What is the cause of the underlying condition, explain why is happened?

3rd nerve palsy, uncal herniation (due to hemorrhagic stroke, intracerebral hematoma, or space-occupying tumor leading to increased intracranial pressure)

Q. 127

Female pt came to ER with nuchal rigidity, fully conscious,
Na 122, bp 180/90, RR 40/min

1- Describe the findings?

The CT scan shows hyperdense blood diffused in the central subarachnoid space, mostly due to aneurysmal subarachnoid hemorrhage (SAH).

2- Grade?

Hunt and Hess Grade I and WFNS grade 1

3- Explain the vital signs and the hyponatremia?

Hyponatremia: due to SIADH or cerebral salt wasting.

Hypertension: chronic or stress-induced.

Tachypnea: Could be compensatory respiratory alkalosis due to pain or increased ICP.

4- Management?

Admission, abc, Nimodipine (prevent vasospasm), Surgical Clipping or Endovascular coiling, Correct hyponatremia, Control ICP.



The Hunt and Hess grading system

Grade	Clinical manifestation
Grade 1	Asymptomatic or minimal headache and slight nuchal rigidity
Grade 2	Moderate to severe headache; neck rigidity; no neurologic deficit except cranial nerve palsy
Grade 3	Drowsy; minimal neurologic deficit
Grade 4	Stuporous; moderate to severe hemiparesis; possibly early decerebrate rigidity and vegetative disturbances
Grade 5	Deep coma; decerebrate rigidity; moribund

The WFNS grading system

	GCS	MOTOR
Grade 1	15	No motor deficits
Grade 2	13-14	Without deficit
Grade 3	13-14	With focal neurological deficit
Grade 4	7-12	With or without deficit
Grade 5	3-6	With or without deficit

The Fischer scale

GRADE	SUBARACHNOID BLOOD
Grade 1	No subarachnoid (SAH) or intraventricular hemorrhage (IVH) detected
Grade 2	Diffuse thin (<1 mm) SAH. No clots
Grade 3	Localized clots and/or layers of blood >1 mm in thickness. No IVH.
Grade 4	Diffuse or no SAH. ICH or IVH present

Q. 128

1- What visual findings associated and why?

Bitemporal hemianopia, because the tumour compresses the optic chiasm

2- Give 2 differential diagnoses?

Pituitary adenoma, meningioma (could be found in suprasellar but without endocrine disturbances)

3- What specific lab tests needed?

Prolactin, tsh, cortisol, fsh/lh, igf-1

4- Surgical approach?

Trans nasal trans sphenoidal or trans ethmoidal hypophysectomy

5- If its size was 17mm, how do you classify this lesion according to size?

Macroadenoma

microadenoma <1 cm; macroadenoma ≥ 1 cm.



Q. 129

1- What is the name of this device?

Ventriculoperitoneal shunt

2- Name each structure?

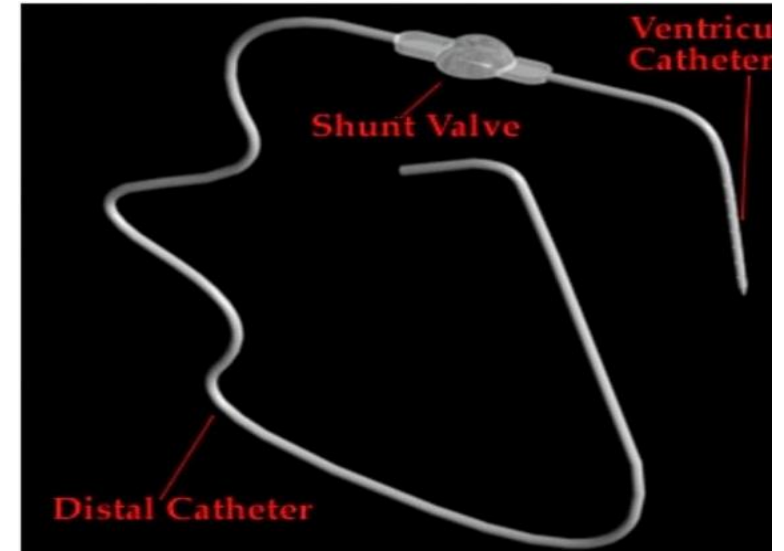
1. Ventricular catheter
2. Reservoir
3. Shunt valve
4. Distal catheter

3- Complications?

Infection, obstruction

4- Other uses of the valve?

CSF sampling, checking for obstruction sites



Q. 130

An 8 year old complaining of headache, had the following scan:

1- What questions should you ask about the headache?

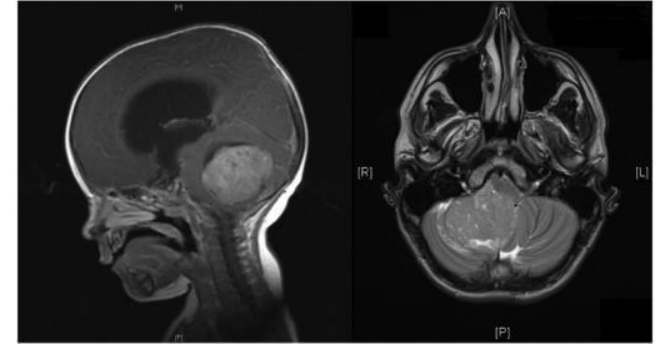
If its associated with nausea or vomiting, if it happens in the morning

2- if the patient suddenly deteriorates what is the next step?

EVD (External Ventricular Drain) to decrease ICP then schedule for elective surgery after a few days

3- Peak age is:

5 years



Medulloblastoma

Q. 131

This is the picture of a patient who fell from the third floor & suffered the following lesion.

