Paper-J (Neurosciences-2)

Table-1: MCQs

Subject	Total MCQs
Pharmacology	20
Pathology	22
Forensic medicine	18
Community medicine	27
PRIME	02
Medicine	11
Psychiatry	09
Neurosurgery	02
Pediatrics	05
Anaesthesia	03
Family medicine	01
Total	**120**

Table-2: OSPE/OSCE

Subject	Viva stations	Total OSPE/OSCE stations	Total stations
Pharmacology	2	3	5
Pathology	2	2	4
Forensic medicine	2	2	4
Community medicine	2	3	5
Medicine (Neurological examination)	X	1	1
Psychiatry (counselling)	x	1	1
Total	8	12	20

* A minimum of 20 stations will be used in final exams. Total marks will be 120 (6 marks for each station).

Department of Public Health & Com Med KGMC (4th prof A... / 1 Block J) 30th January 2023

OSPE # 4

The table below describes the number of illnesses and deaths caused by Covid-19 in three communities. Which community reports the lowest case-fatality rate associated with Covid-19? (total marks: 06)

	Deaths from Covid-19	Sick from Covid-19
Community A	100	150
Community B	300	400
Community C	300	500

Coronavirus Case Fatality Rate = (**Number of people who die from coronavirus** / **Number of people who test positive for coronavirus**) * 100 = **Case Fatality Rate expressed as a percentage**

① $\frac{100}{150} \times 100 = 67\%$

② $\frac{300}{400} \times 100 = 75\%$

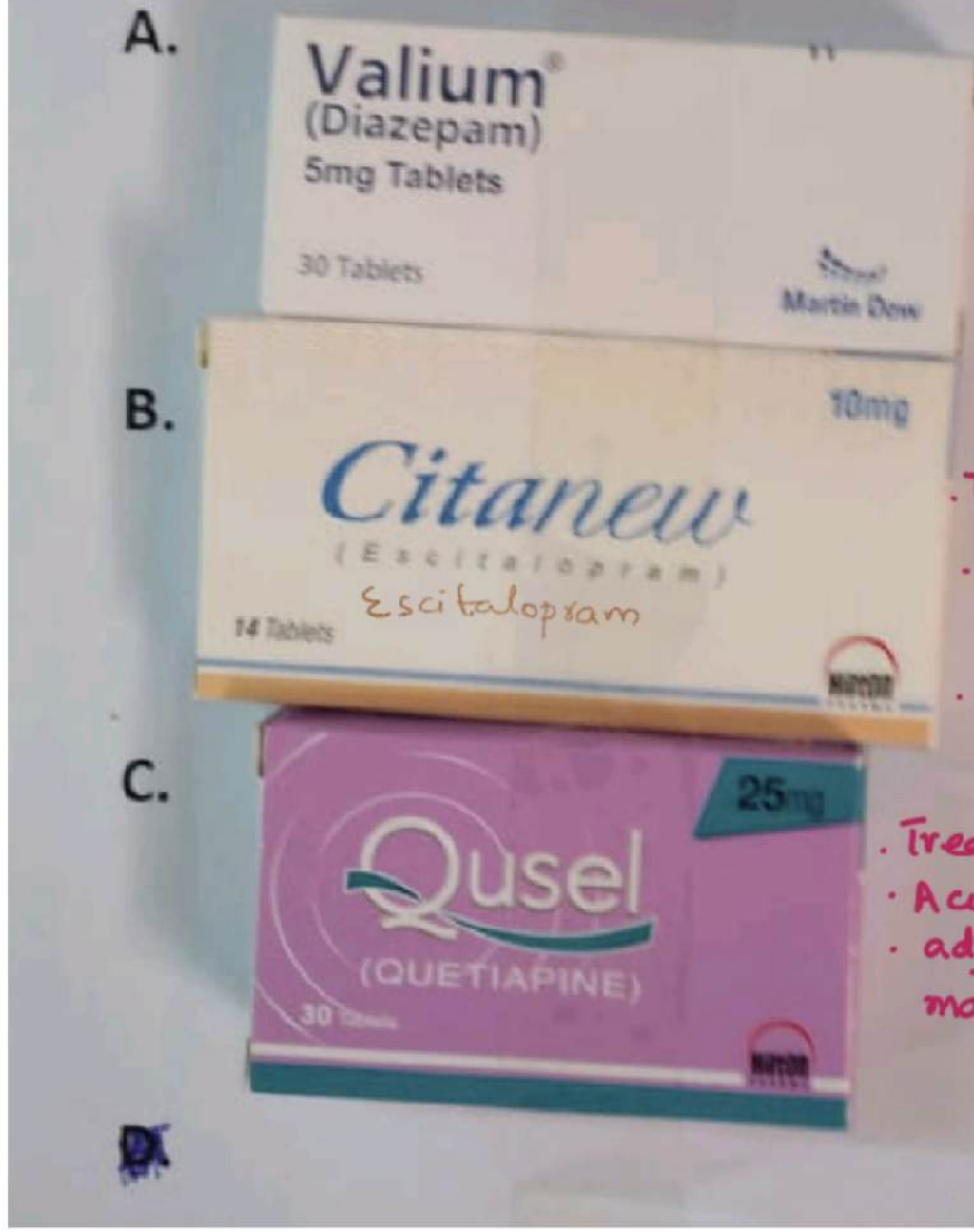
③ $\frac{300}{500} \times 100 = 60\%$

↓ Lowest case Fatality

Station ; 5

Q. Mention clinical uses of the following drugs. (2 ~~5~~ each)

A.



- treat Anxiety
- Alcohol withdrawl
- Seizures

B.

- Treat depression
- Generalised Anxiety Disorder (GAD)
- OCD

C.

- Treat schizophrenia
- Acute Manic episode
- adjunctive treat for major depression disorder

Opening pressure	Elevated
White blood cell count	≥ 1,000 per mm^3
Cell differential	Predominance of PMNs*
Protein	Mild to marked elevation
CSF-to-serum glucose ratio	Normal to marked decrease

PMNs= polymorphonuclear cells, neutrophils

Carefully observe the above given report of cerebrospinal fluid examination ,it is the report of a 20 year old boy who came to Emergency with complaints of severe headache and vomiting and drowsiness.

1.What type of infection is shown by this report? (2)

2. Enumerate two differences between CSF reports of bacterial and viral meningitis . (2)

3. Which stain is used if tuberculous infection is suspected? (2)

1-

2- Bacterial → Neutrophils
↓ Glucose

Viral → Lymphocytes
Normal CSF Glucose

3. Ziehl Nelson Stain

Station ; 9

Write prescription for 35 yrs old Shiraz having depression after sad demise of his parents 06 months back.

Dr. ABC
MBBS RCPS
HMC Peshawar
Phone Nu: 0312xxxxxx

Pt Name: XYZ Age: gender:
Address : Date:

Dx: Depression

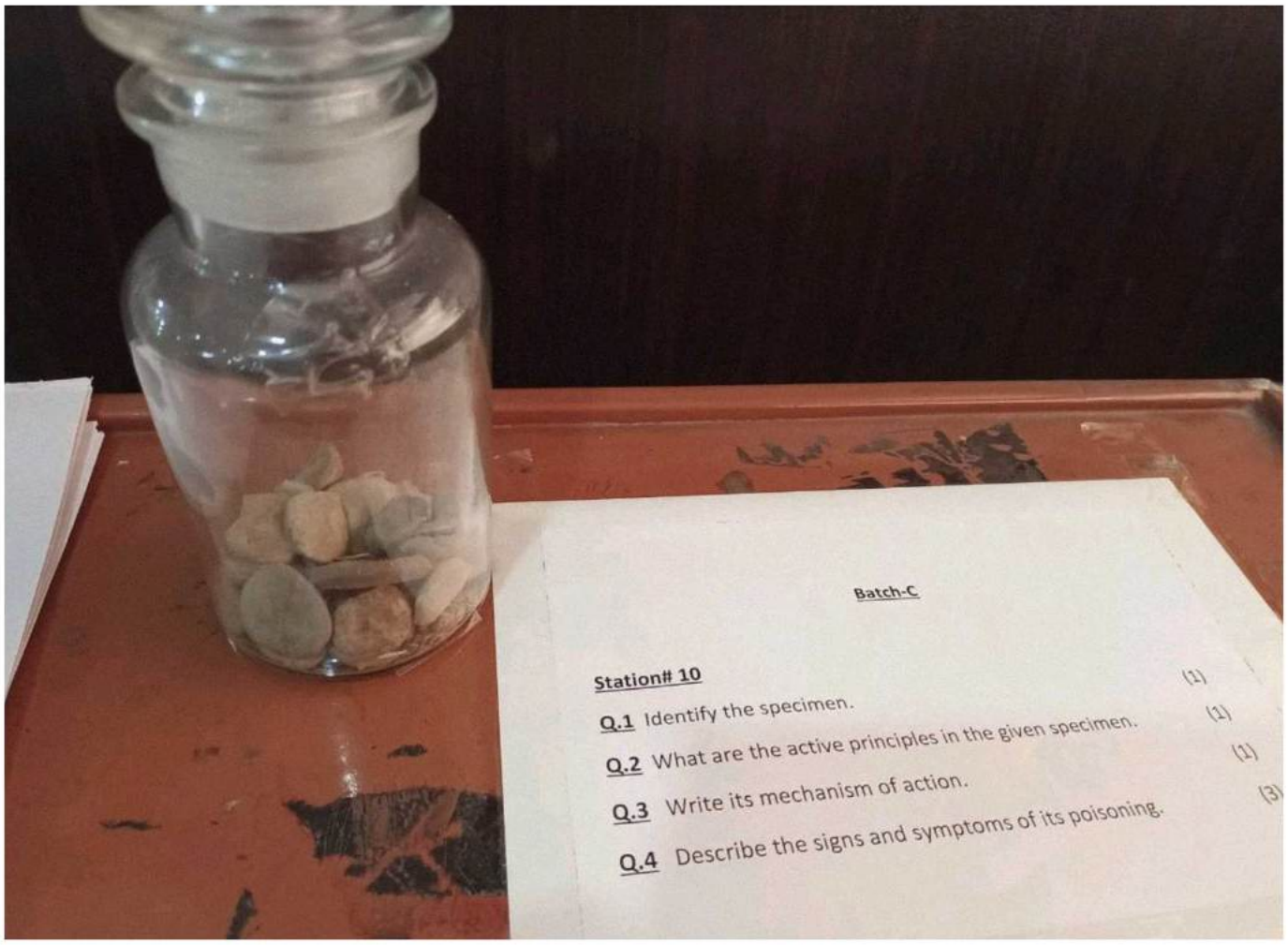
Rx:

① Tab Escitalopram 10 mg
ایک گولی روزانہ صبح ۶ ماہ تک

② Tab Alprazolam 0.5 mg
ایک گولی رات کو سونے سے ① ماہ تک

ہدایات

Signature:



1- Nux vomica

2- Strychnine + Brucine

3. Block Neuroinhibitory postsynaptic glycine receptors

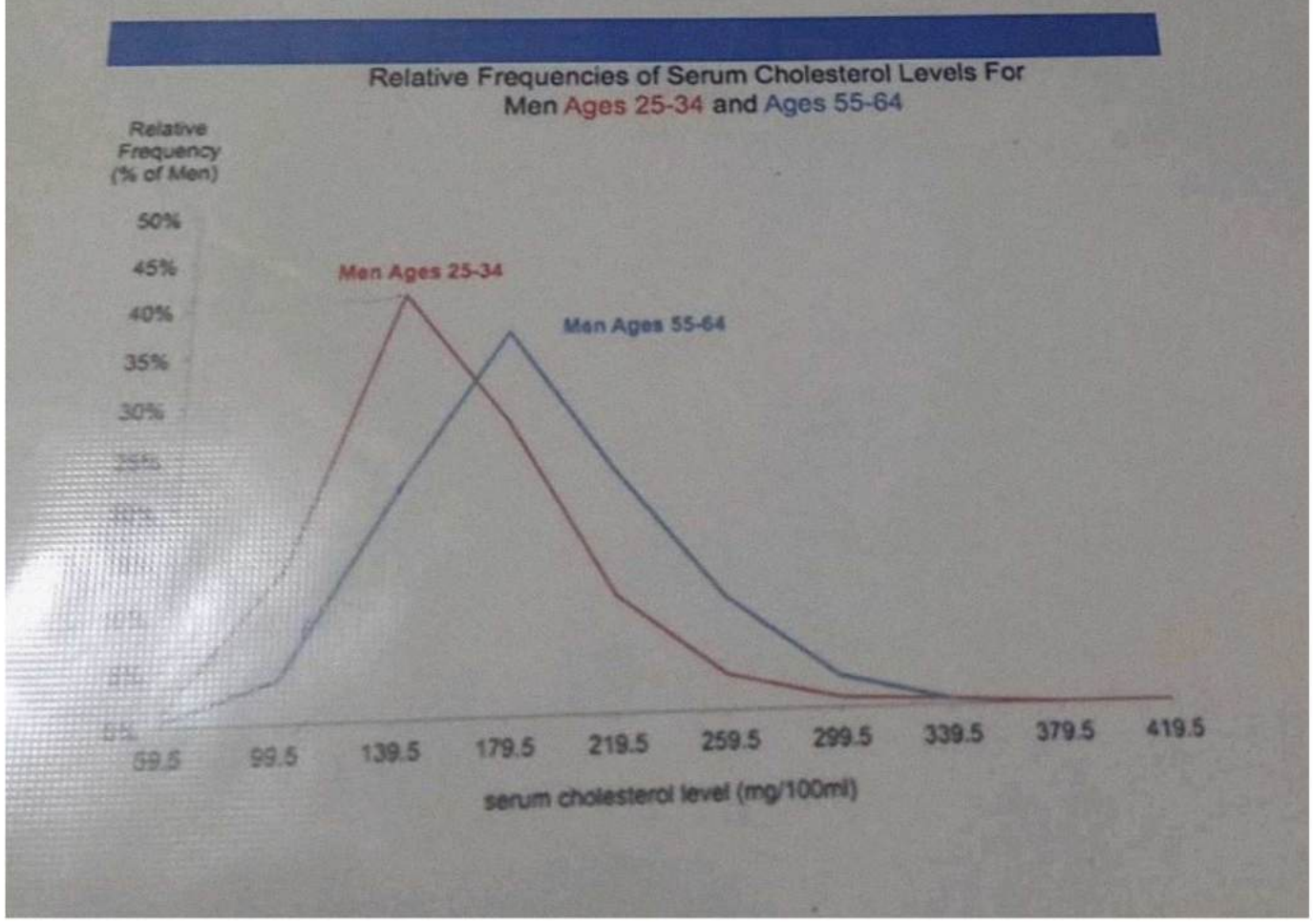
4. Anxiety, Agitation, muscular Spasm, Convulsion, twitching, renal dysfunction, hyperthermia, respiratory and cardiac dysfunction

OSPE 1

Time: 4 min | Marks: 06

Scenario: Following picture shows the Serum cholesterol levels of 30 people in a study. Answer following questions

a) What Type of **Graph** is shown below? Label it 01
b) What Type of Data is used to construct it? 02
c) **Interpret**, what data is presenting? 03

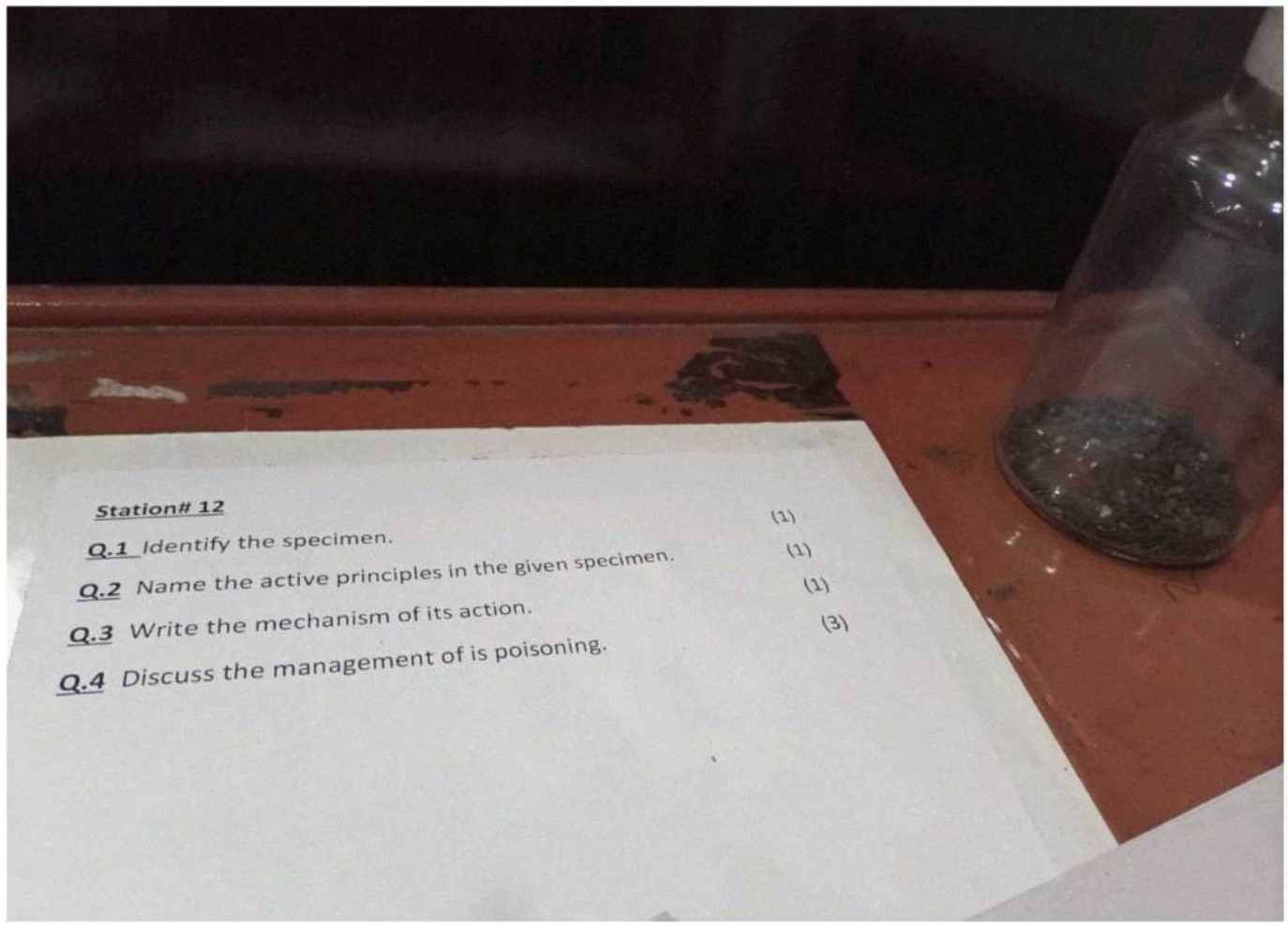


1- Frequency polygon

2- Continuous quantitative data

3. Men Age 25-34 has cholesterol level 139.5 mg/100ml at relative frequency of 40%.

Men Age 55-64 has cholesterol level 180mg/100ml at relative frequency of 35%.



