Pathology MSK Midterm Revision

(Joints and Osteodystrophy)

1- Synovial membrane contains…….synoviocytes

A) Type A (specialized macrophages)
B) Type B (fibroblasts)
C) Type C
D) Type D
E) Both A & B

2- Acute suppurative arthritis is caused by?

A) Staph aureus
B) Strept pyogenes
C) Strept viridans
D) Staph epidermidis
E) Both A & B

3- Osteoarthritis (Degenerative arthritis) occurs in

A) Children
B) infant
C) teenagers
D) elderly

4- All of the following is true about Osteoarthritis (Degenerative arthritis) except?

A) Occurs in elderly
B) Joint affected is Hip joint in females
C) Peak age: 60-80 years.
D) Joints affected are Knees & hands in females

1	2	3	4
E	E	D	B

5- Small bony projections that is formed at the joint periphery in Osteoarthritis (Degenerative arthritis) is called

A) osteocytes
B) osteoclast
C) osteophytes
D) osteoblast.

6- All of the following is true about Rheumatoid arthritis except?

A) autoimmune disease
B) Seropositive arthritis
C) affect peripheral joints and other organs in the body.
D) More in males.

7- All of the following is true about Rheumatoid arthritis except?

A) Joints affected are Small joints of hands and feet.
B) More in females.
C) Production of anti-IgM antibodies.
D) Peak age is 30-40 years

8- All of the following is true about Rheumatoid arthritis except?

A) A synovial biopsy reveals Pannus.
B) Increased osteoblastic activity.
C) Organization of pannus leads to fibrous ankylosis.
D) Erosion of the articular cartilage mainly at the periphery.

9-Local effects of Rheumatoid arthritis include:

a. Stiffness.
B. Swelling.
c. Deformity.
d. All of the above.

5	6	7	8	9
C	D	C	B	D

10- Systemic effects of Rheumatoid arthritis include:

a. +ve ANA in juvenile cases.
B. Rheumatoid nodules.
c. Vasculitis.
d. RF is +ve in 85% of cases.
E. All of the above.

11- All of the following is true about Gout except?

A) Most first attacks are polyarticular.
B) Metabolic arthritis.
C) Tophi is diagnostic.
D) Joints affected are first metatarsophalangeal joint of the big toe.

12- All of the following is true about Gout except?

A) Caused by increased serum uric acid.
B) More in Females.
C) Usually appears after 20 to 30 years of hyperuricemia.
D) Degradation of articular cartilage proteoglycans is the cause of mineralization.

13- All of the following is true about Ganglion cyst except?

A) Joints affected are hand and wrist.
B) More in females.
C) May be after trauma.
D) Peak age is Any age.
E) All of the above

10	11	12	13
E	A	B	E

Joint Diseases (VIP MCQs)

1. Synovial membrane contains Type **A** (specialized macrophages) & Type **B** synoviocytes (Similar to fibroblast).
2. Acute suppurative arthritis is caused by **Staph aureus & Strept pyogenes**.
3. Osteoarthritis (Degenerative arthritis) occurs in **elderly**.
4. Osteoarthritis (Degenerative arthritis):
   - Occurs in **elderly**
   - Peak age: **60-80** years.
   - Joint affected is **Hip** joint in **males**
   - Joints affected are **Knees & hands** in **females**
   - Small bony projections that is formed at the joint periphery in Osteoarthritis (Degenerative arthritis) is called **Osteophytes**.
5. Rheumatoid arthritis:
   - **autoimmune** disease
   - **Seropositive** arthritis
   - Affect **peripheral** joints and other organs in the body.
   - More in **Females**.
   - Joints affected are Small joints of hands and feet.
   - Production of anti-**IgG** antibodies.
   - Peak age is **30-40** years.
   - A synovial biopsy reveals **Pannus**.
   - Increased **osteoclastic** activity.
   - Organization of pannus leads to **fibrous ankylosis**.
   - Local effects of Rheumatoid arthritis include:
     - ✓ Stiffness.
     - ✓ Swelling.
     - ✓ Deformity.
   - Systemic effects of Rheumatoid arthritis include:
     - ✓ **+ve ANA** in juvenile cases.
     - ✓ Rheumatoid nodules.
     - ✓ Vasculitis.
     - ✓ RF is **+ve** in **85%** of cases.