1. What is the name of this appearance?

Raccoon eye appearance

2. What is the cause of this appearance?

Basal skull fracture (anterior cranial fossa fracture)

3. Mention 3 other signs you expect to find in this patient?

Rhinorrhea, subconjunctival hemorrhage, cranial nerve deficit

4. What is the best diagnostic tool for this patient?

Brain CT

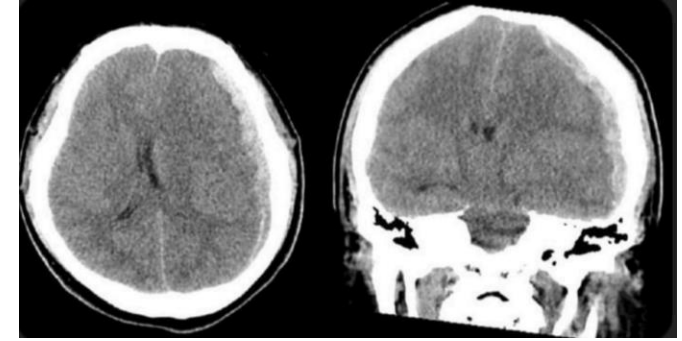
5. What are possible complications in this patient?

Epilepsy, hematomas, CSF leak, infections.



Q. 132

A 40-year-old patient suffered a head injury & fell unconscious. In the ER, his vital signs were stable. The patient doesn't open his eyes in response to pain, he responds with incomprehensible sounds when you talk to him, & he flexes his elbow in response to pain. This is his CT scan.



1. Describe what you see in the pictures?

Axial (left) & coronal (right) brain CT, they show fronto parieto occipital crescent-shaped subdural hyperdensities on the left side with midline shift to the right side, effacement of gyri and sulcus and smaller rt ventricles

2. What is the Glasgow coma score for this patient?

E1V3M4 = 8/15

3. What is the type of injury depending on the GCS?

Severe brain injury

4. How would you manage this pt in the ER and after admission?

ER : ABC , intubation, reduce icp by manitole and diuretics and maintain bp ,

After admission: monitor icp in the icu, craniotomy within the first few hours and evacuate the blood and stop the bleeding

Q. 133

A 14 year old female presented with difficulty walking this is her MRI:

1) Describe what you see?

Sagittal lumbosacral mri T1 with contrast showing intradural intramedullary hyperintense elongated irregular heterogeneous lesion from L2-L5

2) What clinically important questions you would ask this patient, mention 5?

Weakness, parasthesia, urinary incontinence, pain, gait

4) Most probable diagnosis?

Ependymoma

5) Ddx?

Syringohydromyelia, schwannoma, neurofibroma, metastasis



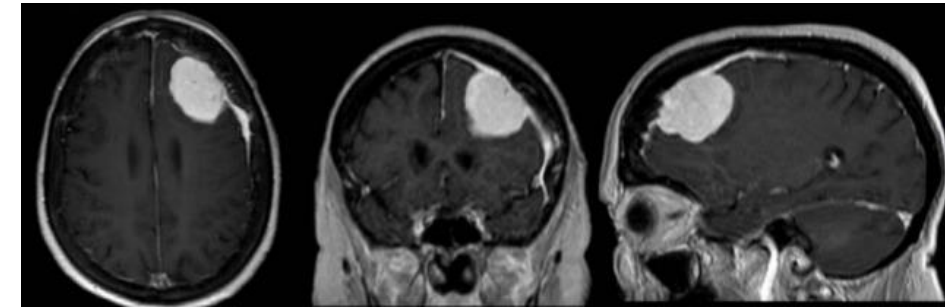
Q. 134

1. What is the Dx, explain?

Meningioma, hyperdense homogeneous parasagittal circumcised tumour in the lt frontal area intradural extramedullary, with dural tail and hyperostosis of cranial vault

2. Describe each image:

- A. Axial brain mri t1 with contrast
- B. Coronal brain mri t1 with contrast
- C. Sagittal brain mri t1 with contrast



A

B

C

3. Findings in image C :

Shows lt hyperintense homogeneous parasagittal lesion with dural tail, clear borders and Hyperostosis of cranial vault

4. Best surgical treatment?

Total surgical excision

5. WHO classification?

Parasagittal, classification depends on position and origin rather than histology

Q. 135

-What is the name of the pointed instrument?

Surgical microscope

-Mention 2 indications for its use:

Brain aneurysm, ACDF, decompressive laminectomy



Q. 136

1-What is the most likely diagnosis for this child:

Myelomeningocele

2-What is the name of the surgery?

Myelomeningocele repair

3-What is the benefit of this surgery, would he improve?

Reduce the risk of infection (meningitis) and prevent further neurological damage & cosmetic, presented neurological deficits won't improve

4-What do you think his lower limb physical examination will reveal?

Bilateral loss of sensation & motor function

5-What are possible associated intracranial abnormalities?

Hydrocephalus, Chiari 2 malformation (Arnold chiari malformation)



Q. 137

5 y o child with posterior fossa tumor

1- Most common ddx?

Medulloblastoma

2 - How to diagnose shunt infection?

CSF sample analysis and culture

3 - CSF findings in infection?

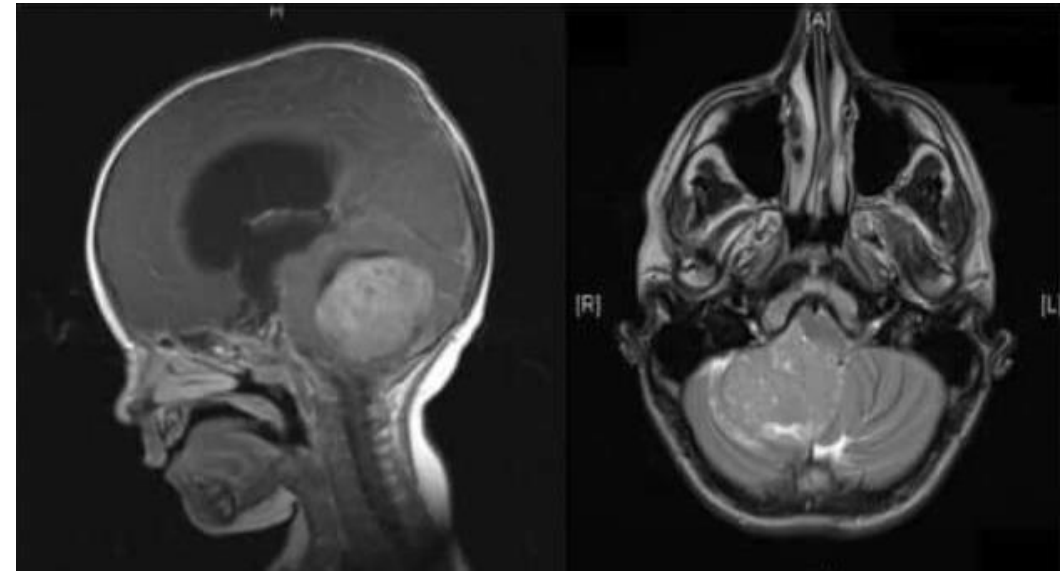
High WBCs, low glucose, high proteins, +ve culture