1- Dhatura Seeds

2- Dhatura active ingredients
Levohyoscyamine
Hyoscine (Scopolamine)
Traces of atropine

4- Dhatura antidote
Physostigmine or neostigmine

3. Signs and symptoms of dhatura poisoning
9 DS
Dryness of mouth
Dryness of throat
Difficulty in talking (Dysarthria)
Dysphagia
Dilated pupil
Drunken gait
Dilatation of cutaneous blood vessels
Dry hot skin
Delirium (muttering delirium)
Drowsiness

Dhatura Management

- Stomach wash with $KMnO_4$
- Antidote → Physostigmine or Neostigmine
- Purgatives are beneficial

Department of Public Health & Com Med KGMC (4th prof-Annual) Block-J

30th January 2023

OSPE # 4

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(total marks: 06)

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A $\frac{100}{150} \times 100$

B $\frac{300}{400} \times 100$

C $\frac{300}{500} \times 100$

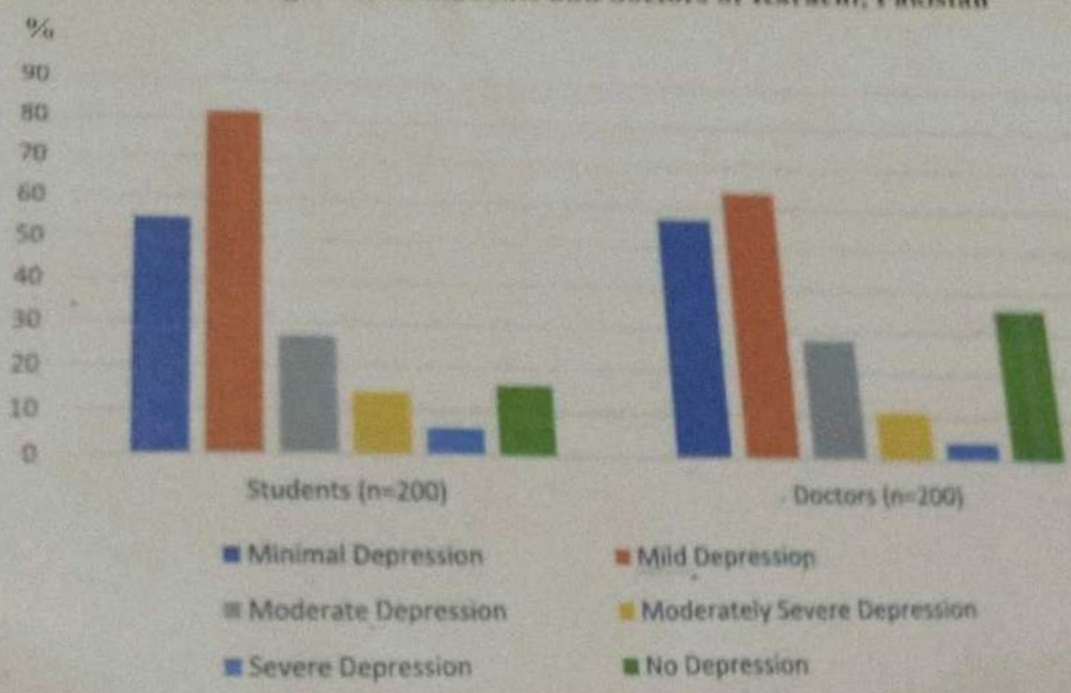


Fig: Comparison of depression scores among doctors and students

Qureshi MFH, Mohammad D, Sadiq S, Abubaker ZJ, Kumari U, Devnani J, et al. A comparative cross-sectional analysis on prevalence of depression and associated risk factors among medical students and doctors of Karachi, Pakistan. Middle East Curr Psychiatry. 2020 Oct 30;27(1):59.

tructions:

he above graph is an "Extract from a paper". Attempt all questions. Each question carries one mark

1. Which study design is used for the above research?
2. Name the two groups that are being compared?
3. Which type of graph is used to present the data?
4. What is the total number of study population (N=?)?
5. In which group "mild depression" is higher & write the percentage?
6. In which group "no depression" is higher & write the percentage?

1- Cross Sectional

2- Doctors and students

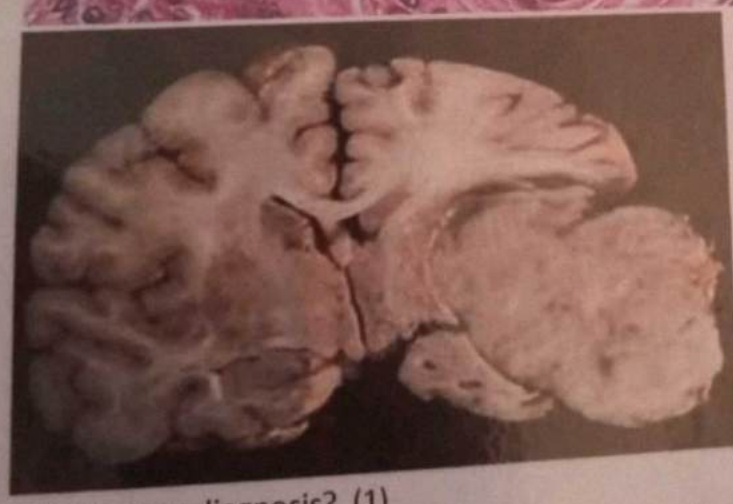
3. Bar chart

4- 400

5- Students 80%

6- Doctors 35%

1. A 54 year old male presented with one month history of headache and blurred vision. One day before he came to hospital, he had a seizure as well. On investigations he was found to have a CNS tumor. The surgeon resected it completely and sent it for biopsy. Following are the gross and microscopic appearance of the tumor. Considering these diagrams answer the following questions.



1) What is your diagnosis? (1)
2) Briefly explain the grades of this tumor?(WHO grading system) (3)
3) Write one gross and one microscopic feature of the tumor? (2)

1- Meningioma

2- Grade 1 → relative low risk of recurrence or aggressive growth
Grade 2 → Atypical meningioma
Grade 3 → Anaplastic meningioma

3. Microscopic → psamoma bodies + whorl pattern
Gross → firm, well circumscribed

OSPE 1

Time: 4 min

Marks: 06

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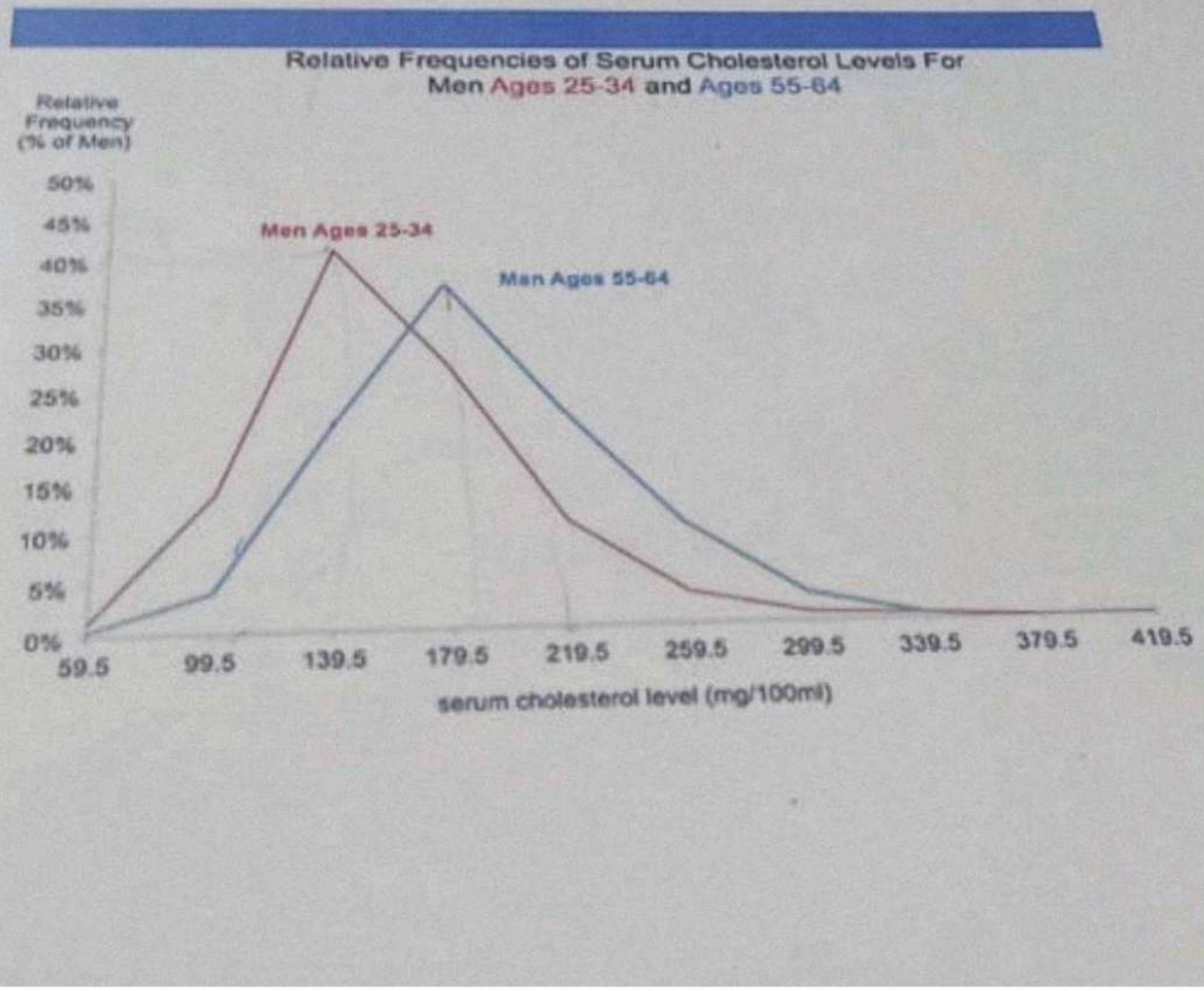

Opening pressure	Elevated
White blood cell count	≥1,000 per mm^3
Cell differential	Predominance of PMNs*
Protein	Mild to marked elevation
CSF-to-serum glucose ratio	Normal to marked decrease

PMNs= polymorphonuclear cells, neutrophils

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2. Enumerate two differences between CSF reports of bacterial and viral meningitis . (2)

3. Which stain is used if tuberculous infection is suspected? (2)

1- meningitis

2. Viral → Normal glucose, Lymphocytes
   Bacterial → Low glucose, Neutrophils

3. Ziehl Nelson stain

STATIC STATION

A 5 year old boy presented with 3 days history of fever and stiffness. He was advised CSF examination.

Q1. Write very briefly how CSF is collected. (2)

Q2. What does increased turbidity signify? (1)

Q3. What is the normal colour of CSF? (1)

Q4. What is suspected when there is decreased level of glucose in CSF? (1.5)

Q5. What is the use of wet preparation ? (0.5)

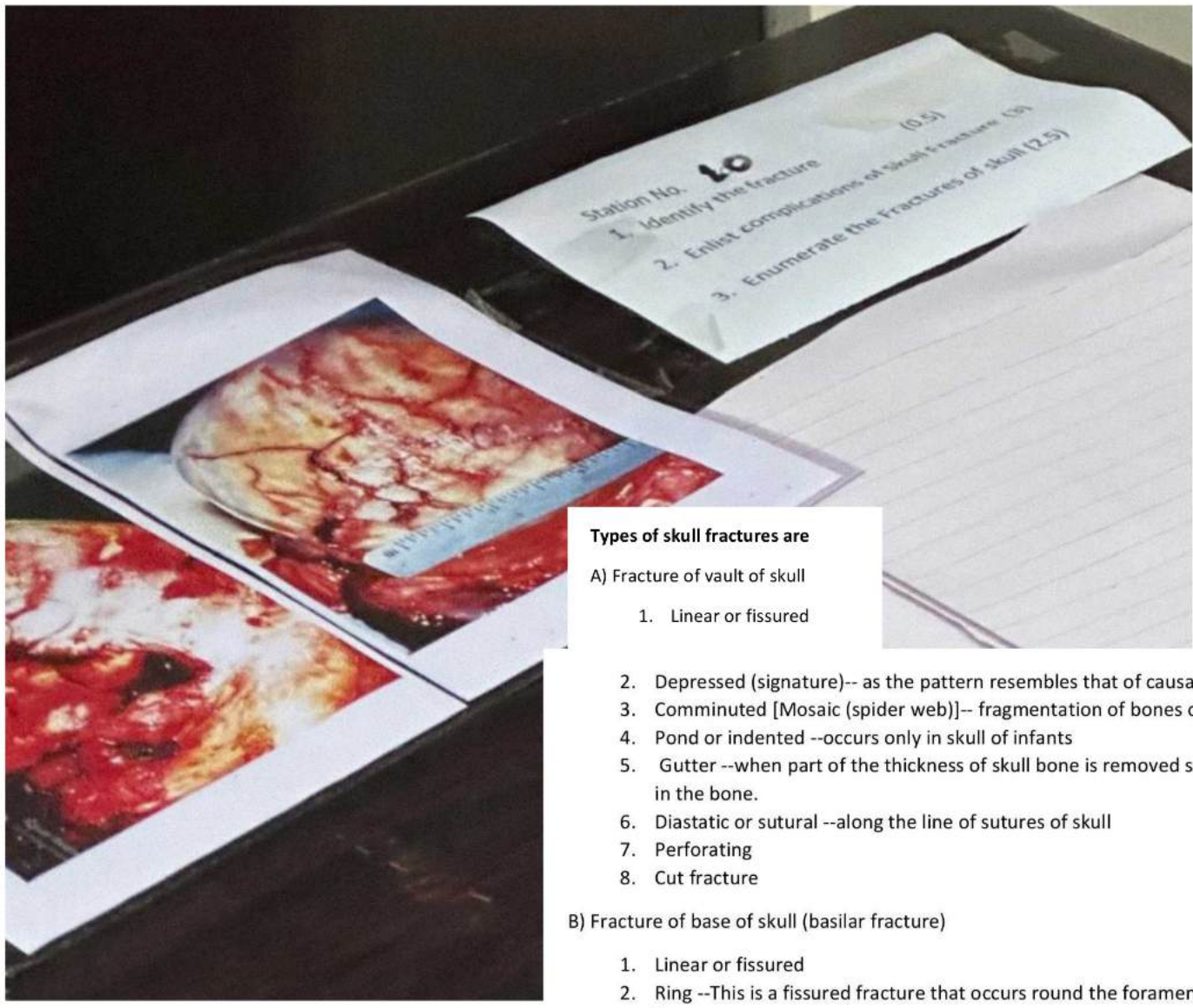
(1) CSF is collected by lumbar puncture
- Performed by Placing a needle between L4 and L5 (level of iliac creat)
- Layers crossed include skin, ligaments, epidural space, dura and arachnoid
- CSF is withdrawn from subarachnoid space
- 30ml volume collection is considered safe

(2) Bacterial, viral, fungal meningitis
Multiple sclerosis
GBS
Subarachnoid hemorrhage
CNS Tumors

(3) Colorless and transparent

(4) Bacterial or Fungal meningitis

(5) Wet preparation / wet mount for
- Detection of microorganisms (Malaria, cryptococcus)
- Detection of WBCs, RBCs
- Detection of tumor cells