Joint Diseases (VIP MCQs)

6. Gout:

- Most first attacks are **Mono**articular.
- **Metabolic** arthritis.
- **Tophi** is diagnostic.
- Joints affected are **first metatarsophalangeal joint of the big toe**.
- Caused by increased serum **uric acid**.
- More in **males**.
- Usually appears after 20 to 30 years of hyperuricemia.
- Degradation of articular cartilage **proteoglycans** is the cause of mineralization.

7. Ganglion cyst:

- Joints affected are **hand and wrist**.
- More in **females**.
- May be after **trauma**.
- Peak age is **Any age**.

14- Disturbance of bone growth is called

a. Osteodystrophy.
B. Osteoporosis.
c. Osteopetrosis.
d. Osteogenesis Imperfecta.

15- Hereditary Osteodystrophy include all of the following Except?

a. Osteogenesis Imperfecta.
B. Paget's disease.
C. Osteopetrosis.
D. Achondroplasia.

16- All of the following are true about Osteogenesis Imperfecta Except?

a. It is a rare hereditary condition.
B. Bone cortex is formed mainly of woven bone.
c. Patient has Red sclera.
d. Patient is short.

17- Clinically Osteogenesis Imperfecta include:

A) Bone weakness.
B) Patient has blue sclera.
C) It may be associated with dentogenesis imperfecta.
D) Hearing loss.
E) All of the above

14	15	16	17
A	B	C	E

18- All of the following are true about Osteopetrosis Except?

a) It is a rare hereditary condition.
b) Called Marble Bone Disease.
c) Development of secondary anemia.
d) Failure of the osteoclastic activity.
E) The bone is hard and can't fracture easily.

19- Clinically Achondroplasia include all of the following Except?:

a) resulted in abnormally Long stature.
b) It is a disorder of bone growth.
c) A common cause of disproportionate dwarfism.
d) The head is large with prominence of the forehead, low nasal bridge.

20- Regarding Fibrous dysplasia:

a) An acquired disturbance of bone growth.
b) disorganized mixture of fibrous and osseous elements.
c) Associated with Skin pigmentation & Acromegaly.
d) It may be either polyostotic or monostotic.
E) All of the above.

21- Regarding Paget's disease of Bone:

A) An acquired disturbance of bone growth.
B) characterized by bone resorption & new bone formation called Osteitis deformans
C) Occurs after age of 40 years
D) More in males.
E) All of the above

18	19	20	21
E	A	E	E

22- All of the following are true about Paget's disease of Bone Except?

a) Include Hot Stage, Mixed stage and Cold stage.
b) It may be polyostotic or monostotic
c) More in Females.
d) Sites are Skull, vertebrae and long bones.

23- All of the following are true about Paget's disease of Bone Except?

a) May be complicated with low output heart failure.
b) Causes lion face deformety of skull (leontiasis ossea)
c) Causes Kyphosis
d) Causes Forward bowing of legs
e) The thickened bony trabeculae show mosaic appearance.

24- Complications of Paget's disease of Bone include:

a) Fractures.
b) High output heart failure.
c) osteosarcoma
d) Fibrosarcoma
e) All of the above.

25- Rickets is a Defect in bone mineralization in…….

a) Newborn babies.
b) adults
c) childood.
d) elderly

22	23	24	25
C	A	E	C

26- All of the following are true about Rickets Except?

A) It starts after 6 months.
B) Patiens have good functioning bone.
C) Deficiency of vitamin D, C and phosphorous.
D) The main source of vitamin D is sunlight (85%).
E) Common in childhood.

27- Clinically Rickets include:

A) Protrusion of the abdomen.
B) Generalized lymphadenopathy and splenomegaly.
C) Delayed standing, sitting and walking.
D) Increased susceptibility to infections and anemia.
E) All of the above.

28- Clinically Rickets include:

A) Delayed closure of fontanelles and sutures
B) Craniotabes
C) Delayed dentition
D) frontal bossing
E) All of the above

29- Clinically Rickets include:

A) Rosary chest
B) Pigeon chest
C) Harrison's sulcus
D) Trefoil pelvis
E) All of the above

26	27	28	29
B	E	E	E

30- Osteomalacia is a Defect in bone mineralization in…….

a) Newborn babies.
b) adults
c) childood.
d) elderly

31- Clinically Osteomalacia include:

A) Lumbar lordosis
B) Bending of femur and tibia
C) Contracted pelvis
D) All of the above

32- Reduction of bone mass to a level below that required for normal bone support is called

a. Osteodystrophy.
B. Osteoporosis.
c. Osteopetrosis.
d. Osteogenesis Imperfecta.

33- Generalized Osteoporosis occurs in all of the following except?