4 – Management?

**Treat hydrocephalus (decrease ICP), Surgery and total excision,
Neuraxis radiation**

5 - other than shunt to treat hydrocephalus in his case?

EVD (external ventricular drain).



Q. 138

You see a road traffic accident on the highway:

a) What will you do? write 4 steps to your approach:

Park safely, put warning sign, call for help (911), approach safely, call the pt

If conscious: don't move him, support neck, ABC (maintain bp and oxygenation, do a brief motor exam).

If unconscious: do CPR

b) When you approached the pt. he opened his eyes spontaneously, was disoriented but obeyed simple commands. what's the GCS?

E4V4M5= 14/15

c) Upon admission, the pt has high bp and tachycardia, what's the cause?

Anxiety, pain

d) The patient was found to have weakness more in the upper limbs compared to lower limbs. what's the cause?

Central cord syndrome



Hypotension+ tachycardia= bleeding
Hypertension+ bradycardia= cushing triad (high icp)
Hypertension+ tachycardia= anxiety and pain
Hypotension+ bradycardia= neurogenic shock (spinal cord injury)

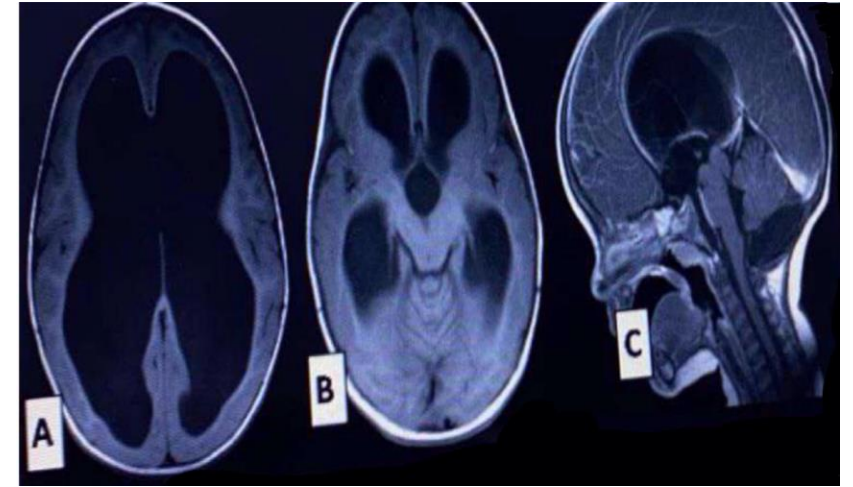
Q. 139

These are images of a one month old infant with head circumference of 42:

1- Describe the image findings A, B, C :

A & B: Axial brain MRI T1 showing symmetrical, enlargement of the lateral ventricles. And the brain is compressed with loss of sulci and gyri.

C: Sagittal/Midline View brain MRI T1 shows dilation of the third ventricle. The fourth ventricle appears normal in size, suggesting obstruction at the level of the aqueduct.



2. What is the diagnosis?

Non communicating congenital hydrocephalus with marked ventriculomegaly.

3. What is the commonest cause?

Congenital aqueduct stenosis

3. What clinical signs would you expect?

Full and tense anterior fontanelle, wide sutures, sunseting eyes sign, dilated scalp vein

5. What is the first-line management?

Ventriculoperitoneal shunt or Endoscopic third ventriculostomy (for aqueductal stenosis).

Q. 140

A 25-year old lady had history of optic neuritis 1 year ago and now has right sided weakness. The MRI shown for her suggest which diagnosis:

- a. Multiple sclerosis
- b. Multiple lacunar strokes
- c. Multiple abscesses
- d. Multiple meningiomas

Answer: A



Q. 141

65yo Patient presented with pain on the shown distribution, paresthesia and muscle weakness.

-What is the affected dermatome?

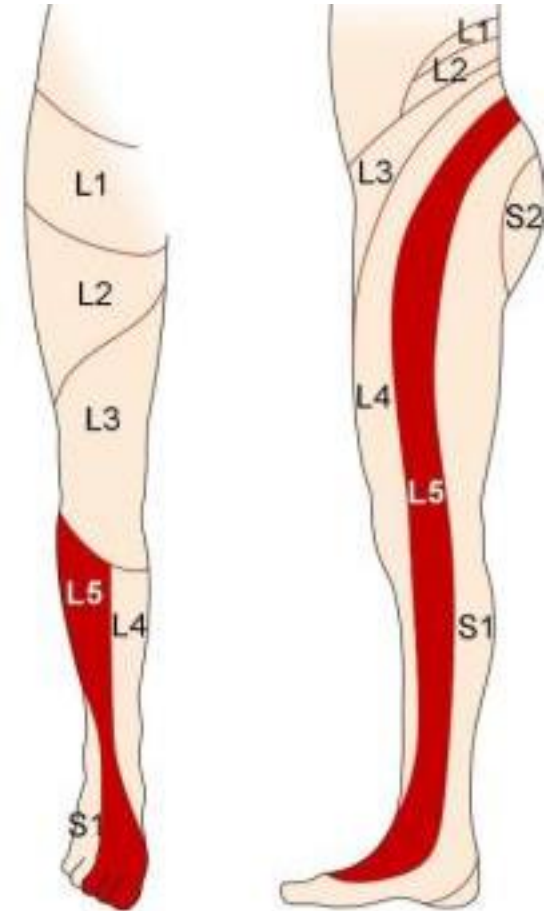
L5, Lateral thigh → anterior leg → dorsum of foot to big toe.