Types of skull fractures are

A) Fracture of vault of skull

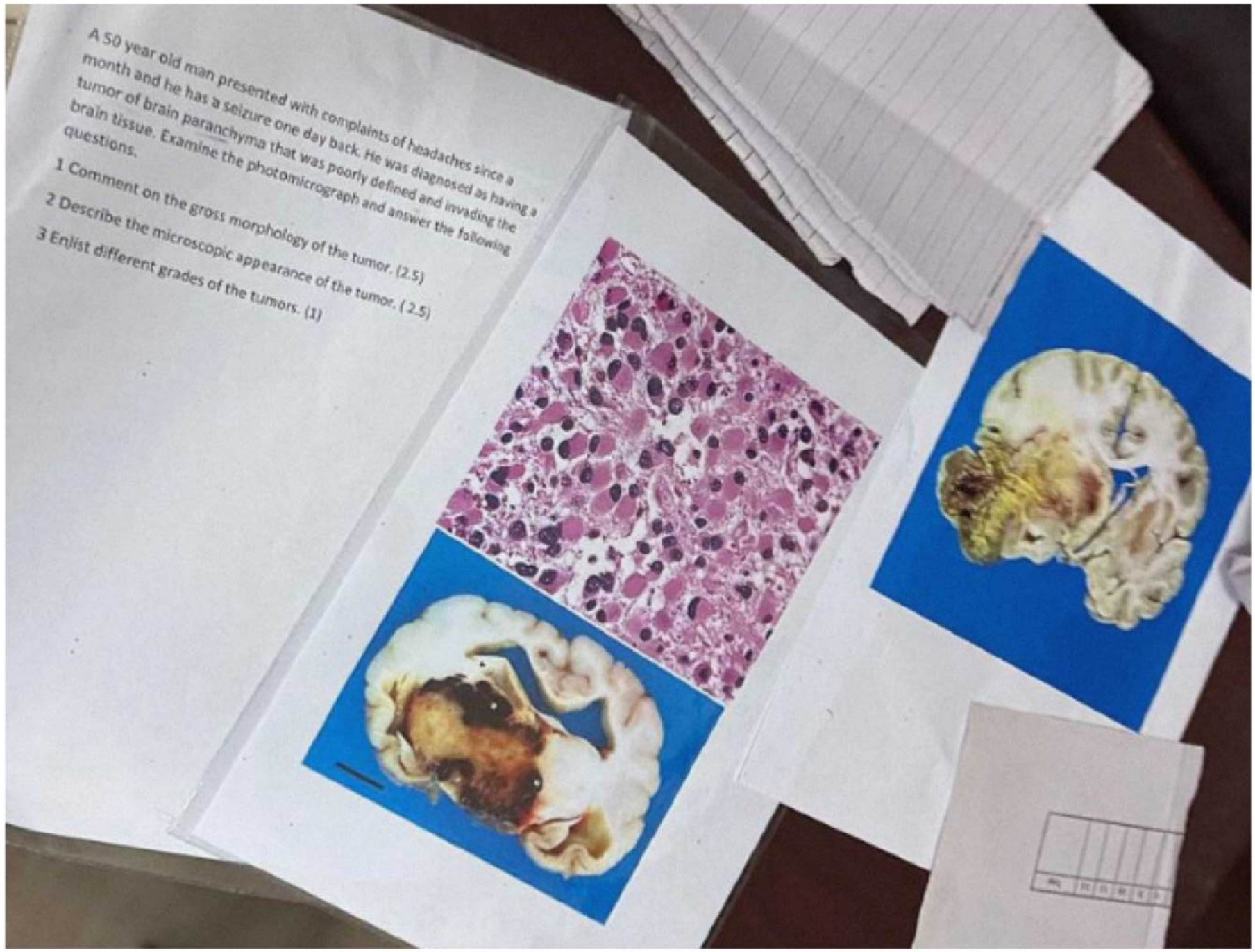
1. Linear or fissured
2. Depressed (signature)-- as the pattern resembles that of causative weapon
3. Comminuted [Mosaic (spider web)]-- fragmentation of bones occurs
4. Pond or indented --occurs only in skull of infants
5. Gutter --when part of the thickness of skull bone is removed so as to form a gutter or furrow in the bone.
6. Diastatic or sutural --along the line of sutures of skull
7. Perforating
8. Cut fracture

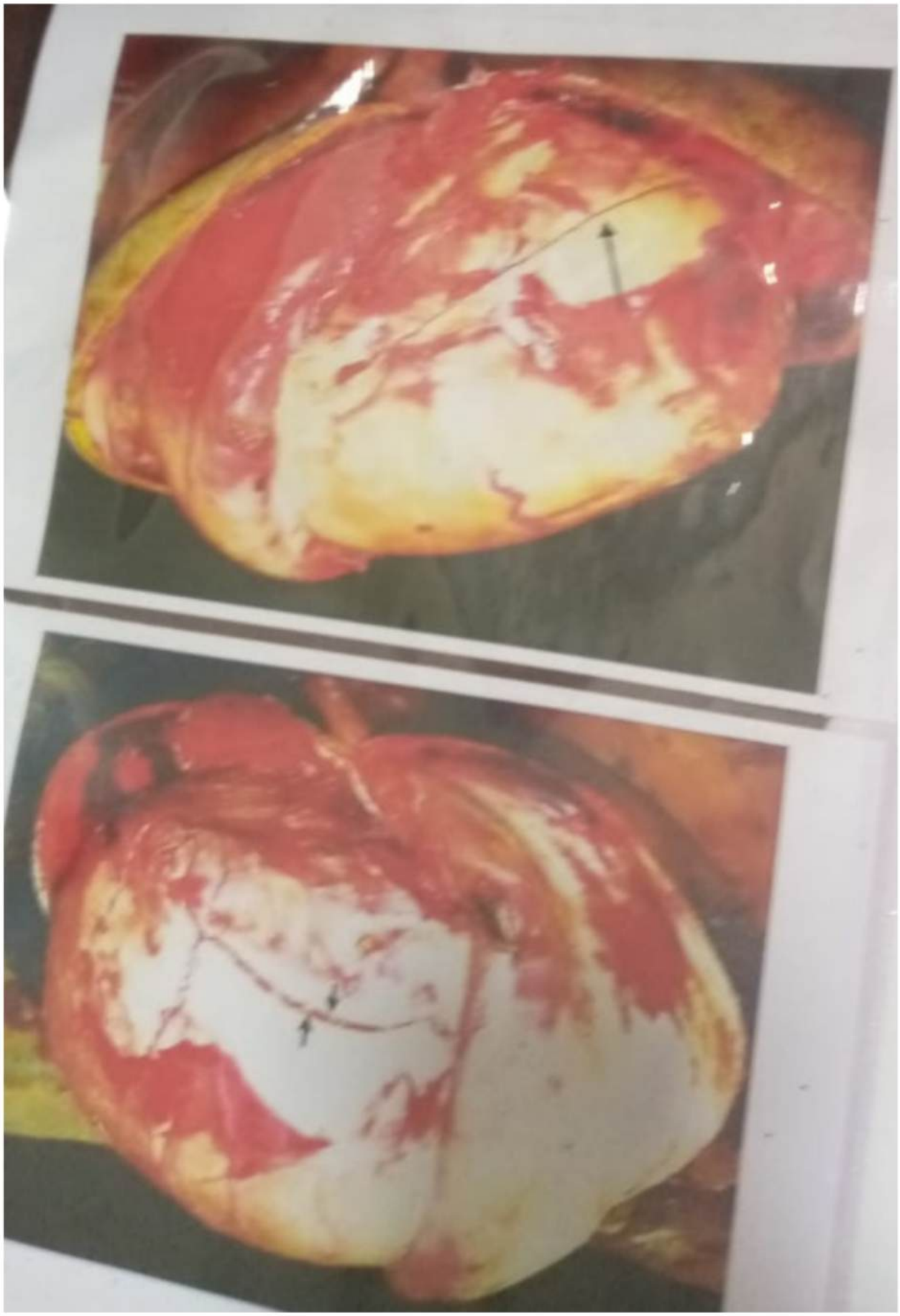
B) Fracture of base of skull (basilar fracture)

1. Linear or fissured
2. Ring --This is a fissured fracture that occurs round the foramen magnum in posterior cranial fossa
3. Hinge --linear fracture that passes across the floor of middle cranial fossa, often following the petrous temporal or greater wing of sphenoid bone into pituitary fossa on both sides thus separating the base of skull into two halves--- motorcyclist's fracture
4. Longitudinal
5. Secondary

1- Linear Fracture

2- Complication of skull fracture
Injury to brain
Intracranial hemorrhage
fracture of anterior cranial fossa may involve frontal, ethmoidal or sphenoidal air sinuses
Intracranial infections – meningitis/encephalitis
Cranial pneumatocele or pneumocranium
Cranial nerve injury
Traumatic epilepsy
CSf otorrhea
Coma
Cerebral edema
Increased intracranial pressure/tension
Death


A 50 year old man presented with complaints of headaches since a month and he has a seizure one day back. He was diagnosed as having a tumor of brain paranchyma that was poorly defined and invading the brain tissue. Examine the photomicrograph and answer the following questions.
1 Comment on the gross morphology of the tumor. (2.5)
2 Describe the microscopic appearance of the tumor. (2.5)
3 Enlist different grades of the tumors. (1)



Linear Fracture

St No 7

1- Identify drug group.

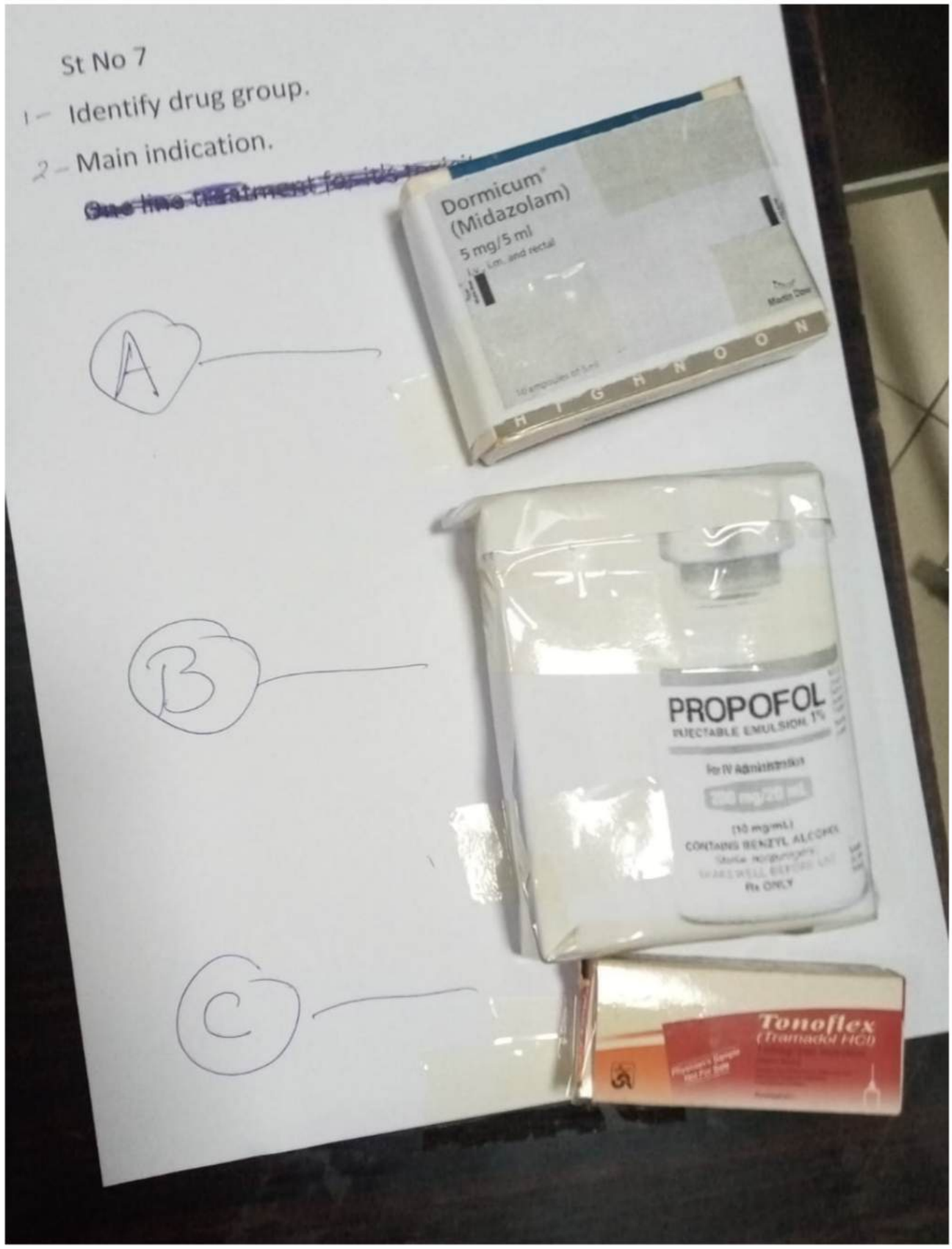
2- Main indication.

~~One line treatment for its~~

A

B

C



St_ 8

Q. What is the management of status epilepticus ? (2)

Q. Pathognomonic adverse effects of phenytoin sodium? (1)

Q. Drugs used for alcohol aversion therapy? (1)

Q. Classify drugs used for Parkinsonism (1.5)

Q. Rationale for use of Carbidopa and levodopa in combination (0.5)

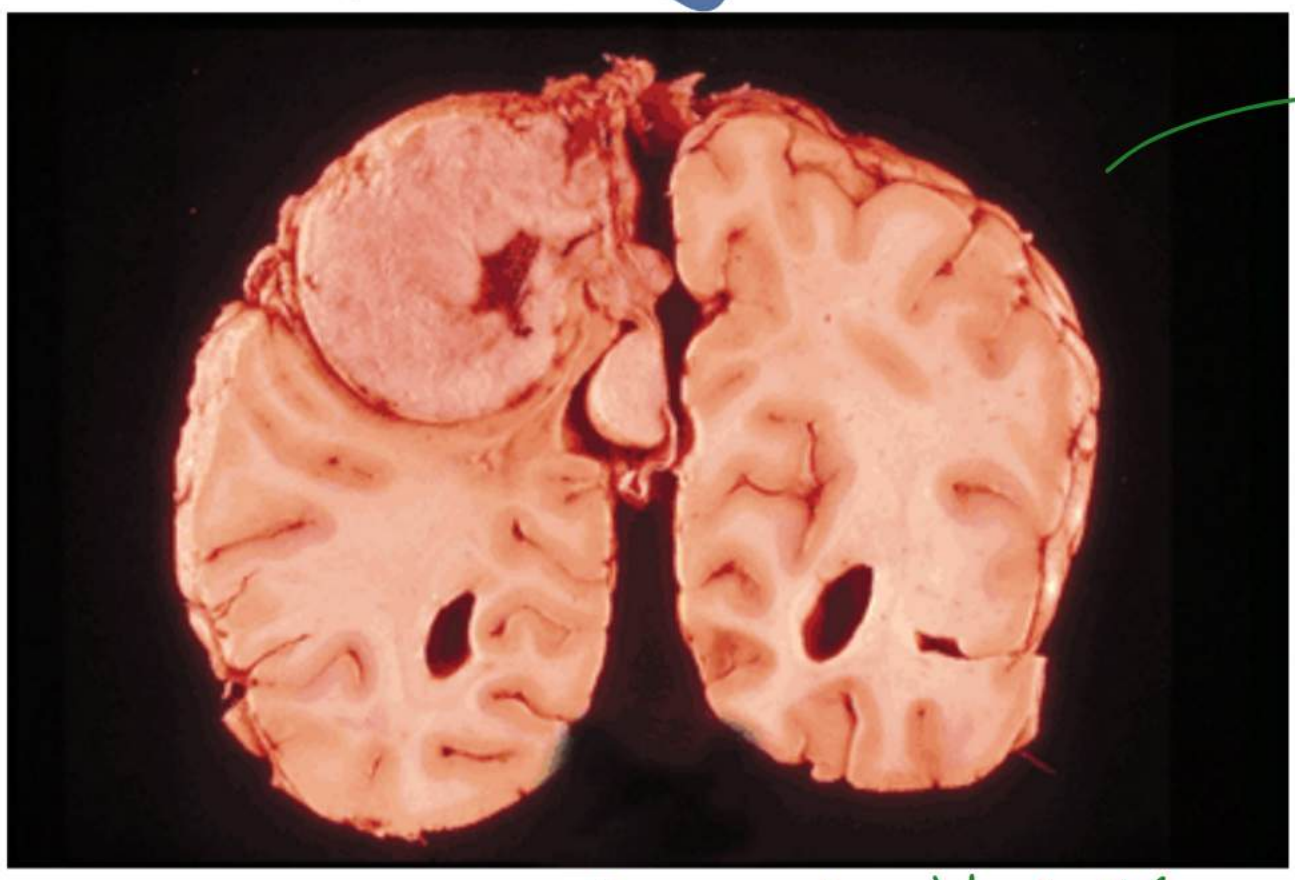
Intensity: Active and Passive Surveillance*

- Active: A systematic and comprehensive solicitation of case data by designated staff supported for that purpose.
- Passive: The collection of case data based on voluntary compliance of reporting by physicians, other health-care workers and laboratories.