A) Paralyzed limb.
B) Postmenopausal women and elderly men.
C) Scurvy.
D) Osteogenesis Imperfecta.
E) Endocrinal.

30	31	32	33
B	D	B	A

34- Exposure of the growth cartilage plate to radiation field leads to premature closure of…….

A) Epiphysis
B) metaphysis.
C) diaphysis.

35- In renal osteodystrophy there is……

A) Hypercalcemia
B) Hypocalcemia.
C) Hyperkalemia.
D) Hypokalemia.

36- Endocrinal osteodystrophy is due to:

A) Steroids
B) Hyperthyroidism.
C) Hyperparathyroidism.
D) Hyperkalemia.

37- Digital clubbing

A) It affects mainly the fingers.
B) Nails are elongated, curved, raise and cyanotic.
C) Phalanges are thickened with subperiosteal new bone formation.
D) Caused by Hypoxia.
E) Caused by Acute lung diseases.

34	35	36	37
A	B	D	E

Osteodystrophy (VIP MCQs)

1. **Osteodystrophy** >> It is disturbance of bone growth.
2. Hereditary Osteodystrophy
   - Osteogenesis Imperfecta.
   - Osteopetrosis.
   - Achondroplasia.
3. **Osteogenesis Imperfecta**
   - It is a **rare** hereditary condition.
   - Bone cortex is formed mainly of **woven** bone.
   - Patient is **short**.
   - Patient has **Blue** sclera.
   - Bone weakness. (B)
   - Patient has blue sclera. (**I**)
   - It may be associated with dentogenesis imperfecta. (**T**)
   - Hearing loss. (**E**).
4. **Osteopetrosis**
   - It is a **rare** hereditary condition.
   - Called **Marble Bone Disease**.
   - Development of **secondary anemia**.
   - Failure of the osteoclastic activity.
   - The bone is **Fragile** and can fracture **easily**.
5. **Achondroplasia**
   - It is a disorder of bone growth.
   - Resulted in abnormally **short** stature.
   - A common cause of **disproportionate dwarfism**.
   - The head is large with prominence of the forehead, low nasal bridge.
6. **Fibrous dysplasia**
   - An acquired disturbance of bone growth.
   - disorganized mixture of fibrous and osseous elements.
   - Associated with Skin pigmentation & Acromegaly.
   - It may be either polyostotic or monostotic.

Osteodystrophy (VIP MCQs)

7. Paget's disease of Bone:

- An **acquired** disturbance of bone growth.
- characterized by bone resorption & new bone formation called Osteitis deformans
- Occurs after age of **40** years
- More in **males**.
- Include **Hot** Stage, **Mixed** stage and **Cold** stage.
- It may be polyostotic or monostotic
- Sites are **Skull, vertebrae and long bones.**
- **Deformeties:**
  - ✓ lion face deformety of skull **(leontiasis ossea)**
  - ✓ Kyphosis
  - ✓ Forward bowing of legs
- The thickened bony trabeculae show **mosaic appearance**.
- **Complications:**
  - ✓ Fractures.
  - ✓ **High** output heart failure.
  - ✓ Mainly osteosarcoma
  - ✓ Fibrosarcoma.

Osteodystrophy (VIP MCQs)

8. **Rickets** >> is a Defect in bone mineralization in **Children.**
   - It starts after 6 months.
   - Deficiency of vitamin D, C and phosphorous.
   - The main source of vitamin D is sunlight (85%)
   - **General:**
     - ✓ Protrusion of the abdomen.
     - ✓ Generalized lymphadenopathy and splenomegaly.
     - ✓ Delayed standing, sitting and walking.
     - ✓ Increased susceptibility to infections and anemia.
   - **Skull:**
     - ✓ Delayed closure of fontanelles and sutures
     - ✓ **Craniotabes**
     - ✓ **Delayed dentition**
     - ✓ frontal bossing
   - **Chest:**
     - ✓ **Rosary** chest
     - ✓ **Pigeon** chest
     - ✓ **Harrison's sulcus**
   - **Pelvis: Trefoil pelvis**
9. **Osteomalacia** is a Defect in bone mineralization in **adults**.
   - Lumbar lordosis
   - Bending of femur and tibia
   - Contracted pelvis
10. **Osteoporosis**
    - reduction of bone mass to a level below that required for normal bone support.
    - **Generalized Osteoporosis:**
      - ✓ Postmenopausal women and elderly men.
      - ✓ Scurvy.
      - ✓ Osteogenesis Imperfecta.
      - ✓ Endocrinal.