-What is most likely diagnosis?

disc prolapse.

-On physical examination, what is the motor function that would show weakness?

Big toe dorsiflexion mainly maybe with ankle dorsiflexion.



Q. 142

These are two types of a common congenital anomaly seen in the neurosurgical practice.

1-Name the anomalies seen in figures A&B?

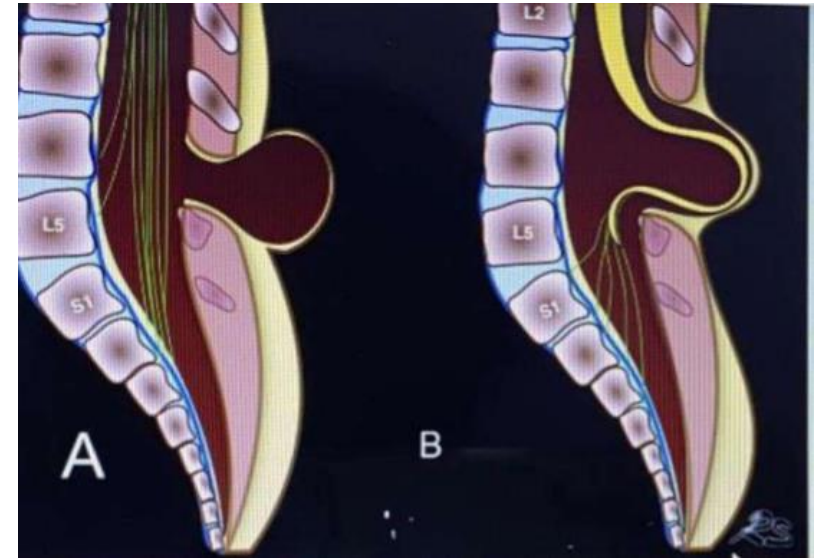
A) **meningiocolle**

B) **myelomeningiocolle**

2-How can you differentiate between them on clinical examination (mention two differences)?

Neurological deficit is present in myelomeningiocolle and not in meningiocolle

Contents of the sac in myelomeningiocolle is spinalcord, meningeies and csf, in meningiocolle only meninges and csf.



Q. 143

This is a 68 male who presented with progressive lower limbs stiffness and gait disturbance. Physical examination showed; spastic quadriparesis with hyperreflexia, bilateral Babinski signs and lost position sensation in both lower limbs.

1-Describe the image?

Cervical sagittal T2-weighted MRI shows multi segmental cervical canal stenosis with disc osteophyte complexes and possible ligamentum flavum hypertrophy are contributing to the stenosis, and compression of the cervical spinal cord, most prominent at C3–C4, The cord shows hyperintense signal, indicating myelomalacia or cord edema.

2-Is his clinical picture is suggestive of radiculopathy, myelopathy or myeloradiculopathy and why?

Cervical myelopathy ,because he shows signs of UMN (spasticity, hyperreflexia, babinski, with no signs of radicular pain).

3-Why he is having impaired position sensation?

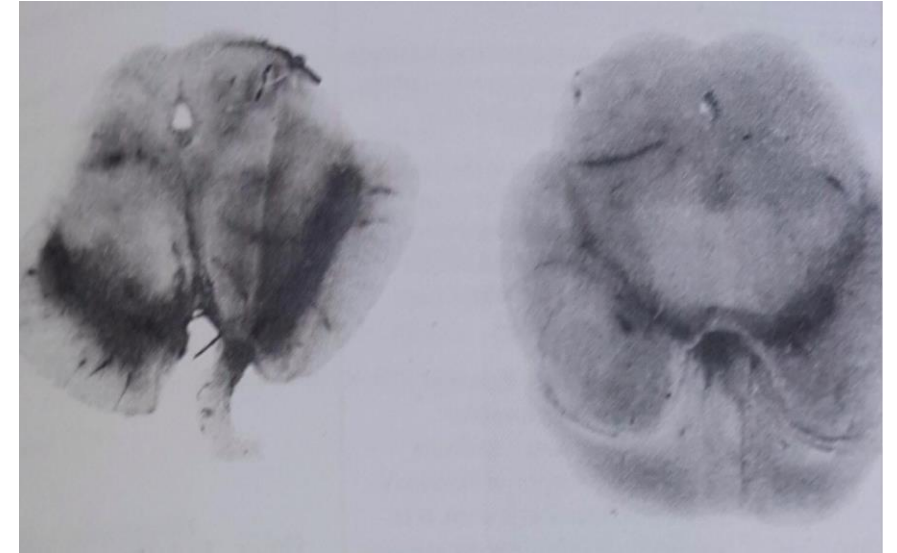
Posterior column compression due to dorsal cord involvement from cervical stenosis.



Q. 145

What neuronal loss causes the changes seen in the diseased (right) image compared to the normal (left) image?

- a. Cholinergic neurons
- b. Adrenergic neurons
- c. Serotonergic neurons
- d. Dopaminergic neurons



Answer: d

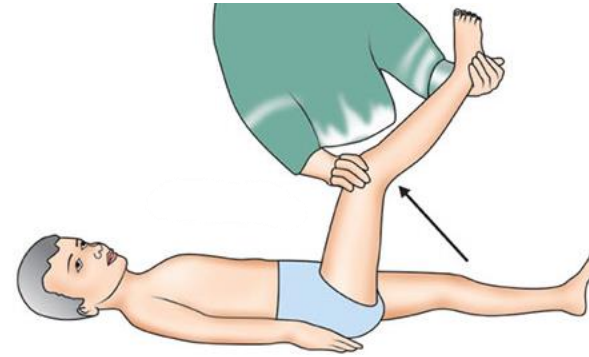
The image comparison shows substantia nigra degeneration (loss of pigment) a hallmark of Parkinson's disease.