Active vs passive surveillance

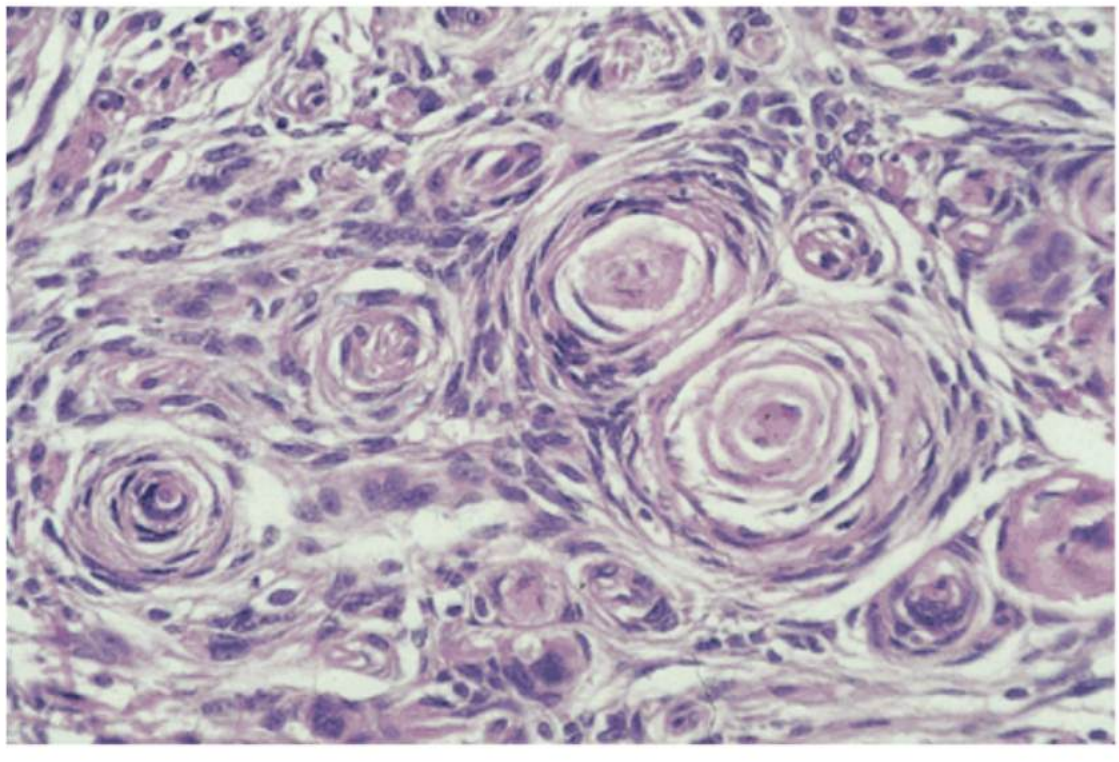
- Passive surveillance
  - Issue case definition
  - Wait for cases to be reported
- Active surveillance
  - Go looking for cases
  - E.g., MD offices, hospitals, pathology departments

Meningioma



well circumscribed mass

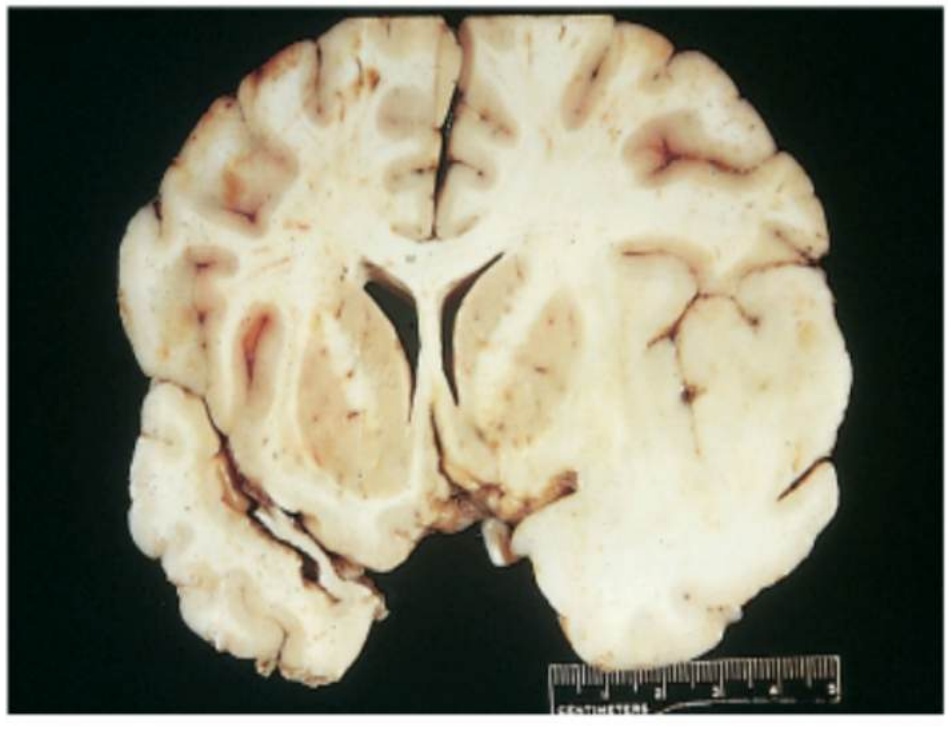
- Benign Tumor of Arachnoid cells
- Histology → whorled pattern, psammoma bodies (calcification arranged in whorls)



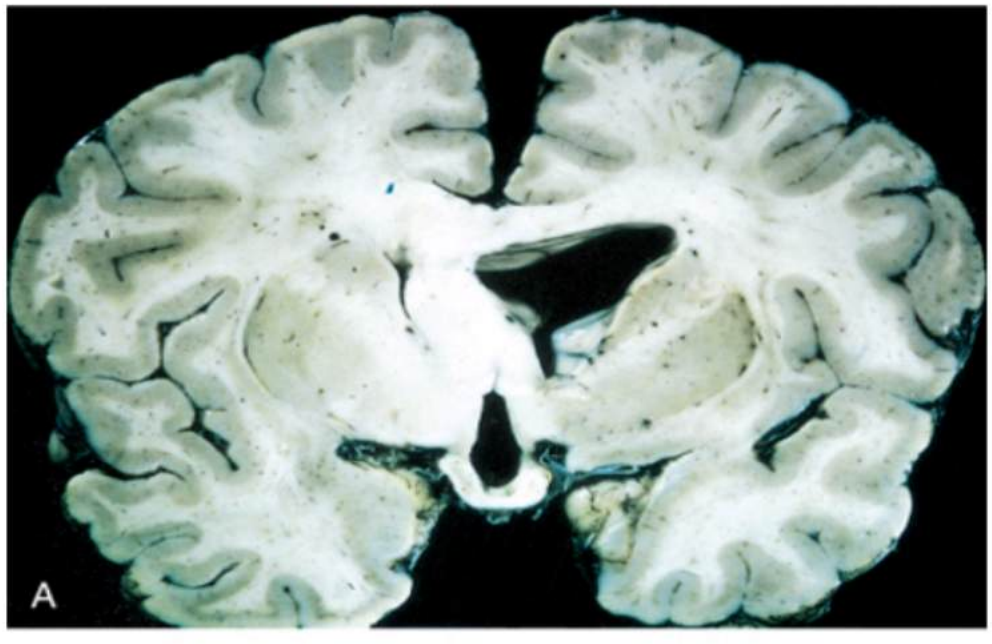
- may present as seizures

Astrocytoma

Well-differentiated infiltrating astrocytoma. The right temporal lobe contains an infiltrative, homogeneous lesion that has expanded the lobe and obscured the normal boundaries between gray and white matter. Because of the ill-defined borders, surgical resection seldom removes all the tumor in such cases.

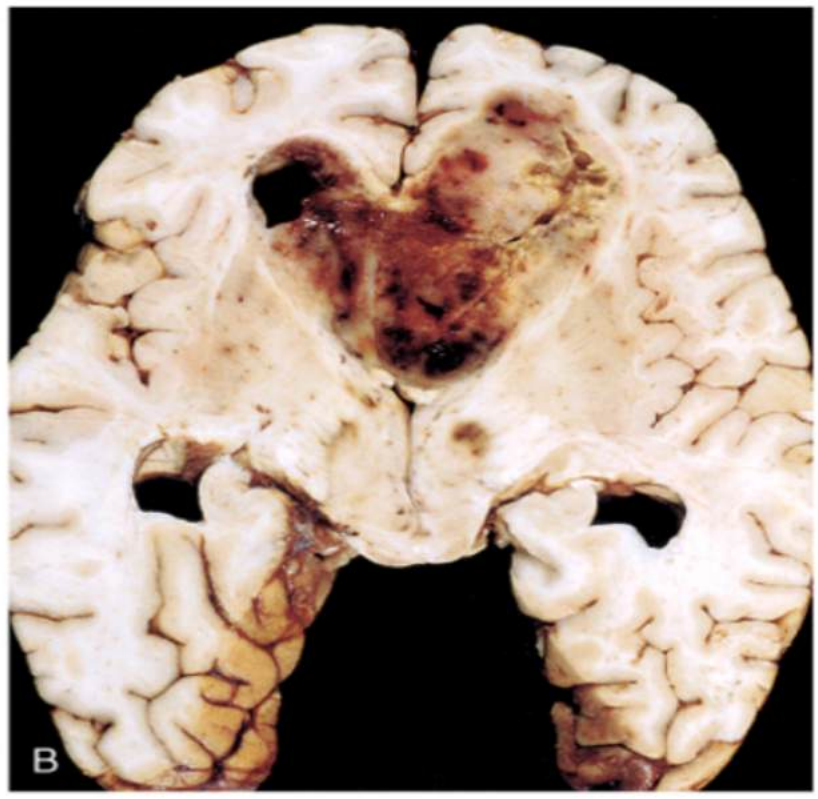


Low-grade astrocytoma is seen as expanded white matter of the left cerebral hemisphere

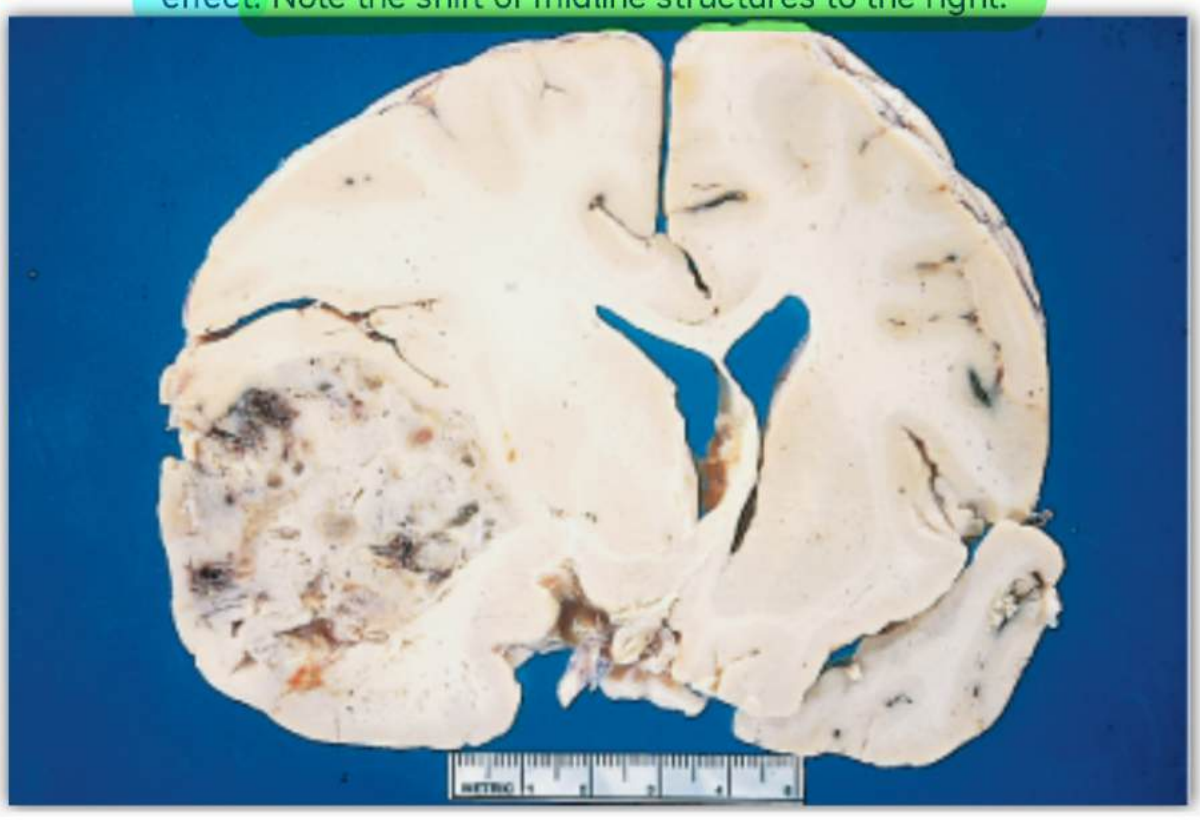


Glioblastoma Multiforme

Glioblastoma multiforme appearing as a necrotic, hemorrhagic, infiltrating mass

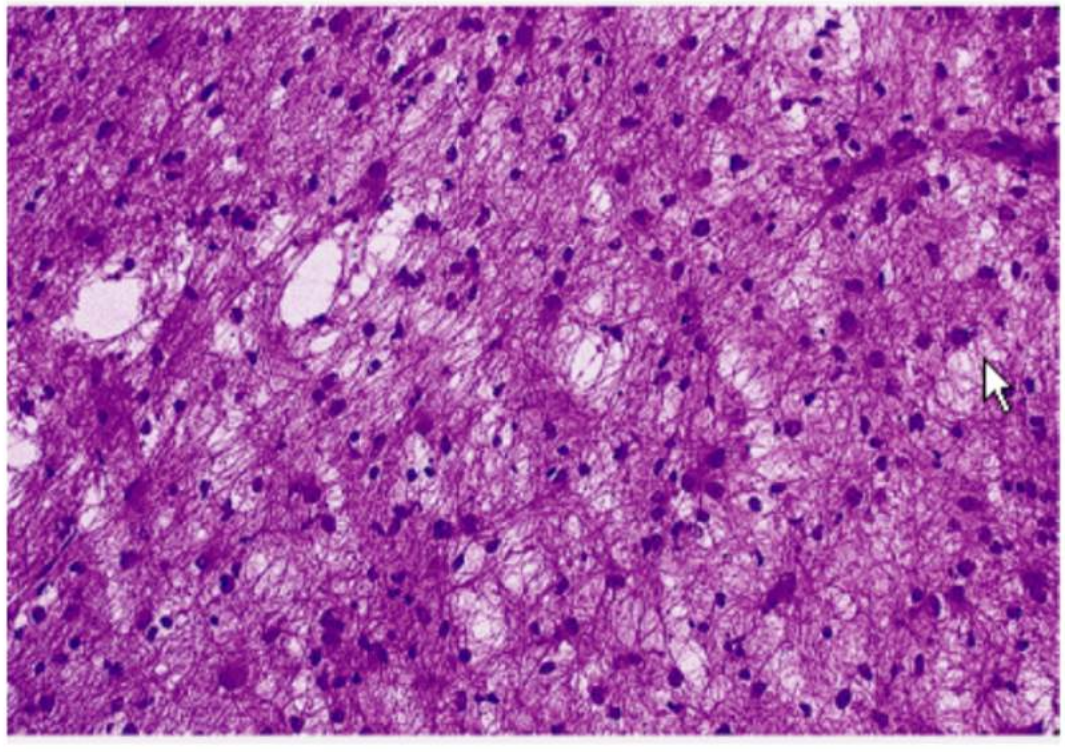


Glioblastoma multiforme. In contrast to the well-differentiated infiltrating astrocytoma in, this glioblastoma contains irregular areas of discoloration and cystic change, reflecting the presence of necrosis and hemorrhage. These lesions are widely infiltrative and associated with considerable mass effect. Note the shift of midline structures to the right.

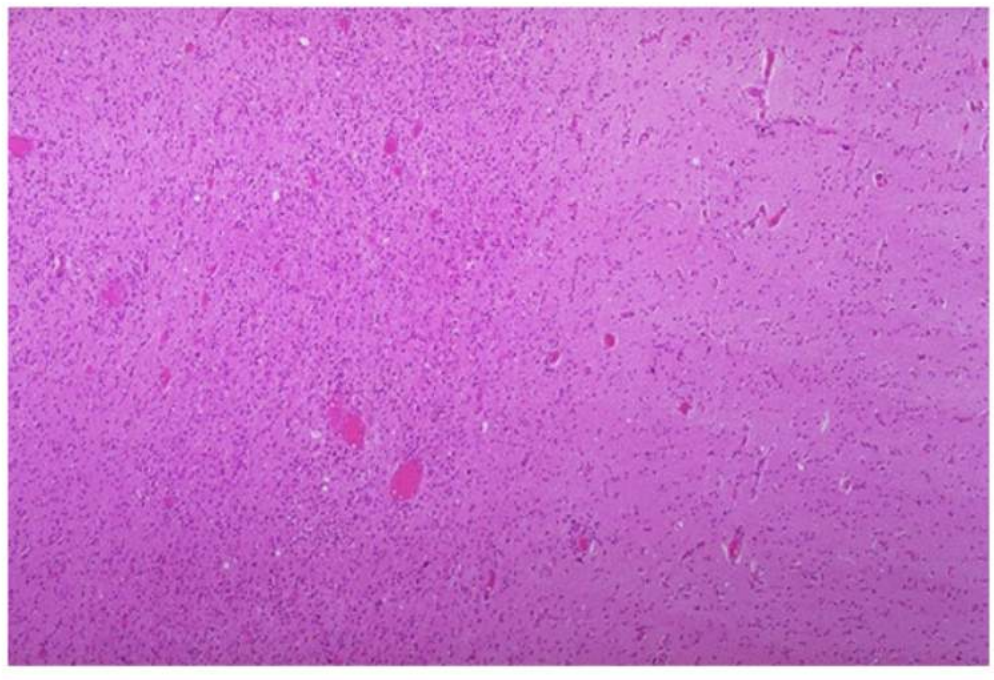


Astrocytoma

Astrocytoma. Moderately pleomorphic, neoplastic astrocytes infiltrate the white matter.