Osteodystrophy (VIP MCQs)

11. **Radiation Osteodystrophy:**
    - Exposure of the growth cartilage plate to radiation field leads to premature closure of **Epiphysis.**
12. **Renal osteodystrophy** there is **Hypocalcemia**.
13. **Endocrinal osteodystrophy** is caused by:
    - Steroids
    - Hyperthyroidism.
    - Hyperparathyroidism.
14. **Digital clubbing**
    - It affects mainly the **fingers**.
    - Nails are elongated, curved, raise and cyanotic.
    - Phalanges are thickened with subperiosteal new bone formation.
    - Caused by **Hypoxia**.
    - Caused by **chronic** lung diseases.

Pathology MSK Final Revision

(Osteomyelitis)

1. Inflammation of bone and marrow

A) Osteodystrophy
B) Osteomyelitis
C) Osteoporosis
D) Osteomalacia

2. Acute suppurative Osteomyelitis is caused by?

A) Staph aureus
B) Strept pneumoniae
C) Strept viridans
D) Staph epidermidis

3. Acute suppurative hematogenous osteomyelitis occurs in

A) Children
B) Infant
C) Teenagers
D) Elderly

4. In Acute suppurative hematogenous osteomyelitis which part of bone is affected?

A) Epiphysis
B) Metaphysis
C) Diaphysis.
D) None of the above

1	2	3	4
B	A	A	B

5. Acute suppurative hematogenous osteomyelitis in children which site is affected?

A) pelvis
B) Vertebrae
C) Lower end of femur
D) Clavicle.

6. Acute suppurative hematogenous osteomyelitis in adults which site is affected?

A) Upper end of tibia
B) Vertebrae
C) Lower end of femur
D) Ankle.

7. Separation of septic necrotic tissue

A) Acute ischemia.
B) Involucvrum.
C) Bone necrosis.
D) Sequestrum

8. New bone formation

A) Acute ischemia.
B) Involucvrum.
C) Bone necrosis.
D) Sequestrum

9. Bone necrosis is recognized by

A) Absence of osteocytes within lacunae
B) Absence of osteoclast within lacunae.
C) Absence of osteoblast within lacunae.
D) Absence of osteogenics within lacunae

5	6	7	8	9
C	B	D	B	A

10. **Acute suppurative non hematogenous osteomyelitis occurs in**

A) Children
B) Infant
C) Adults
D) Elderly

11. **In Acute suppurative non hematogenous osteomyelitis which part of bone is affected?**

A) Epiphysis
B) Metaphysis
C) Diaphysis.
D) None of the above

12. **Chronic Osteomyelitis is caused by?**

A) Staph aureus
B) Strept pneumoniae
C) Strept viridans
D) Staph epidermidis

13. **In Chronic Osteomyelitis which site is affected?**

A) Tarsal and metatarsal bones and toes
B) Femur and tibiofibular
C) Spine, sternum and pelvis
D) All of the above.

14. **In Chronic multifocal osteomyelitis which of the following is false?**

A) Occurs in Children and young adults
B) Occur mainly in the metaphysis of tubular bones and in the clavicles
C) The main symptom is usually a purulent discharge from a sinus over the affected bone
D) Cultures are positive for bacterial, fungal, and viral organisms.

10	11	12	13	14
C	C	A	D	D

Written Q

☒ **Enumerate causes of bone necrosis in acute suppurative hematogenous osteomyelitis.**

……
……
……
……
……
……

☒ **Enumerate Complications of Acute Osteomyelitis.**

……
……
……
……

☒ **Define Sequestrum**

……
……

☒ **Define Involucvrum**

……
……

☒ **Define Chronic Osteomyelitis**

……
……

☒ **Enumerate Complications Chronic Osteomyelitis.**

……

……

……

……

Pathology MSK Final Revision

(Bone tumors)

1. All of the following are Benign tumor of bone EXCEPT?

A) Osteoma
B) Osteosarcoma
C) Osteoid osteoma
D) Osteoblastoma

2. In Osteoma which site is affected?

A) pelvis
B) Vertebrae
C) Facial bones
D) Metaphysis of long bone.

3. In Osteoid osteoma which site is affected?

A) pelvis
B) Vertebrae
C) Facial bones
D) Metaphysis of long bone.

4. In Osteoblastoma which site is affected?

A) pelvis
B) Vertebrae
C) Facial bones
D) Metaphysis of long bone.

5. In Osteosarcoma which site is affected?

A) pelvis
B) Vertebrae
C) Facial bones
D) Metaphysis of long bone.