Q. 146

The sign the examiner is trying to elicit is:

- a. Brudzinski sign
- b. Babinski sign
- c. Hoffman's sign
- d. Kernig's sign
- e. Lhermitte sign

Answer:d



Q. 147

The most important factor to make a proper diagnosis of epilepsy is:

- a. Blood chemistry
- b. Proper history from patient or witness
- c. Physical examination
- d. Electroencephalogram EEG
- c. Brain MRI

Answer: b

Q. 148

In localizing the lesion causing motor weakness which of the following pairs of clinical features/lesion site is Not correct?

- a. Right 3rd nerve palsy and left hemiparesis | Midbrain
- b. Seizures and hemiparesis | Pons
- c. Pure motor weakness | AHC (anterior horn cell)
- d. Bilateral lower limb spastic weakness | Spinal cord
- e. Wrist drop | Radial nerve

Answer: b

Q. 149

The shown fundoscopic exam is for a 37- year old obese lady with body mass index (BMI) of 38kg/m² who presented with diffuse severe headache worse in the morning and no other findings. If her neuroimaging studies were normal, the next step to do to reach a diagnosis for this lady is:

- a. Toxicology screen
- b. Cerebral angiogram
- c. Lumbar puncture
- d. Electroencephalogram EEG
- e. Visual evoked potential VEP

Answer: c



Q. 150

The drug that is commonly used to treat an acute attack of multiple sclerosis is:

- a. Corticosteroids
- b. Natalizumab
- c. Alemtuzumab
- d. Fingolimod
- e. Interferon beta

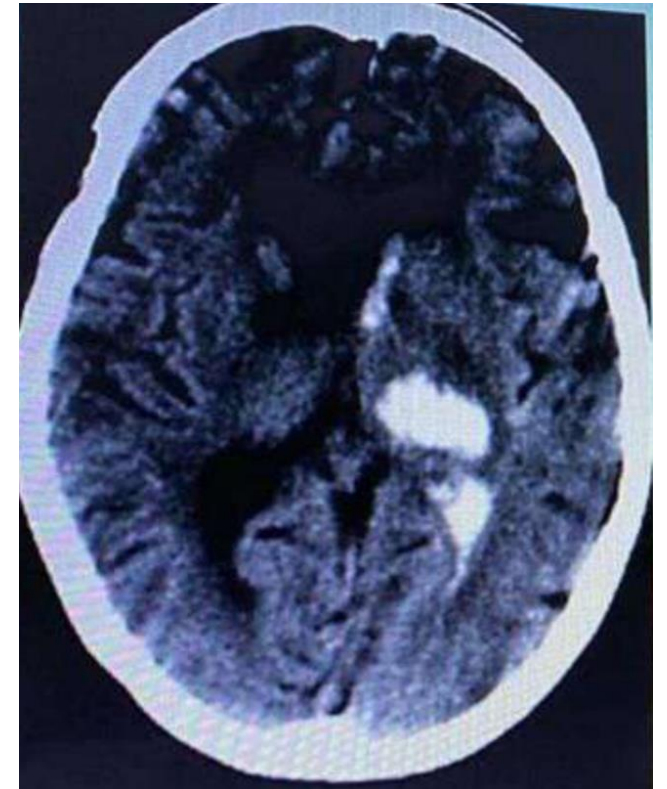
Answer: a

Q. 151

The most important risk factor for the pathology seen in the pic is:

- A- aspirin use
- B- dyslipidemia
- C- hypertension
- D- ischemic heart disease
- E- DM

Answer: c



Q. 152

This posture is feature of which disease:

- a. Huntington disease
- b. Alzheimer's disease
- c. Parkinson's disease
- d. Progressive supranuclear palsy
- e. Wilson's disease

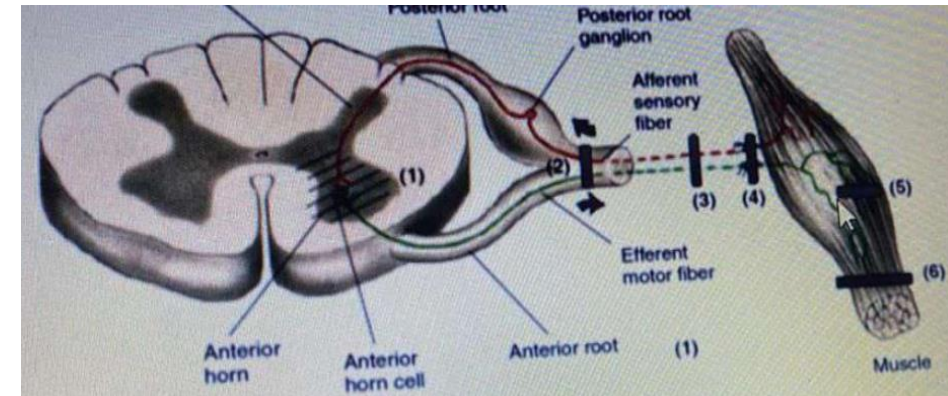
Answer: c



Q. 153

Which of the following diseases will be caused by lesion at site #5 in the shown figure?