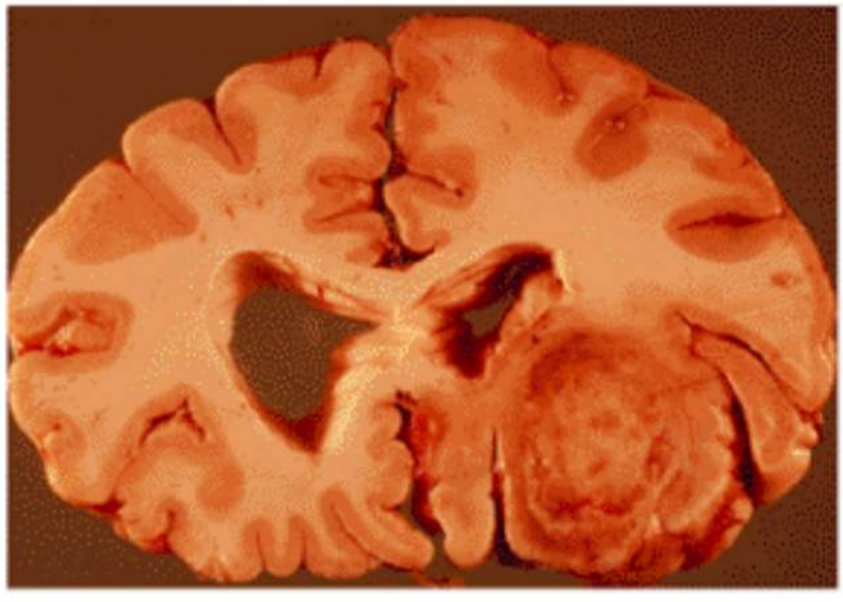
Glioma at the left shows greater cellularity and pleomorphism than adjacent brain at the right, but the margin is not distinct.

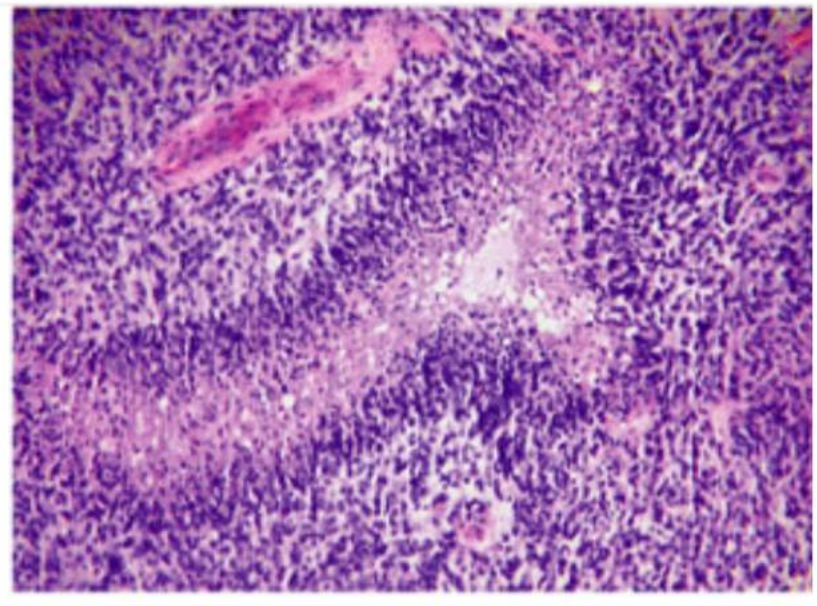


Glioma

Glioblastoma Multiforme

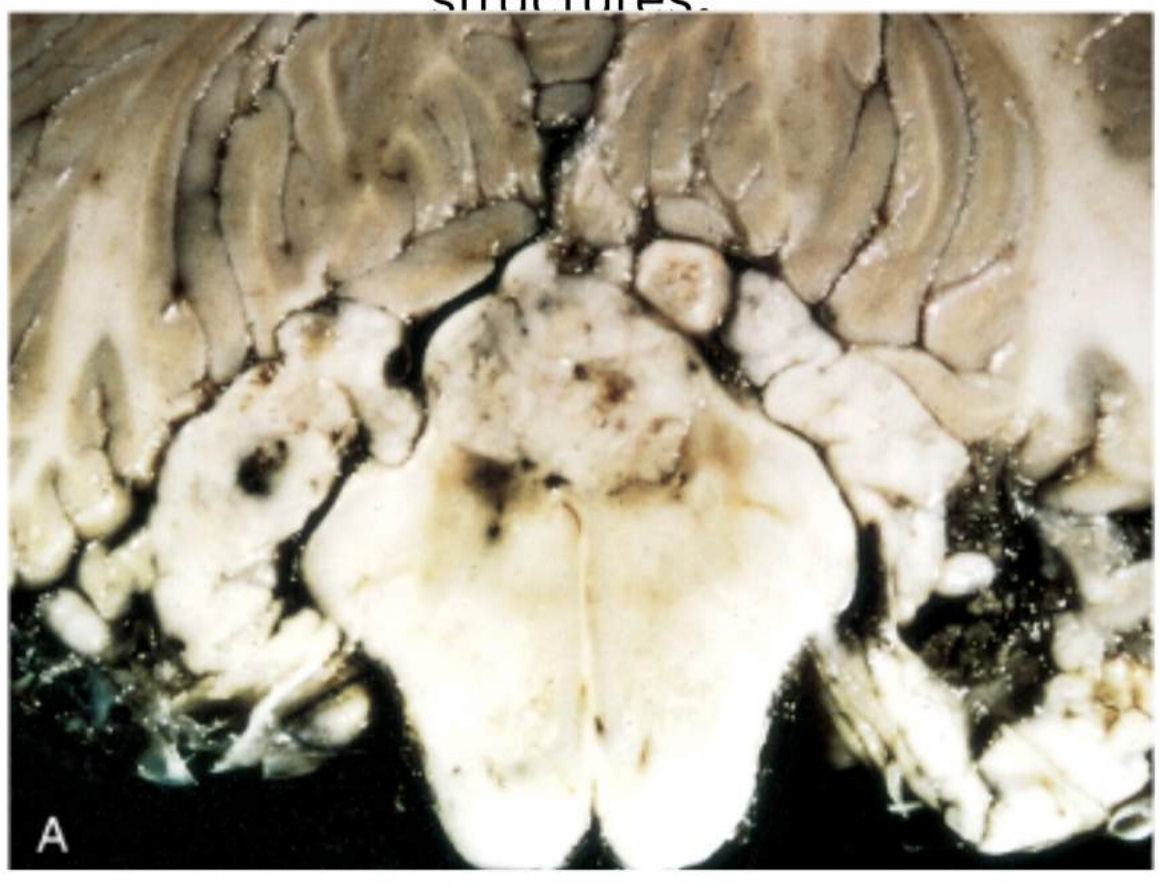
Glioblastoma multiforme.
A .Necrotic, hemorrhagic, expansile mass
B. Tumor necrosis, surrounded by pseudopalisaded tumor cells





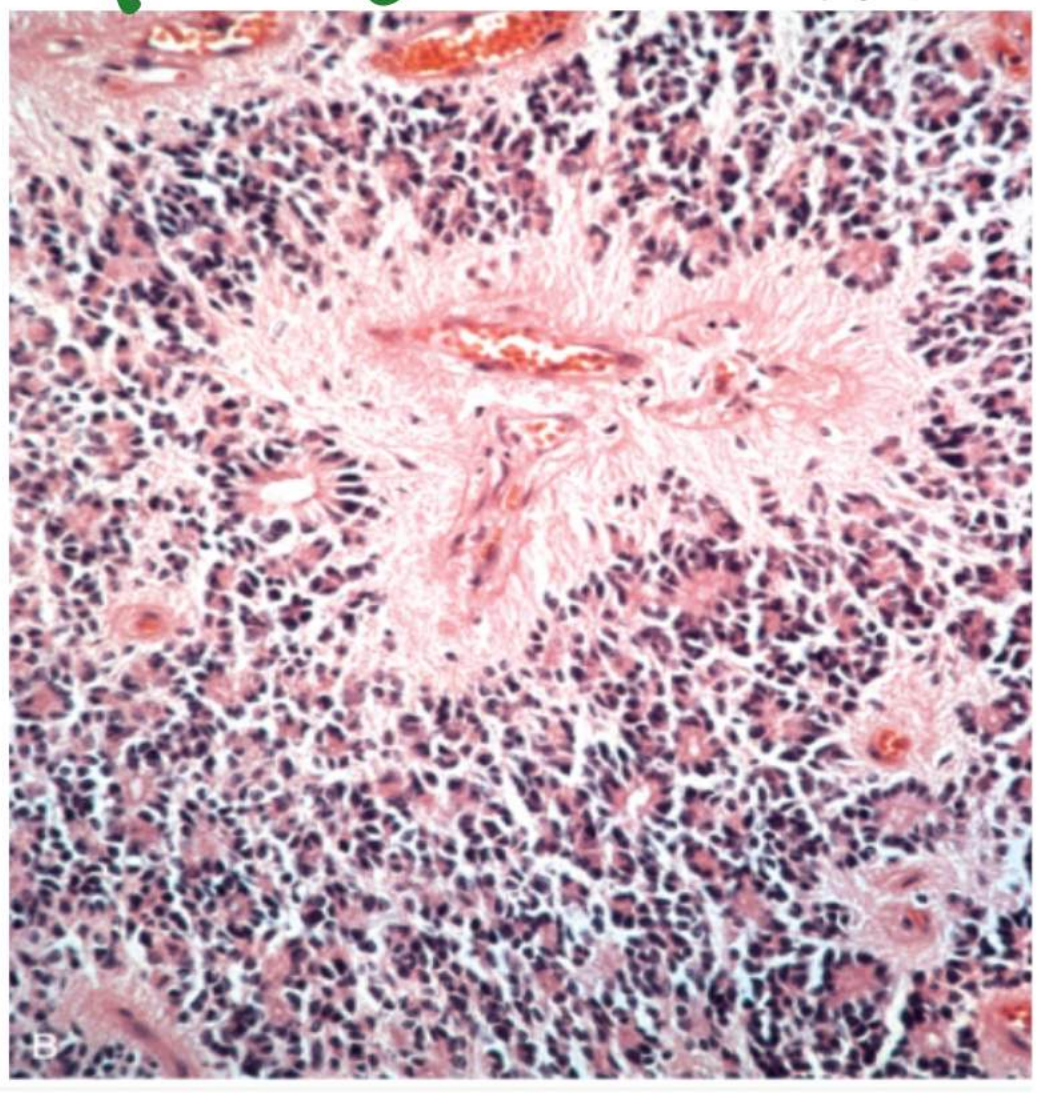
Ependymoma

Tumor growing into the fourth ventricle, distorting, compressing, and infiltrating surrounding structures.

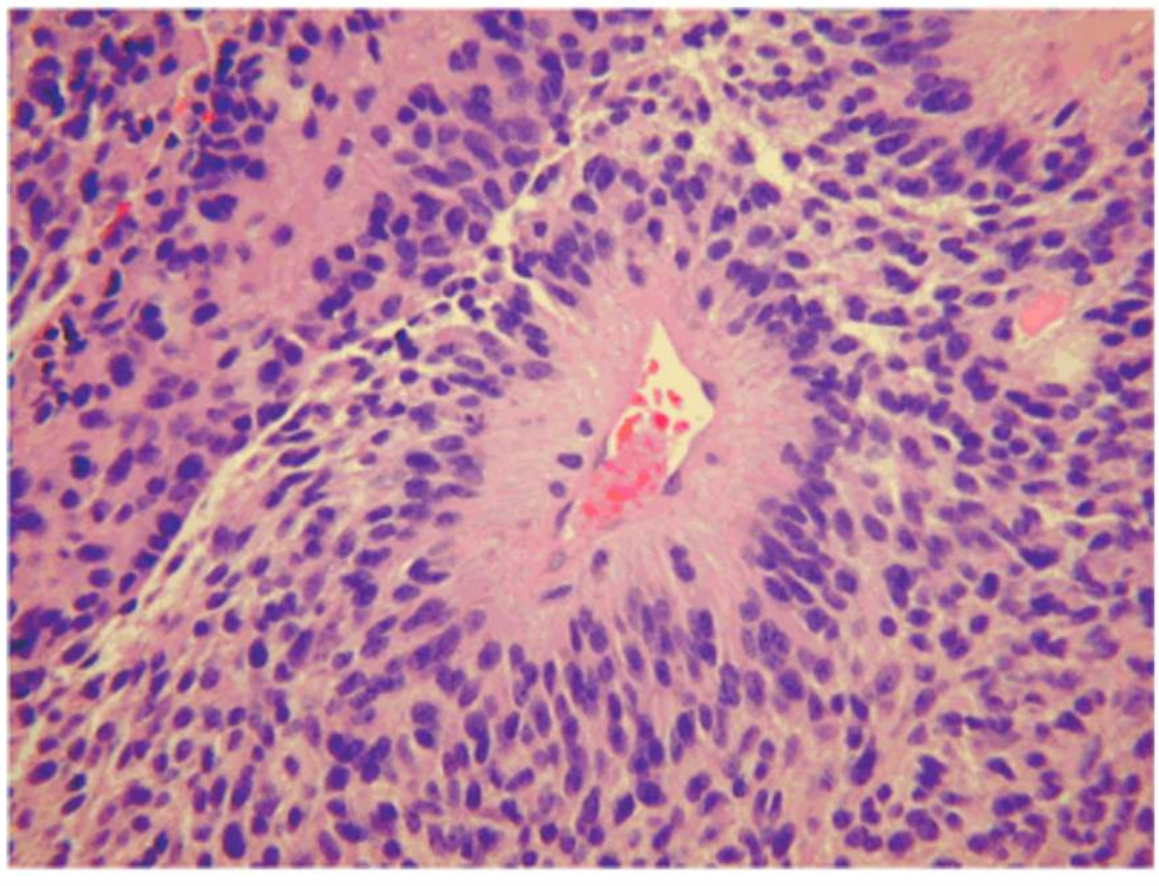


Ependymoma

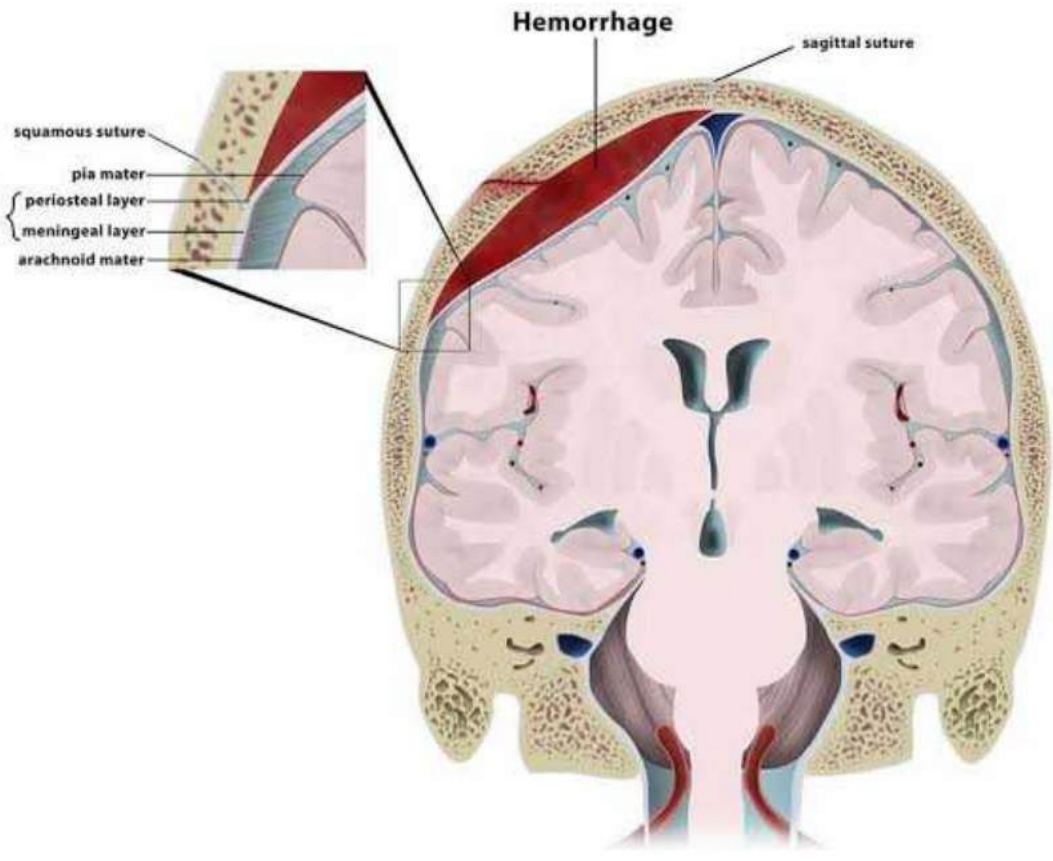
Microscopic appearance of ependymoma.



Ependymoma. A microscopic section shows a perivascular pseudorosette.