1	2	3	4	5
B	C	D	B	D

6. Osteoma occurs at the age of

A) 10 – 20 Y
B) 10 – 30 Y
C) 40 – 50 Y
D) None of the above.

7. Osteoid osteoma occurs at the age of

A) 10 – 20 Y
B) 10 – 30 Y
C) 40 – 50 Y
D) None of the above.

8. Osteoblastoma occurs at the age of

A) 10 – 20 Y
B) 10 – 30 Y
C) 40 – 50 Y
D) None of the above.

9. Osteosarcoma occurs at the age of

A) 10 – 20 Y
B) 10 – 30 Y
C) 40 – 50 Y
D) None of the above.

10. Bone tumor that causes severe pain (tumor cells secrete Prostaglandin E2) relieved by aspirin.

A) Osteoma
B) Osteosarcoma
C) Osteoid osteoma
D) Osteoblastoma

6	7	8	9	10
C	B	B	A	C

11. **Bone tumor that causes severe pain (tumor cells secrete Prostaglandin E2) NOT relieved by aspirin.**

A) Osteoma
B) Osteosarcoma
C) Osteoid osteoma
D) Osteoblastoma

12. **Bony mass < 2cm with radiolucent core (nidus)**

A) Osteoma
B) Osteosarcoma
C) Osteoid osteoma
D) Osteoblastoma

13. **The most common primary malignant tumor of bone مهم**

A) Ewing sarcoma
B) Osteosarcoma
C) Chondrosarcoma
D) Giant cell tumor

14. **Characteristic sunray appearance and Codman triangle**

A) Ewing sarcoma
B) Osteosarcoma
C) Chondrosarcoma
D) Giant cell tumor

15. **Glassy eosinophilic appearance & lace-like pattern**

A) Ewing sarcoma
B) Osteosarcoma
C) Chondrosarcoma
D) Giant cell tumor

11	12	13	14	15
D	C	B	B	B

16. Osteochondrma occurs at the age of

A) 10 – 20 Y
B) 10 – 30 Y
C) 40 – 50 Y
D) 30 - 60.

17. Chondrma occurs at the age of

A) 10 – 20 Y
B) 10 – 30 Y
C) 40 – 50 Y
D) 30 - 60.

18. Chondrosarcoma occurs at the age of

A) 10 – 20 Y
B) 10 – 30 Y
C) 40 – 50 Y
D) 30 - 60.

19. The most common Benign tumor of bone مهم

A) Ewing sarcoma
B) Osteosarcoma
C) Chondrosarcoma
D) Osteochondroma

20. In Osteochondroma which site is affected?

A) Pelvis, shoulder and ribs
B) Medullary cavity of small bones of hands and feet
C) Facial bones
D) Metaphysis of long bone.

16	17	18	19	20
B	B	D	D	D

21. **In Chondroma which site is affected?**

A) Pelvis, shoulder and ribs
B) Medullary cavity of small bones of hands and feet
C) Facial bones
D) Metaphysis of long bone.

22. **In Chondrosarcoma which site is affected?**

A) Pelvis, shoulder and ribs
B) Medullary cavity of small bones of hands and feet
C) Facial bones
D) Metaphysis of long bone.

23. **Benign cartilage-capped tumor that is attached to the underlying skeleton by a bony stalk**

A) Ewing sarcoma
B) Osteosarcoma
C) Chondrosarcoma
D) Osteochondroma

24. **A mass < 3cm Composed of well-circumscribed nodules of hyaline cartilage containing benign chondrocytes**

A) Ewing sarcoma
B) Chondroma
C) Chondrosarcoma
D) Osteochondroma

25. **The second most common primary malignant tumor of bone مهم**

A) Ewing sarcoma
B) Chondroma
C) Chondrosarcoma
D) Osteochondroma

21	22	23	24	25
B	A	D	B	C

26. Large mass with "Popcorn calcification" seen using radiology

A) Ewing sarcoma
B) Chondroma
C) Chondrosarcoma
D) Osteochondroma

27. In Giant Cell Tumor which site is affected?

A) Pelvis, shoulder and ribs
B) Epiphysis of long bones
C) Diaphysis of long bone
D) Metaphysis of long bone.

28. In Ewing Sarcoma which site is affected?

A) Pelvis, shoulder and ribs
B) Epiphysis of long bones
C) Diaphysis of long bone
D) Metaphysis of long bone.