- a. Duchene muscular dystrophy
- b. Guillain Barre syndrome
- c. Multiple sclerosis
- d. Amyotrophic lateral sclerosis
- e. Myasthenia gravis



Answer: e

Q. 154

A sensitive test to assess for possible temporal arteritis as a cause of headache in elderly is:

- a. Complete blood count CBC
- b. Brain MRI
- c. Electroencephalogram EEG
- d. Erythrocyte sedimentation rate ESR
- e. Brain CT scan

Answer:d

Q. 155

This is a non contrasted brain CT scan for a patient who presented with sudden headache, right sided paresthesia and weakness. This is consistent with:

- a. Meningitis
- b. Brain hemorrhage
- c. Multiple sclerosis
- d. Brain infarction
- e. Brain abscess

Answer: b



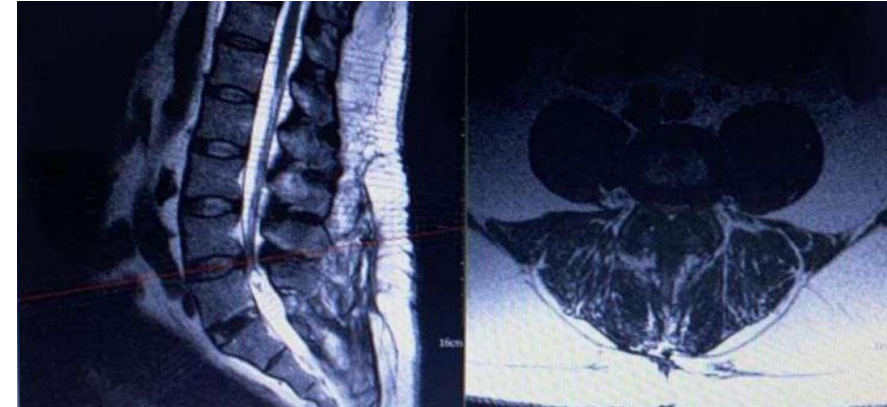
Q. 156

This is a 61 year old male patient who is hypertensive and heavy smoker, presented with claudication for 100 meters distance.

1-Describe the images?

Left: lumbosacral sagittal spine mri t2, shows lumbar canal stenosis most prominent at L4-L5

Right: axial spine mri t2 shows the lumbar canal stenosis, herniated disc and thickened ligamentum flavum



2-What is the diagnosis based in the clinical and images findings?

Lumbar canal stenosis (Neurogenic claudication)

3-What other differential diagnosis that you should keep in your mind?

Vascular claudication

Q. 157

This is 45 male patient, a victim of RTA, who was brought to the emergency department with decreased level of consciousness. Physical examination showed a pulse rate of 40/minute, Blood pressure 180/95 with shallow irregular breathing. He has Glasgow coma scale (GCS) of 5/15 with dilated non reactive left pupil and right sided hemiparesis. He had no other systemic injuries

1-What is the type of head injury he has according to his GCS? Why?

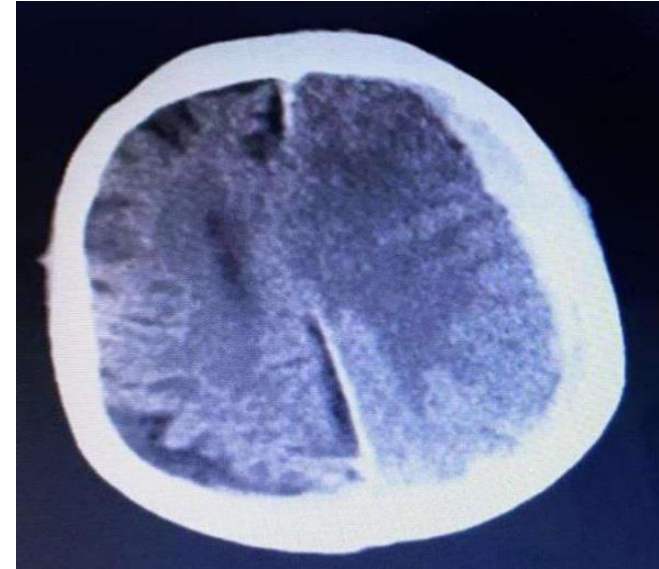
Severe head injury, because gcs is 5/15

2-What do his vital signs indicate? What do you call this triad?

Cushing's triad, indicates raised intracranial pressure (ICP)

3-What type of brain herniation that is possible in this patient based on the above clinical findings?

Uncal herniation, due to the fixed dilated pupil (CN3 compression) and contralateral hemiparesis



Cushing's Triad

A physiological reflex to brainstem compression and raised ICP:

- Hypertension → to maintain cerebral perfusion pressure
- Bradycardia → baroreceptor reflex due to systemic hypertension
- Irregular respiration → brainstem (medullary) dysfunction