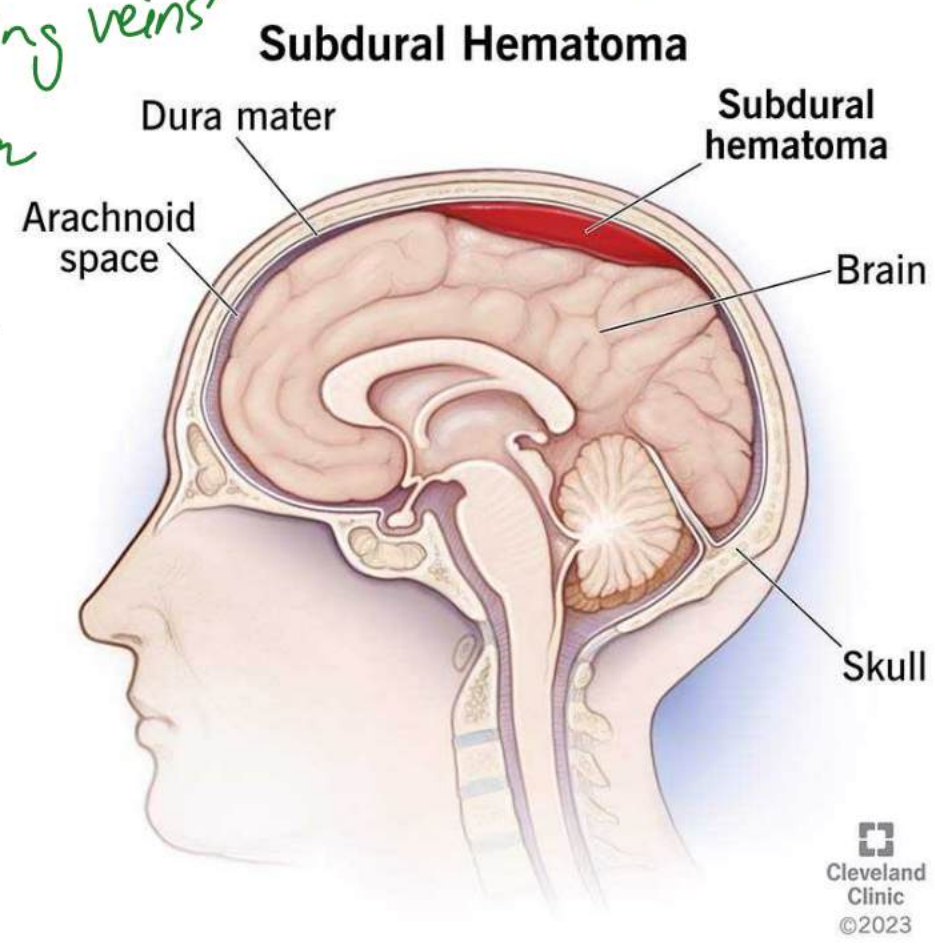


Epidural Hemorrhage → Collection of blood b.w dura and skull



- Rupture of middle meningeal artery
- Lens shaped lesion on CT
- Lucid interval

- Collection of blood underneath the dura
- Due to tearing of bridging veins that lie between dura and arachnoid
- Crescent shaped legion on CT



* demyelination of CNS – multiple sclerosis
* demyelination of PNS – Guillain Barre syndrome

	Pilocytic astrocytoma	Glioblastoma Multiforme	Oligodendroglioma	Ependymoma
MC site	Cerebellum	Cerebral hemisphere	Cerebral Cortex (white matter)	4th Ventricle
Gross	– Well circumscribed – Cystic	Butterfly tumor	Gelatinous mass	Well demarcated
Microscopy	Rosenthal fibres	– Pleomorphic – Pseudopalisading necrosis – Mitosis	– Fried egg cell – Calcification	Rosettes , Pseudorosettes Blepharo

	Meningioma	Medulloblastoma	Schwannomas
MC site	– Arise from Arachnoid – Lateral Cerebral Convexities	Cerebellum	8th nerve (Acoustic)
Gross	– Well circumscribed	Grey- white mass	– Encapsulated – Eccentric – Does not infiltrate nerve
Microscopy	– Whorled pattern – Psammoma bodies	– Home Wright Rosettes	– Antoni A → Cellular areas (Verocay body) – Antoni B → L areas

* Astrocytes → principal cells responsible for repair and scar formation in brain

* Oligodendrocytes → myelination of CNS

* Ependymal Cells → line the ventricular system

* Microglia → Macrophages of CNS

Microscopic features

Well-differentiated fibrillary astrocytomas

- A mild to moderate increase in the number of glial cell nuclei,
- Somewhat variable nuclear pleomorphism, and
- An intervening feltwork of fine, (gfap-positive astrocytic cell processes that give the background a fibrillary appearance)

- The transition between neoplastic and normal tissue is indistinct, and tumor cells can be seen infiltrating normal tissue at some distance from the main lesion.

Anaplastic astrocytomas

show regions that are

- More densely cellular
- Greater nuclear pleomorphism;
- Increased mitoses often

The highest grade tumor(Glioblastoma)

- Histologic appearance similar to anaplastic astrocytoma
- with the additional features of *necrosis* and *vascular or endothelial cell proliferation*
- Necrosis in serpentine pattern,
- occurs in areas of hypercellularity with highly malignant tumor cells crowded along the edges of the necrotic regions, **pseudopalisading**

- Vascular cell proliferation is characterized by tufts of piled-up vascular cells that bulge into the vascular lumen; the minimal criterion for this feature of glioblastoma is a double layer of endothelial cells.

- When vascular cell proliferation is extreme, the tuft forms a ball-like structure, the **Glomeruloid body**

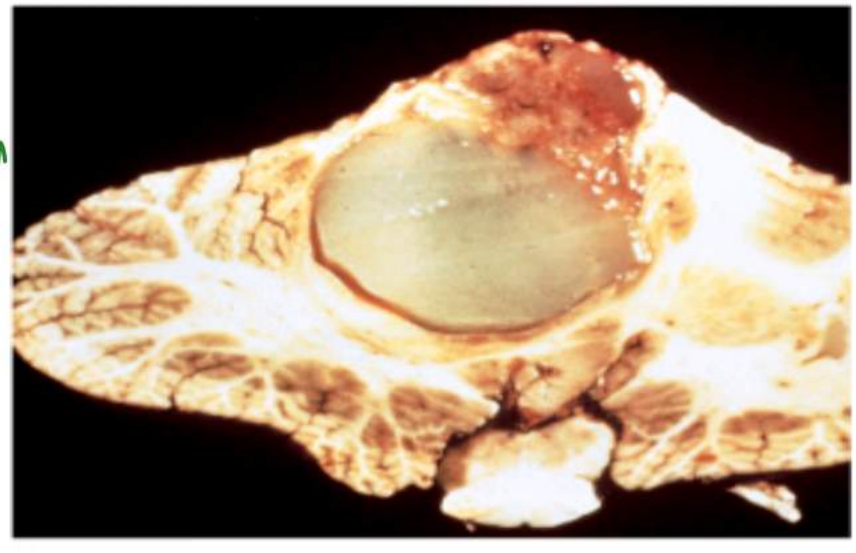
- (VEGF), produced by malignant astrocytes, perhaps in response to hypoxia,

Pilocytic Astrocytoma

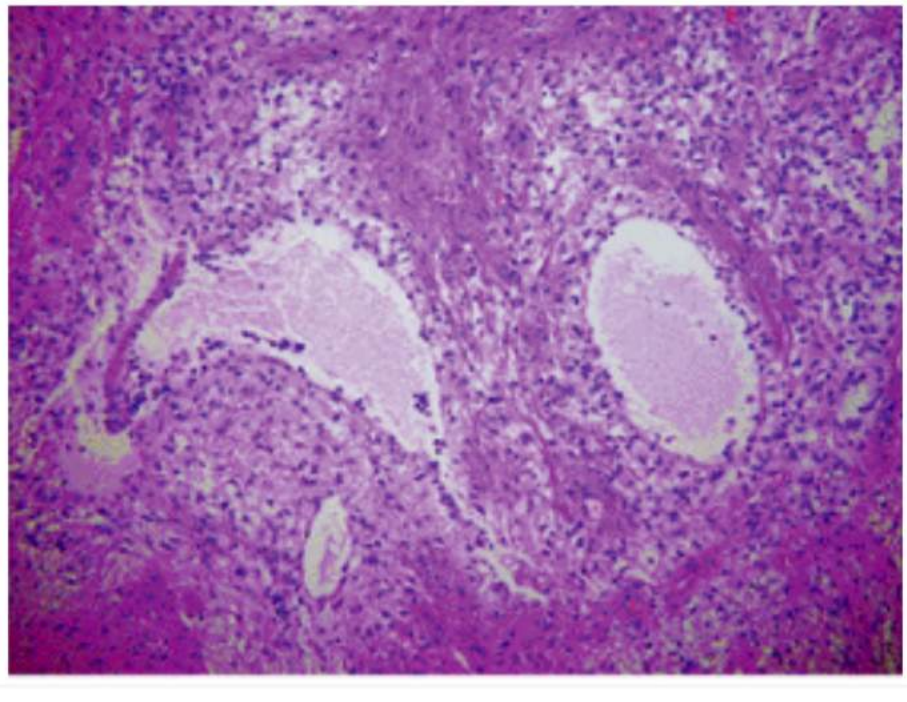
- Distinguished from the other types by their pathologic appearance and relatively benign behavior.
- Children and young adults
- Located in the cerebellum but may also appear in the floor and walls of the third ventricle, the optic nerves

- On macroscopic examination, a pilocytic astrocytoma is often cystic, with a mural nodule in the wall of the cyst
- If solid, it may be well circumscribed or, less frequently, infiltrative.

- well circumscribed
- child
- Cerebellum
- Rosenthal fibers
- GFAP positive



Pilocytic astrocytoma. A section of a cerebellar tumor reveals cystic areas containing neoplastic astrocytes against a fibrillary background.



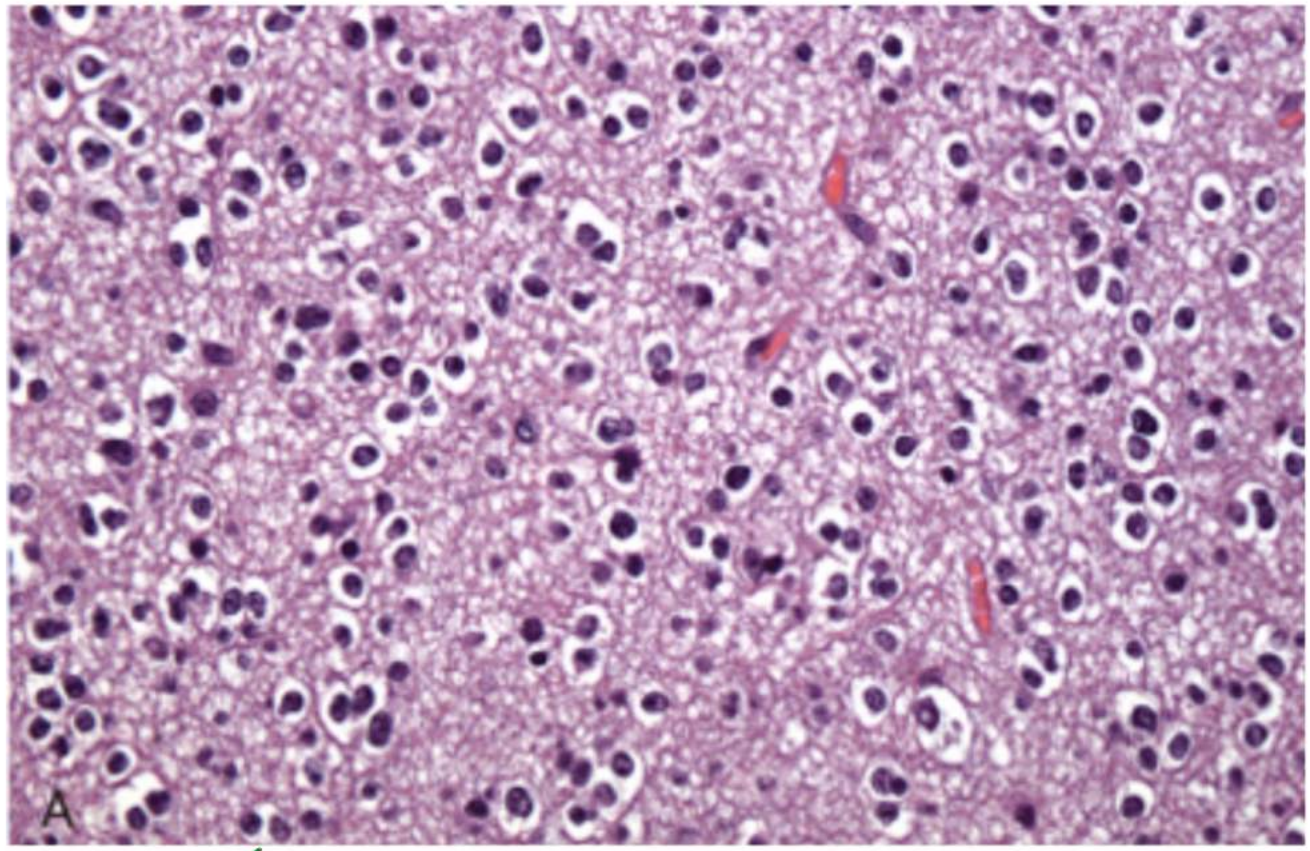
Oligodendroglioma

Morphology

- Infiltrative tumors that form gelatinous, gray masses, and may show cysts, focal hemorrhage, and calcification.

C/O

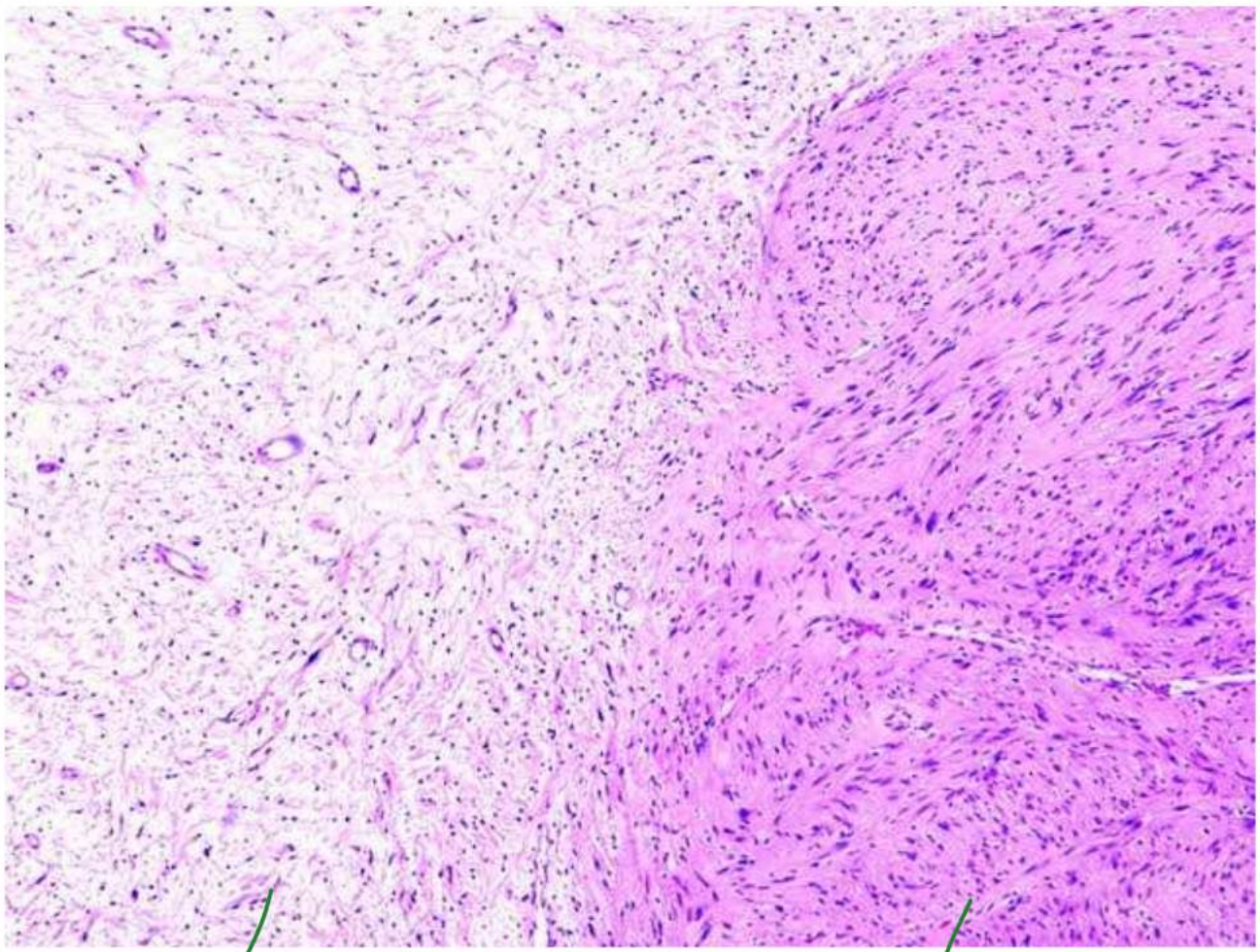
- sheets of regular cells with spherical nuclei containing finely granular chromatin (similar to normal oligodendrocytes) surrounded by a clear halo of cytoplasm



↙ Perinuclear halo (clear halo around nucleus)