29. Expanding lesion with Soap Bubble appearance

A) Ewing sarcoma
B) Osteosarcoma
C) Chondrosarcoma
D) Giant cell tumor

30. The second most common bone sarcoma in children مهم

A) Ewing sarcoma
B) Chondroma
C) Chondrosarcoma
D) Osteochondroma

26	27	28	29	30
C	B	C	D	A

31. Destructive lytic tumor with reactive bone deposited in an onion-skin fashion

A) Ewing sarcoma
B) Osteosarcoma
C) Chondrosarcoma
D) Giant cell tumor

32. Homer-Wright rosettes is seen in

A) Ewing sarcoma
B) Osteosarcoma
C) Chondrosarcoma
D) Giant cell tumor

33. In multiple myeloma which site is affected?

A) pelvis
B) Vertebrae
C) Skull
D) All of the above.

34. The most common bone tumor at all مهم

A) Ewing sarcoma
B) Secondary bone tumors
C) Chondrosarcoma
D) Osteosarcoma

35. Most bone metastases are osteolytic EXCEPT مهم

A) Cancer lung
B) Cancer breast
C) Cancer prostate
D) Cancer brain

31	32	33	34	35
A	A	D	B	C

Written Q

☒ Describe clinical picture of osteoma.

……

……

……

☒ Enumerate Genetic mutations of Osteosarcoma.

……

……

☒ Enumerate Genetic mutations of Chondrosarcoma.

……

……

☒ Enumerate Genetic mutations of Ewing Sarcoma.

……

……

☒ Describe clinical picture of multiple myeloma. (CRAB)

C:……

R:……

A:……

B:……

☒ Mention 2 tumors and their characteristic radiological appearance.

Tumor	characteristic radiological appearance

Pathology MSK

(Soft tissue tumors)

1. What is excluded from the definition of soft tissue? A. Adipose tissue B. Skeletal muscles C. Peripheral nerves D. Joints	D
2. Which of the following is a benign tumor of fat? A. Liposarcoma B. Fibroma C. Lipoma D. Rhabdomyosarcoma	C
3. Which tumor shows "signet ring" appearance microscopically? A. Lipoma B. Leiomyoma C. Schwannoma D. Synovial sarcoma	A
4. Liposarcoma most commonly affects people aged: A. 20–30 years B. 50–60 years C. 30–40 years D. 10–20 years	B
5. The diagnostic cell in liposarcoma is: A. Myoblast B. Fibroblast C. Lipoblast D. Schwann cell	C

6. Which tumor is locally aggressive but with minimal metastatic risk? A. Lipoma B. Fibromatosis C. Liposarcoma D. Leiomyosarcoma	**B**
7. Which soft tissue tumor shows β-catenin positivity? A. Leiomyoma B. Lipoma C. Fibromatosis D. Rhabdomyosarcoma	**C**
8. Which tumor typically arises in the palm or sole? A. Superficial fibromatosis B. Liposarcoma C. Synovial sarcoma D. Schwannoma	**A**
9. Embryonal rhabdomyosarcoma is most commonly found in: A. Adults B. Children and adolescents C. Elderly D. Neonates only	**B**
10. Alveolar rhabdomyosarcoma resembles: A. Liver lobules B. Bone marrow C. Glandular acini D. Pulmonary alveoli	**D**

11. Which markers are positive in rhabdomyosarcoma? A. S100 only B. SMA and desmin C. Desmin and myogenin D. CK and TLE1	C
12. Which benign tumor arises from smooth muscle? A. Rhabdomyosarcoma B. Lipoma C. Leiomyoma D. Schwannoma	C
13. A characteristic histologic feature of leiomyoma is: A. Verocay bodies B. Interlacing fascicles of smooth muscle cells C. Gland-like structures D. Fibrous septa forming alveoli	B
14. What is a common clinical feature of leiomyosarcoma? A. Painful swelling B. Hemorrhagic lesion C. Painless firm mass D. Slowly growing mass	D
15. Leiomyosarcoma typically arises in: A. Deep soft tissue and retroperitoneum B. Skin only C. Uterus only D. Sinuses	A

16. Schwannomas arise from: A. Smooth muscle B. Fibrous tissue C. Peripheral nerves D. Skeletal muscle	**C**
17. Histologic hallmark of Schwannoma: A. Lipoblasts B. Antoni A and B areas C. Pleomorphic giant cells D. Beta-catenin expression	**B**
18. Which IHC marker is positive in Schwannoma? A. SMA B. Desmin C. CD99 D. S100	**D**
19. Synovial sarcoma is misnamed because it: A. Lacks synovial tissue B. Arises within synovium C. Always affects joints D. Lacks muscle differentiation	**A**
20. Synovial sarcoma typically affects: A. Children B. Elderly C. People aged 20–40 years D. Infants	**C**