Q. 158

1. What is the finding in the image CT scan showing?

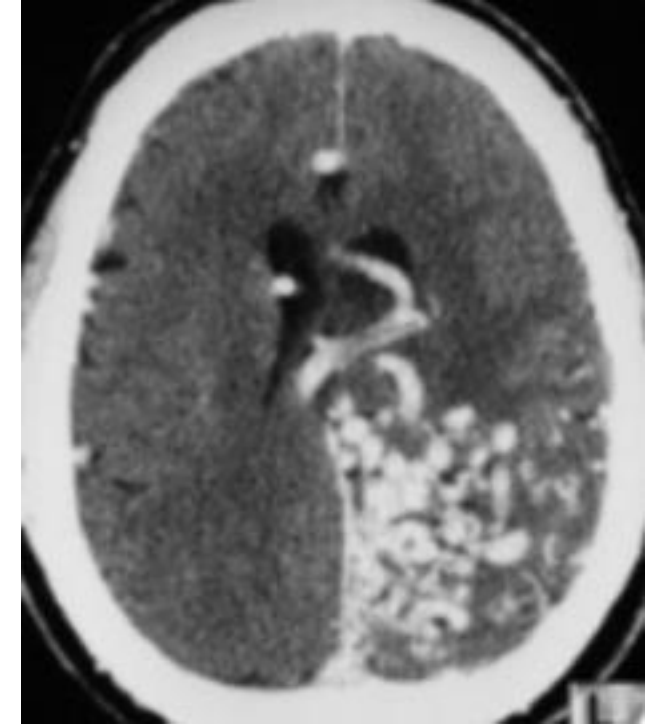
Cerebral AV malformation

2. Possible complication?

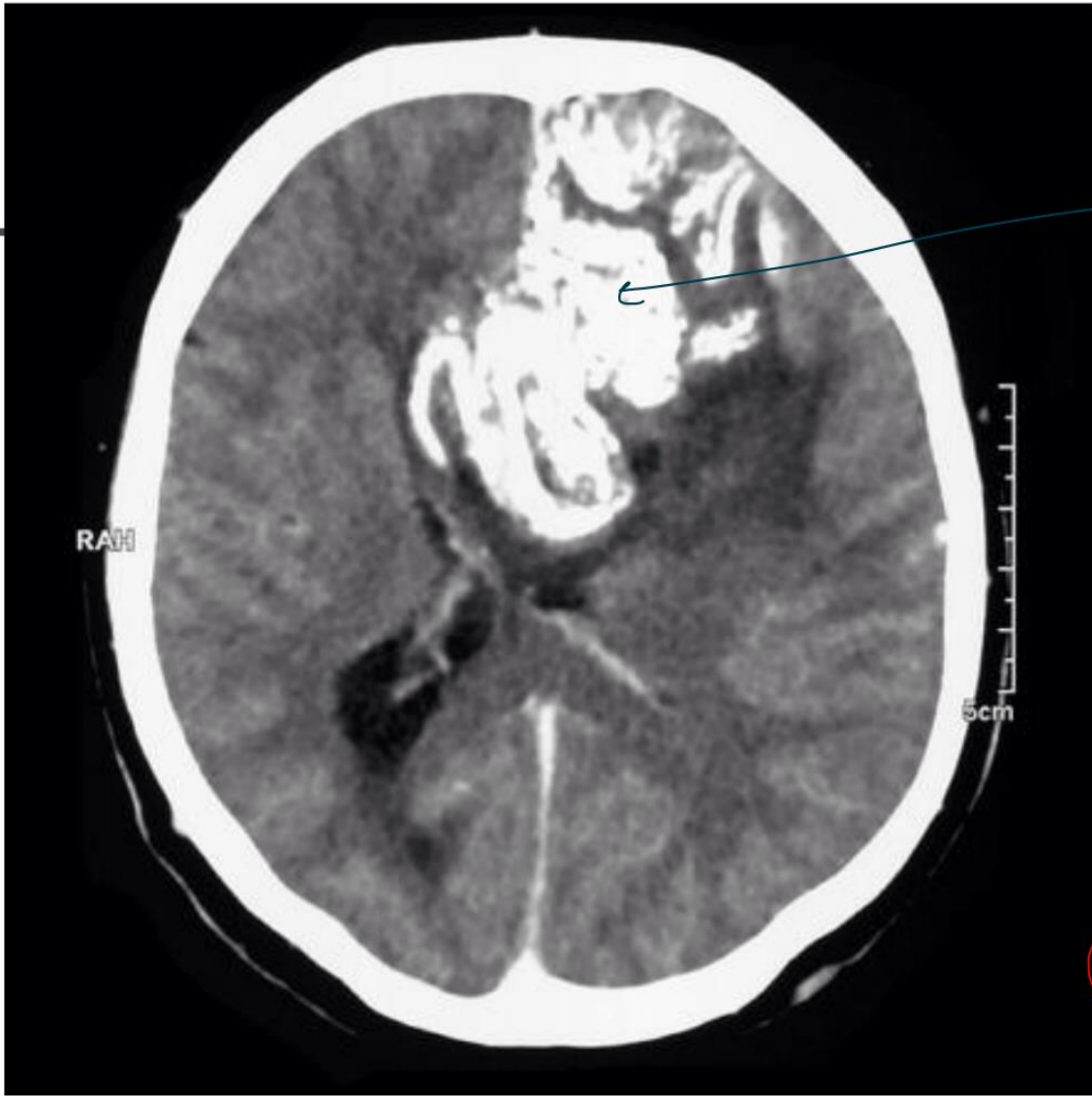
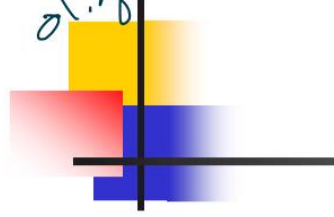
Spontaneous SAH or intracerebral hemorrhage

3. Prognosis?

Based on the size of the lesion , the eloquence of adjacent brain and the venous drainage system (spetzler-Martin grading system)



oligodendroglioma



calcification
enhancement is
well demarcated

white on
CT with contrast
↓
can mean one of two:
acute hemorrhage
or calcification

→ differentiated
from the history of
trauma → hemorrhage
thunderclap → intracranial,
subarachnoid
→ tumor in
frontal
lobe
personality
changes

also differentiated it
contrast is used or not:
white without contrast
→ bleeding
white with contrast
→ calcified tumor

CT with
contrast
↓
is circled
calcified tumor

Q. 189

1. Dermatome?

L5, Lateral thigh → anterior leg → dorsum of foot to big toe.

2. Myotome?

dorsiflexion of the big toe (extensor hallucis longus) and foot (tibialis anterior), also hip abduction (gluteus medius)

3. Investigation?

Lumbosacral spine MRI sagittal and axial T1/T2



Q. 190

1- What is the name of the procedure done?

Anterior cervical discectomy and fusion (ACDF)

2- At what level was the cage placed?

C5-C6

3- Name one complication of this surgery?