• Fried egg appearance of cells on biopsy

Schwannoma

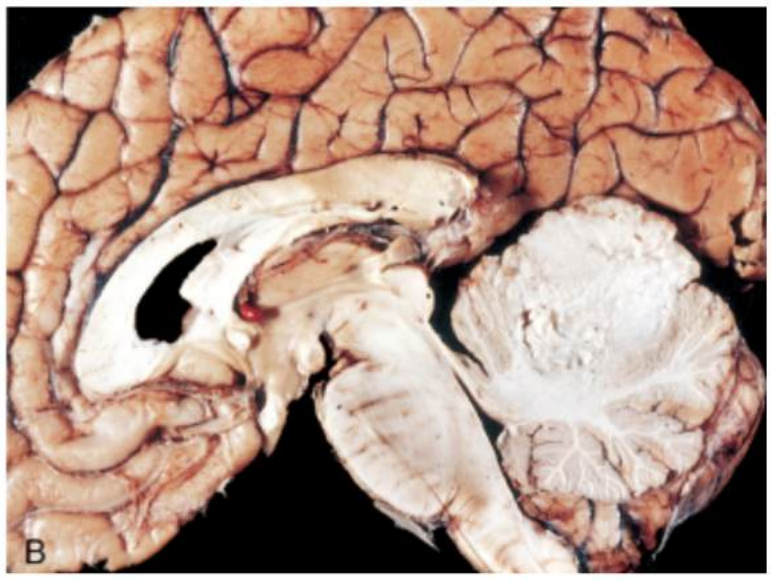


Antony B (hypocellular area)

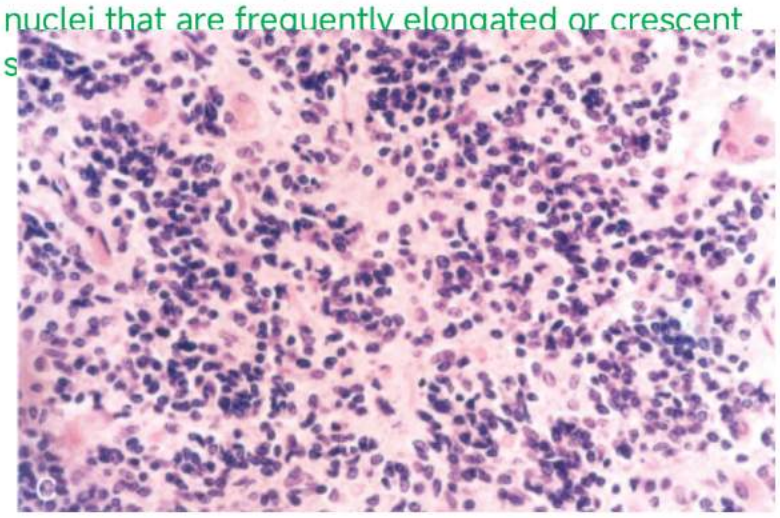
Antony A (hypercellular area)

- S100 positive
- Associated with NF2 (bilateral tumor)
- Verocay bodies → palisading nuclei

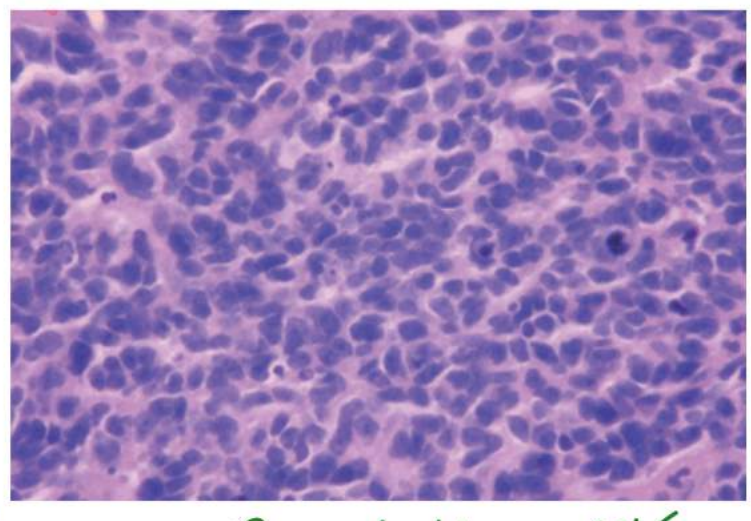
Medulloblastoma



Small, with little cytoplasm and hyperchromatic nuclei that are frequently elongated or crescent s



- children
- cerebellum
- Radiosensitive



- Round blue cells
- Homer Wright rosettes

Poisons

- **Corrosive**
  - **Strong acid** — HCl, nitric acid, acetic acid, hydrocyanic acid etc.
  - **Strong base** — Sodium hydroxide, sodium carbonate etc.
- **Irritant**
  - **Inorganic**
    - **Metallic** — Hg, As, Pb, Cu etc.
    - **Non Metallic** — Chloride, cyanide, phosphate etc.
  - **Organic**
    - **Animal** — Snake venom, cantharides etc.
    - **Vegetable** — Kaner, dhatura etc.
  - **Mechanical** — diamond dust, dry sponge, glass dust etc.
- **Systemic**

Systemic Poison

- **Cardial** — Digitalis, Nicotine
- **Spinal** — Nux-vomica
- **Cerebral**
  - **CNS stimulants** — Cocaine, nicotine, imipramine
  - **CNS depressants** — Barbiturates, Tranquillizers, Anesthetic, Inebriants, Opiates
    - **Natural** — Opium
    - **Semi synthetic** — Heroin
    - **Synthetic** — Pethidine
  - **Deliriants** — Cannabis, Atropa
  - **Hallucinogens** — LSD, Mescaline
- **Asphyxiants** — Carbon dioxide, war gases
- **Peripheral** — Curare, Conium

Table 11.1: Classification of head injury		
Type	***Duration of un-consciousness***	***Glasgow coma scale***
Minor or mild head injury	< 30 minutes	13-15
Moderate head injury	> 30 min and < 6 hours	9-12
Severe head injury	> 6 hours	8 or less

SCALP:

Contusion of Scalp

- Bruise of scalp may be **mobile**
- A bruise in the **anterior scalp** may shift **downward** to appear **around the eye**, thus causing **"black eye" or spectacle hematoma** (Hemorrhage in the soft tissue around the eyes in eyelids of both eyes is called spectacle hematoma or raccoon eyes i.e. in other words black eye on both side is a spectacle hematoma. It usually suggests fracture of base of skull.).
- A contusion in **temporal scalp** may shift do**wnward** and appear **behind the ear** – similar to **battle sign.**
- These **shifting bruises** are also called as **ectopic contusion**, percolated bruises or migratory contusions.
- Hematoma may occur **beneath the galea aponeurotica** and called as **under-scalp hematoma** or sub-galeal hemorrhage or sub-galeal hematoma

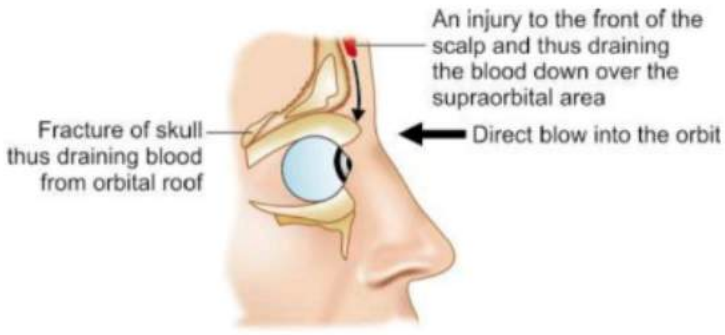


FIG. 11.3: Mechanism of production of black eye

Mechanism of Skull Fracture

As per Rowbotham's hypothesis, fracture of skull is caused by:

1. **Direct** application of force to skull – for example blow over head with iron rod.
2. **Indirect** violence – for example fall from height on feet or buttock: Fracture due to general deformation results in **fissured type** and occur in part of the skull distant

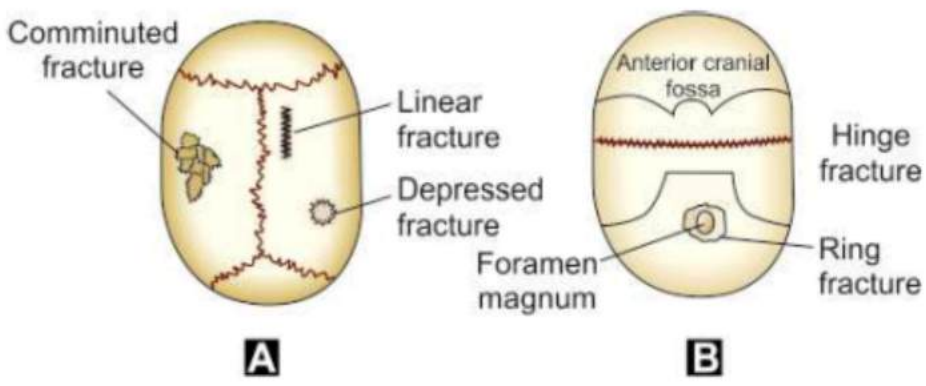
Types of skull fractures are

A) Fracture of vault of skull

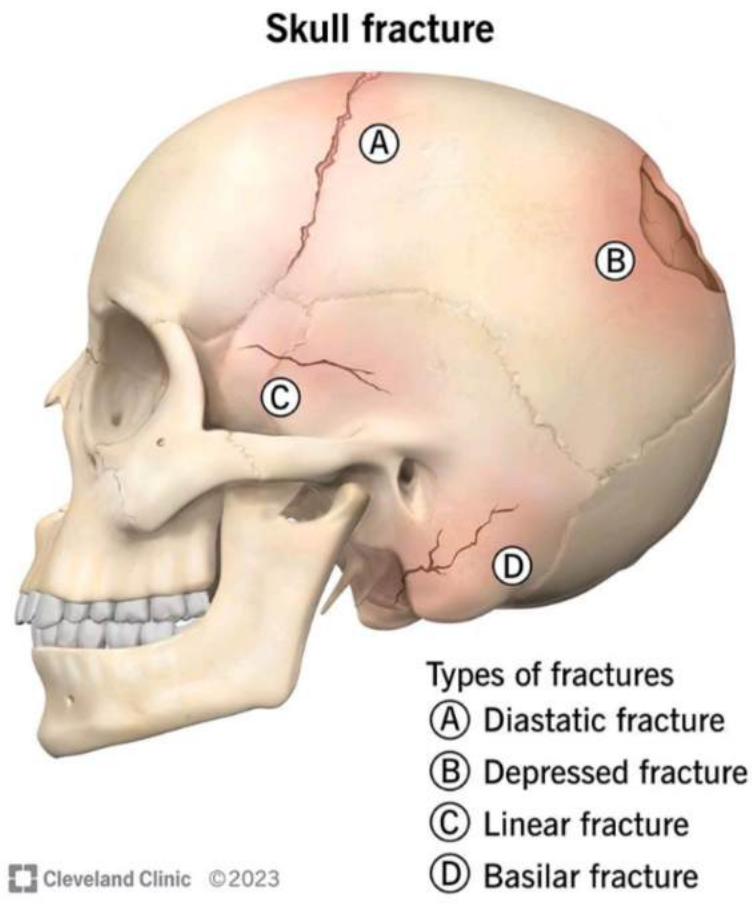
1. Linear or fissured
2. Depressed (signature)-- as the pattern resembles that of causative weapon
3. Comminuted [Mosaic (spider web)]-- fragmentation of bones occurs
4. Pond or indented --occurs only in skull of infants
5. Gutter --when part of the thickness of skull bone is removed so as to form a gutter or furrow in the bone.
6. Diastatic or sutural --along the line of sutures of skull
7. Perforating
8. Cut fracture

B) Fracture of base of skull (basilar fracture)

1. Linear or fissured
2. Ring --This is a fissured fracture that occurs round the foramen magnum in posterior cranial fossa
3. Hinge --linear fracture that passes across the floor of middle cranial fossa, often following the petrous temporal or greater wing of sphenoid bone into pituitary fossa on both sides thus separating the base of skull into two halves--- motorcyclist's fracture
4. Longitudinal
5. Secondary



FIGS 11.20A and B: Different types of fracture



HEAD INJURY

1. If dura is intact = closed head injury
2. If dura is lecerated = open head injury .
3. An effusion of blood over the top of the head or forehead may gravitate down to the loose tissues causing black eyes (periorbital hematoma).

SKULL FRACTURE:

The fracture of skull can occur either by direct or indirect violence.

Direct violence:

1. The forces act directly on the bone to produce a fracture, e.g. head crushed under the wheels in road traffic accidents or an object like stick/rod/ bullet striking the head.

Indirect violence:

1. The forces act indirectly on the skull through some other structure, which receives primary impact, e.g. fall on buttocks from height which transmits the force to occipital bone through vertebral column or a blow to the chin resulting in fracture of base of the skull.

TYPES PF FRACTURES

FISSURED FRACTURE :

1. Are called linear fracture .
2. Involve outer and inner table .
3. Such fracture cảnnot be seen on X ray .
4. Can only be detected on Autopsy.
5. Caused by :

- Impact against hard ground surface (RTA)
- Blows with a hard blunt object having a relatively broad striking surface.

6. The fracture line tends to follow an irregular course.

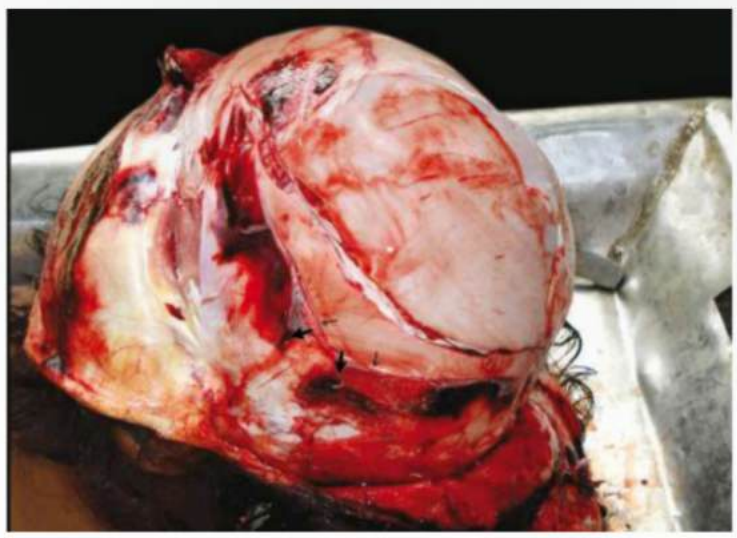


FIG. 11.9: Linear fracture (black arrows)

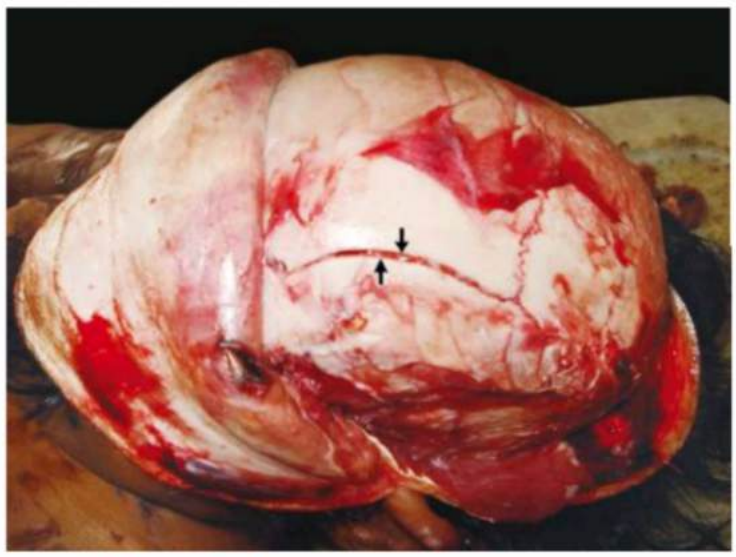
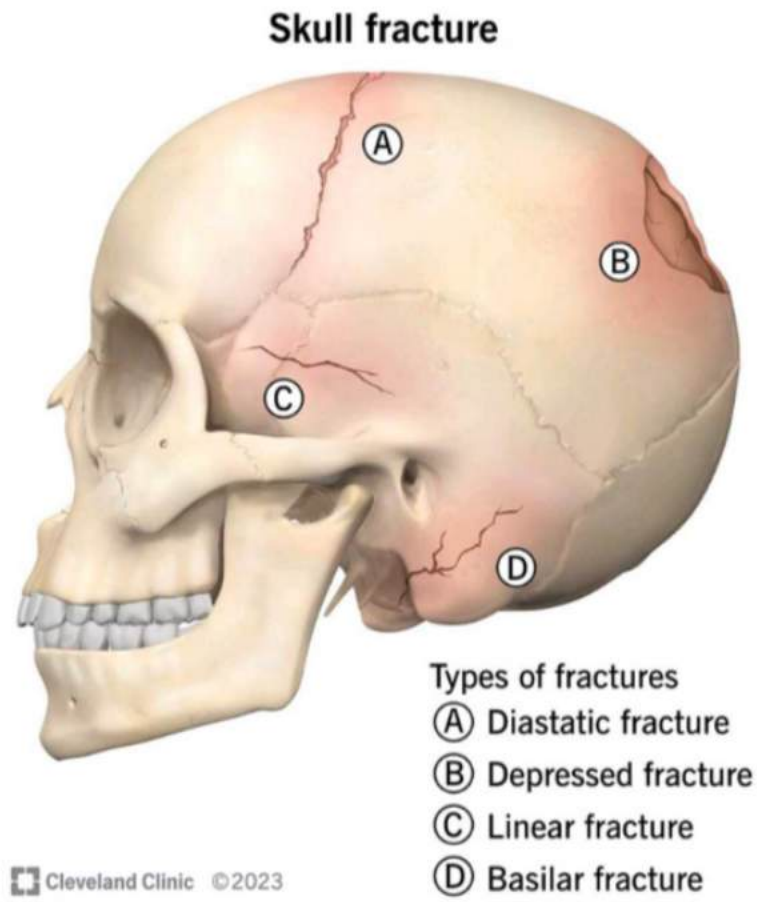
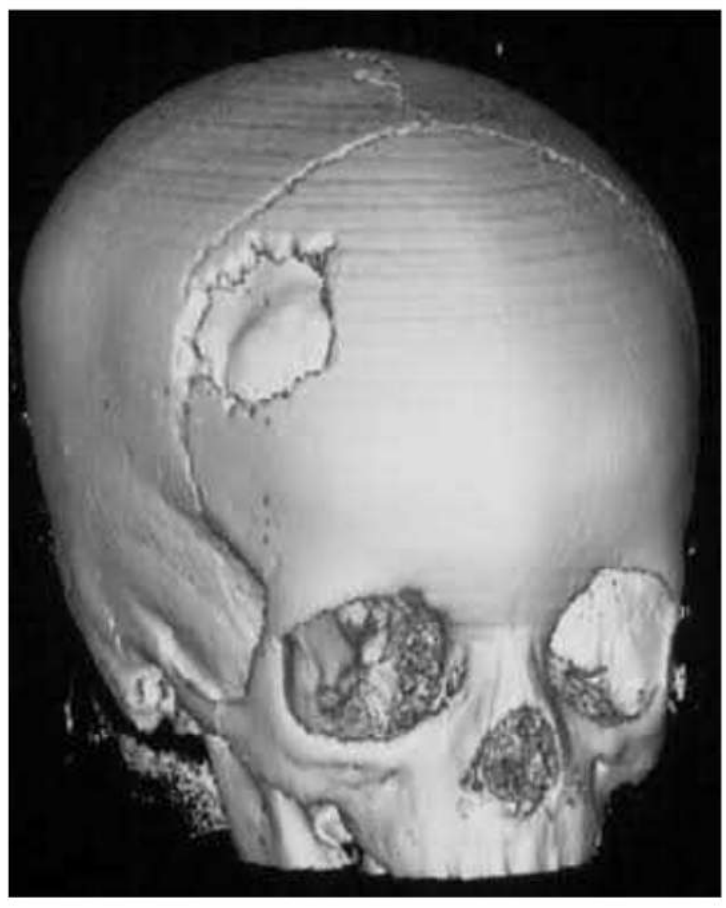