21. Biphasic synovial sarcoma contains: A. Only spindle cells B. Only epithelial cells C. Spindle and gland-like epithelial cells D. Muscle and neural cells	**C**
22. Which marker is associated with synovial sarcoma? A. CD99 B. Desmin C. S100 D. β-catenin	**A**
23. Which tumor is S100 positive? A. Leiomyosarcoma B. Schwannoma C. Rhabdomyosarcoma D. Fibromatosis	**B**
24. Which tumor has a well-circumscribed but not encapsulated appearance and may mimic lipoma? A. Schwannoma B. Liposarcoma C. Fibroma D. Synovial sarcoma	**B**
25. What is seen in pleomorphic rhabdomyosarcoma? A. Spindle cells in alveolar spaces B. Gland-like structures C. Bizarre multinucleated eosinophilic cells D. Lipoblasts	**C**

26. Which tumor shows "nuclear palisading" histologically? A. Schwannoma B. Lipoma C. Synovial sarcoma D. Leiomyosarcoma	**A**
27. Which tumor shows interweaving fascicles of eosinophilic spindle cells with blunt-ended hyperchromatic nuclei? A. Liposarcoma B. Leiomyosarcoma C. Rhabdomyosarcoma D. Fibromatosis	**B**
28. Which immunohistochemical marker indicates smooth muscle origin? A. Myogenin B. CK C. S100 D. SMA	**D**
29. What is characteristic of superficial fibromatosis? A. Encapsulated tumor B. Affects elderly women C. Occurs in palm, sole, penis D. Arises from nerves	**C**
30. Which tumor may have a mucoid cut surface? A. Lipoma B. Schwannoma C. Liposarcoma D. Fibroma	**C**

Past Years Written Q

1. Enumerate:-

1) Clinical classifications of soft tissue tumors.

1. Benign (self-limited) lesions
2. Intermediate-grade (locally aggressive) tumors
3. Malignant (high-grade sarcomas)

2) Main histologic types of rhabdomyosarcoma.

1. Embryonal rhabdomyosarcoma
2. Alveolar rhabdomyosarcoma
3. Pleomorphic rhabdomyosarcoma

3) Immunohistochemical markers used in soft tissue tumor diagnosis and their significance.

1. **S100** – Positive in adipose and neural tumors
2. **Desmin** – Indicates muscle differentiation
3. **Myogenin** – Specific for skeletal muscle origin
4. **SMA (Smooth Muscle Actin)** – Indicates smooth muscle differentiation
5. **β-catenin** – Positive in fibromatosis
6. **CD99** – Seen in synovial sarcoma
7. **TLE1** – Seen in synovial sarcoma
8. **CK (Cytokeratin)** – Seen in epithelial component of synovial sarcoma

4) common sites of lipomas.

1. Back
2. Shoulder
3. Neck
4. Abdomen

5) Histological features of Schwannoma.

1. Antoni A (hypercellular) areas
2. Antoni B (hypocellular) areas
3. Verocay bodies (nuclear palisading)
4. Spindled cells with wavy nuclei
5. Hyalinized blood vessels