Dysphagia



Note that the first vertebrae here is C1 unlike the spinal cord view



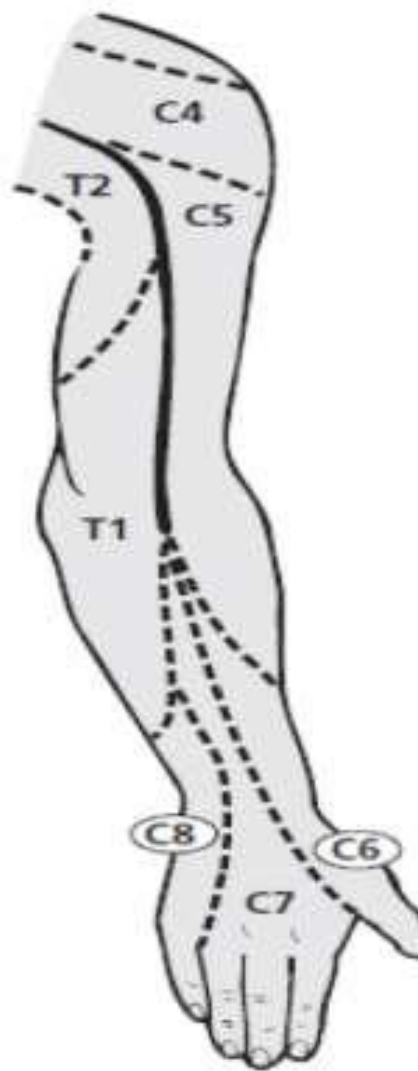
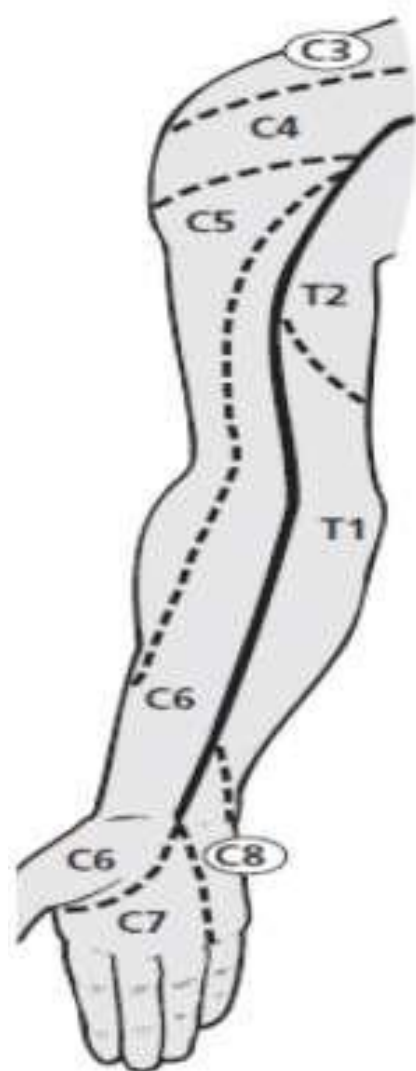


Table 14.2 Segmental innervation of upper limb joint movements.

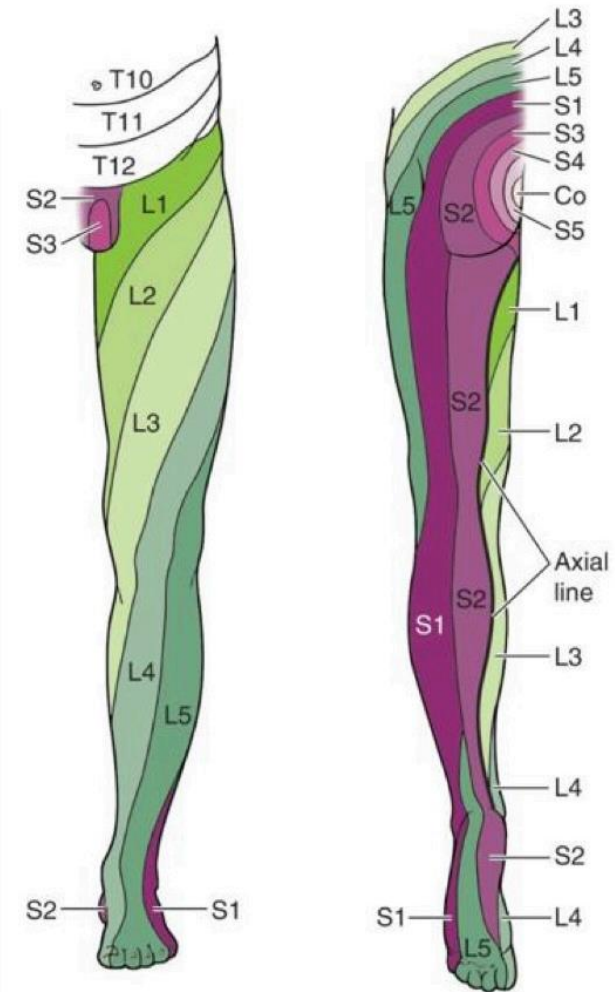
Shoulder	Abductors and lateral rotators	C5
	Adductors and medial rotators	C6,7,8
Elbow	Flexors	C5,6
	Extensors	C7,8
Forearm	Supinators	C6
	Pronators	C7,8
Wrist	Flexors and extensors	C6,7
Digits	Long flexors and extensors	C7,8
Hand	Intrinsic muscles	C8, T1

Table 35.4 Neurological evaluation of the upper limb.

Neurological level	Motor	Sensation	Reflex
C5	Deltoid	Lateral arm	Biceps
C6	Wrist extensors and extensor carpi radialis longus	Lateral forearm	Brachioradialis
C7	Triceps	Middle finger	Triceps
C8	Long finger flexors	Medial forearm	No reflex
T1	Interosseus muscles	Medial arm	No reflex

Table 35.5 Neurological evaluation of the lower limb.

Neurological level	Motor	Sensation	Reflex
L2	Hip flexion	Anterior thigh, groin	No reflex
L3	Knee extension	Anterior and lateral thigh	Patellar (L3, 4)
<u>L4</u>	<u>Ankle dorsiflexion</u>	Medial leg and foot	Patellar (L3, 4)
<u>L5</u>	<u>Extensor hallucis longus</u>	Lateral leg and foot	No reflex
S1	Ankle plantarflexion	Lateral foot and little toe	Achilles



(C) Anterior view

(D) Posterior view

﴿ مَا عِنْدَكُمْ يَنْفَدُ وَمَا عِنْدَ اللَّهِ بَاقٍ ۖ وَلَنَجْزِيَنَّ الَّذِينَ صَبَرُوا أَجْرَهُمْ بِأَحْسَنِ مَا كَانُوا يَعْمَلُونَ ﴾

لا تنسوا تدعوا لأهلنا في غزة

بالتوفيق 