FIG. 11.10: Linear fracture (black arrows)



DEPRESSED FRACTURE:

1. Also called signature fracture .
2. Caused by heavy weapon with a small striking surface . (such as hammer, axe, brick or chopper.) .
3. Fracture bone is driven inward (giving the shape of striking object therefore called signature fracture).



Comminuted

~~COMMUNICATED~~ FRACTURE:

1. Also called

- Spider web fracture
- Mosaic fracture

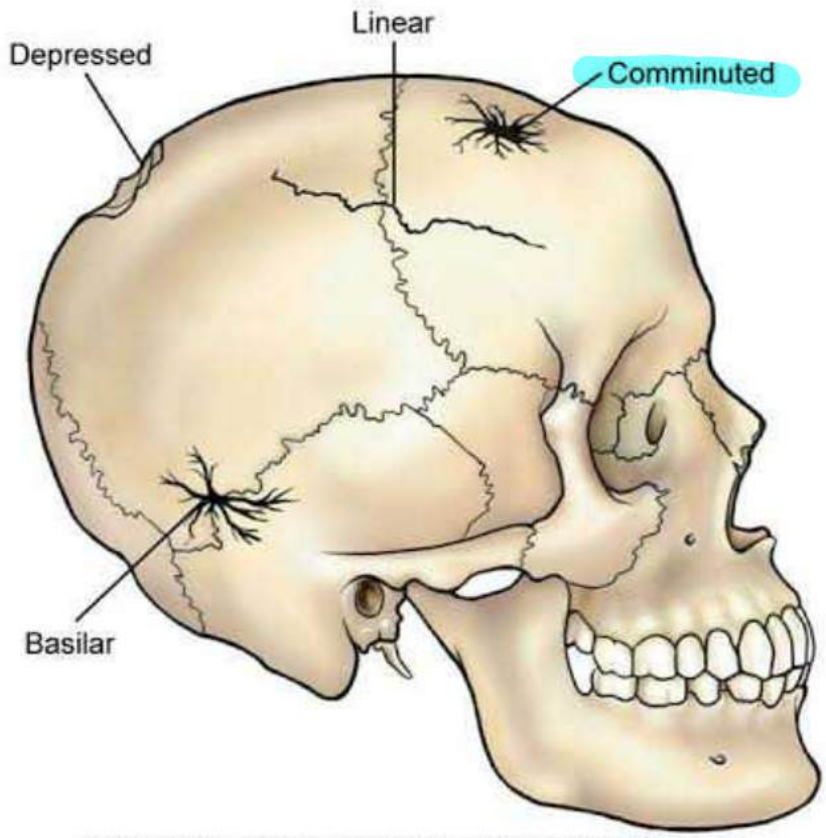
2. Caused by —>

- Vehicular accidents
- Fall from height
- Blow from weapon with a large striking surface .

  (heavy iron bar) (bullet)

3. Bone broken into two or more pieces .

Types of skull fractures

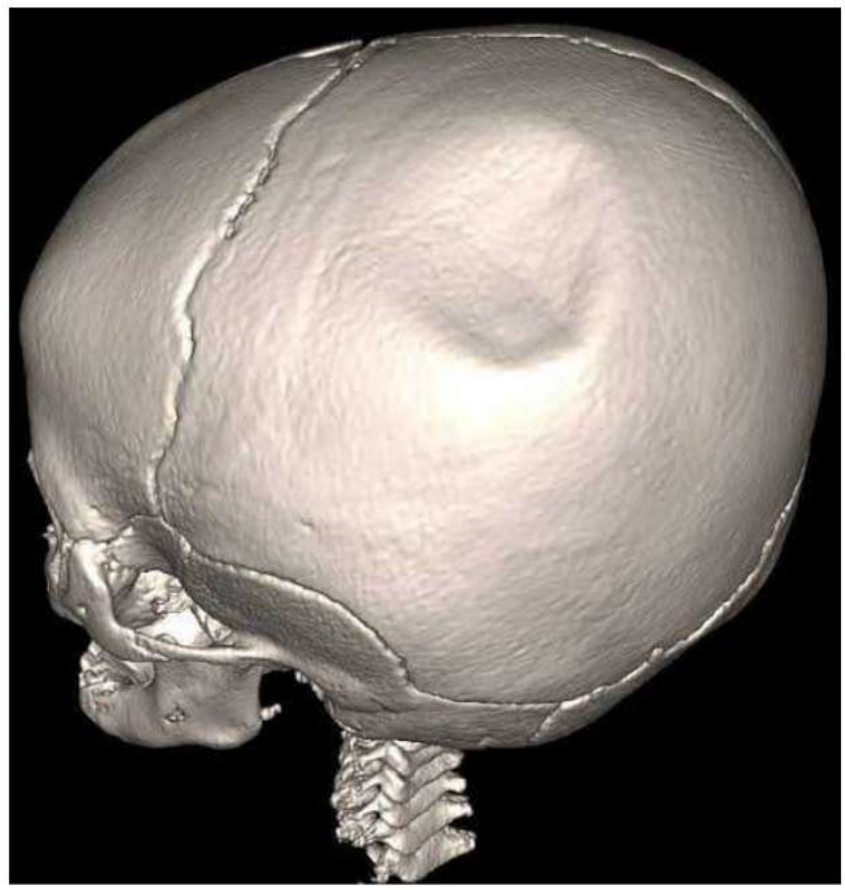


(From Monahan, F., & Neighbors, M. [1998]. *Medical-surgical nursing: Foundations for clinical practice* [2nd ed.]. Philadelphia: Saunders.)

Fig. 56-26. Skull fractures.

POND FRACTURE :

1. Also called indented fracture.
2. It is actually a type of depressed fracture .
3. This is a smooth concave depression without a fracture line, resulting from in-buckling of skull.
4. Prior to 4 years of age.
5. Occurs in children due to elastics of their skull bone .
6. It is also known as ping-pong fracture, as it looks similar to a dent in ping-pong ball.
7. Only outer table is involved.



GUTTER FRACTURE:

1. It is formed when part of the thickness of the bone is removed so as to form a gutter, e.g. oblique bullet wounds.

PENETRATING FRACTURE:

1. Clean cut opening due to penetrating weapon such as a dagger or a bullet .

ELEVATED FRACTURE :

1. Blow from a moderately heavy sharp edge weapon .
2. It is caused by a blow from sharp, heavy object (e.g. an axe/ machete) which elevates the skull fracture by lateral pull of the weapon while retrieving it.

DISTASIS FRACTURE :

1. Usually occurs in young childrens.
2. Fractures lines passing through the sutures .

Common Sites of Fracture

A) **Anterior cranial fossa**

1. Can lead to black eye , spectacle harmorrhage , raccoon eye .

B) **Middle cranial fossa**

1. Direct impact behind the ear.

C) **Posterior cranial fossa**

1. Striking back of head

D) **Around the foramen magnun (Ring fracture)**

1. Any fracture around the foramen magnum .
2. A fissured fracture about 3.5 cm outside the foramen magnum at the back , involving middle ear sideways , and roof of nose anteriorly .
3. Results from

- Fall from height on feet or buttocks .
- Sudden violent turn of head on the spine .
- Severe blow on vertex which drives the skull downwards on the vertebral column .
- Heavy blow directed underneath the acciput or chin .

COUP AND CONTRECOUP INJURY :

CONTRECOUP INJURY :

1. Occurs exactly opposite to the site of primary impact or 'coup violence'. This is due to shear strain.
2. It is usually seen in the anterior cranial fossa involving the bones of the orbital or ethmoid plates with associated periorbital hematoma.
3. It can only occur when the head is fee to move .

COUP INJRURY :

1. Which occur immediately subjacent to the area of impact .
2. The smaller the impact area the greater is the likelihood of a coup injury .

Snake Bite Management (Parikh's Textbook)

1. **Immediate First Aid:**
    - **Immobilization:** Keep the bitten limb below heart level.
    - **Tourniquet:** Apply it 5 cm above the bite site to prevent lymphatic flow, but not too tight to cut off blood supply.
    - **Cleansing:** Wash the bite site with plain water or saline.
2. **Hospital Management:**
    - **Antivenin Therapy:**
        - **Specific Antivenin**: For a particular species (e.g., cobra).
        - **Polyvalent Antivenin**: Effective for cobra, krait, Russell's viper, and saw-scaled viper bites.
        - Dosage: Typically 60 ml, given subcutaneously, intramuscularly, and intravenously. Repeat IV dose if symptoms persist.
    - **Supportive Care:**
        - Neostigmine-atropine for **neurotoxic bites** (elapids).
        - Heparin and fibrinogen transfusion for **vasculotoxic bites** (vipers).
    - **Tetanus Prophylaxis and Antibiotics** to prevent secondary infections.
3. **General Measures:**
    - **Artificial Respiration** if needed.
    - **Corticosteroids** for allergic reactions to antivenin.
    - **Blood Transfusion** in hemorrhagic cases.

Treatment of opium poisoning

* emetics usually fail due to depression of vomiting center
* stomach should be washed out first with tepid water and then with a solution of potassium permanganate
* some solution should be left in stomach to oxidise the alkaloid that might be excreted in stomach after absorption
* Specific antidote – Naloxone

Strychnine poisoning treatment
* patient should be kept in bed in dark, quiet room
* quick anesthesia with chloroform or IV barbiturates
* stomach wash with charcoal or tannic acid
* Antidote – barbiturates – IV administration
* mephenism – a muscle relaxant

Dhatura poisoning treatment
* stomach wash with potassium permanganate or tannic acid
* Antidote – physostigmine or neostigmine
* purgatives are beneficial

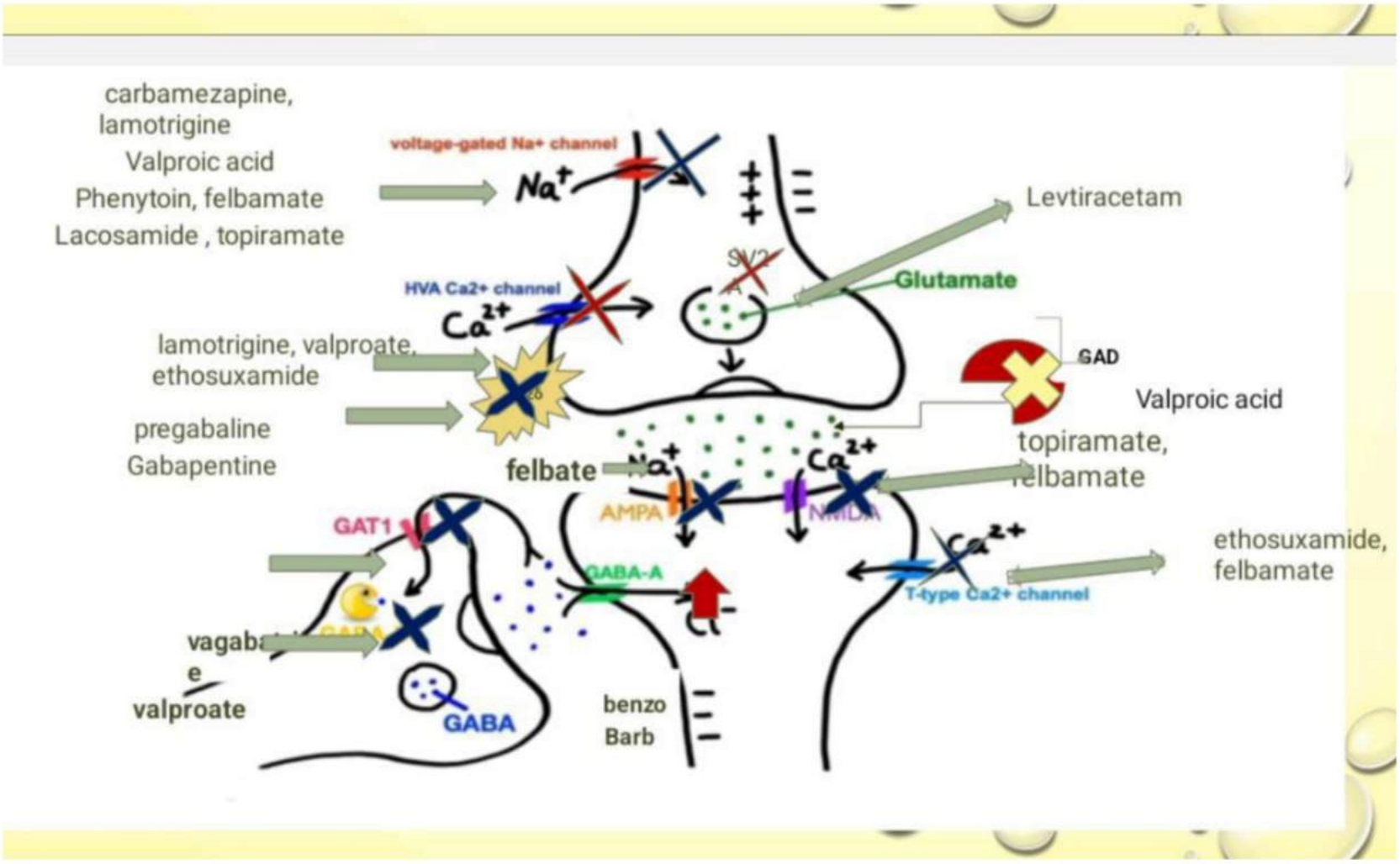
Petroleum poisoning treatment
* stomach wash with warm water containing sodium bicarbonate
* liquid paraffin to slow absorption
* artificial respiration is poison is inhaled

Elements of epidemiological studies

See also "Types of epidemiological studies" and "Statistical analysis of data."

- **Population (epidemiology)**: the total number of people in the group being studied [4]
- **Sample (epidemiology)**: a group of people selected from a larger population; meant to be representative of the larger population
- **Data (epidemiology)**: information collected during observation and/or experimentation that is used as a basis for analysis and discussion [5]
- **Exposure**: a factor that is potentially associated with a particular outcome
- **Intervention**: a treatment, drug, or management step that is being studied in an experimental study
- **Outcome**: an endpoint (e.g., a disease or health-related event) that may occur after exposure to a risk factor or intervention.
- **Latency period**: a seemingly inactive period between the exposure to a risk factor and when its effect becomes clinically apparent.

Research questions can be formulated using the PICO criteria: **P**opulation, **I**ntervention, **C**omparison (or **C**ontrol group), and **O**utcome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lamotrigine
Valproic acid
Phenytoin, felbamate
Lacosamide , topiramate
voltage-gated Na+ channel
Na+
Levtiracetam
SV2
HVA Ca2+ channel
Ca2+
Glutamate
lamotrigine, valproate,
ethosuxamide
GAD
Valproic acid
pregabaline
Gabapentine
felbate
Na+
Ca2+
topiramate,
felbamate
AMPA
NMDA
GAT1
GABA-A
Ca2+
ethosuxamide,
felbamate
T-type Ca2+ channel
vagaba
e
valproate
GABA
benzo
Barb