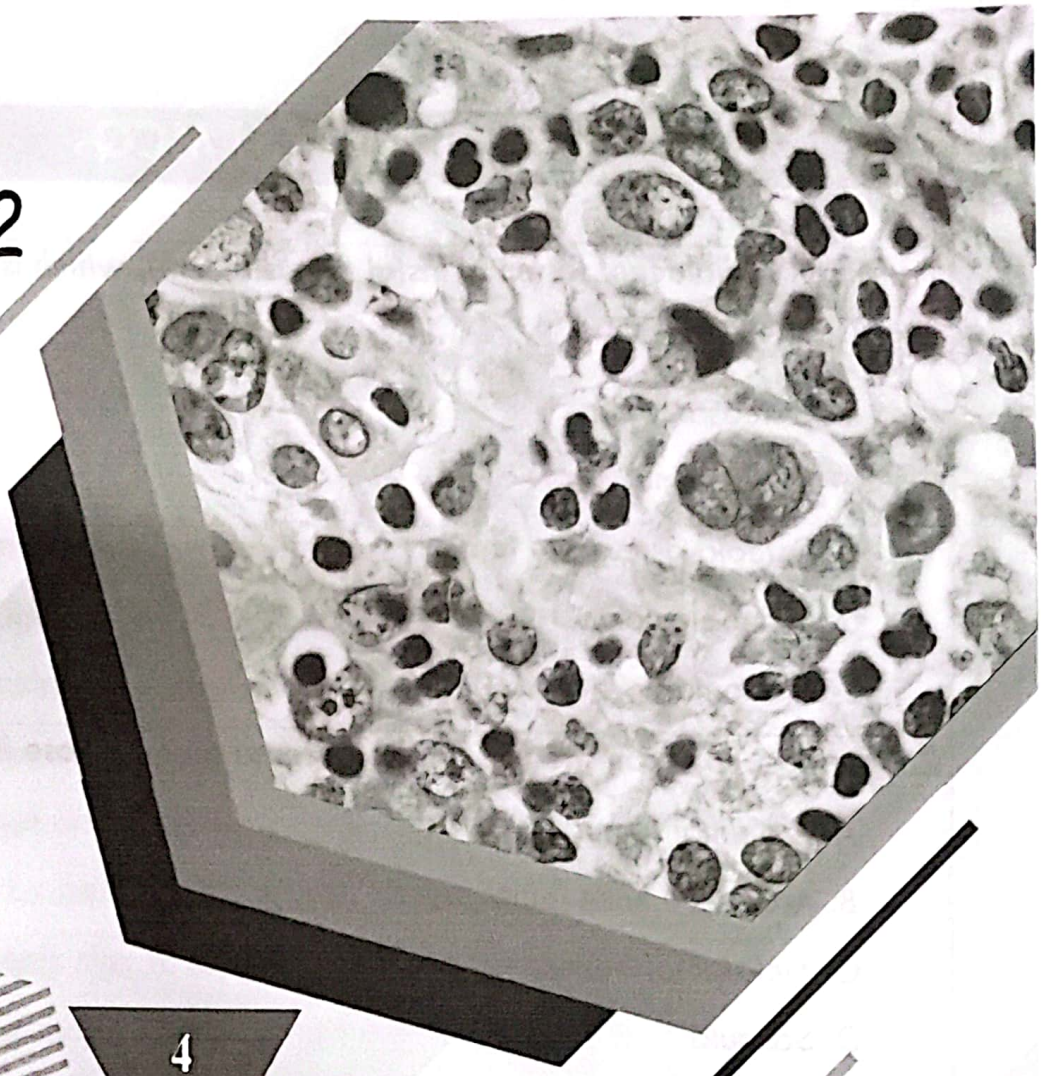
2. Compare:-

1) Lipoma & Lipomyosarcoma

Feature	Lipoma	Liposarcoma
Nature	**Benign** tumor of adipose tissue	**Malignant** tumor of adipose tissue
Age Group	Common in **adults**, rare in children	Typically affects **50–60 years** old adults
Common Sites	Back, shoulder, neck, abdomen (subcutaneous tissue)	Deep soft tissues (e.g., thigh) and retroperitoneum
Clinical Picture	**Slowly** growing, soft, mobile mass	**Rapidly** enlarging, painless deep mass
N/E	- Soft, well-circumscribed, lobulated mass - Thinly encapsulated - Pale yellow, greasy cut surface	- May appear well circumscribed but **not** encapsulated - Mucoid or bright yellow areas that may mimic lipoma
M/E	- Lobules of **mature adipocytes** - Slight variation in cell size - Small eccentric nuclei **("signet ring" appearance)** - Thin fibrous septa and capsule	- Presence of **lipoblasts** (mononuclear or multinucleated) - **Indented nuclei** due to lipid vacuoles - Variable cellular **atypia** and **mitoses**
Immunohistochemistry	**S100 protein** positive	
Differentiating Feature	Uniform mature adipose tissue, **NO** atypia or mitoses	Presence of lipoblasts, cellular atypia, infiltrative behavior

Level 1
Semester2

MSK



4
L.E

L5

MCQ Pathology

Dr.Ahmed Hhassan

Lecture (5) MCQs

1. Painful radiolucent lesion in distal femur (1 cm), which is relieved by Aspirin: a- Osteosarcoma. b- Chondroma. c- Osteoid osteoma. d- Osteoblastoma. e- Osteoma.	**C**
2. The most common site for chodrosarcoma among those is: A. Proximal femur. B. Aroud the knee joint. C. Metatarsal bones. D. Scapula E. Mandible	**D**
3. The Following are primary bone tumors except: a) Metastatic tumors b) Osteogenic tumors c) Chondrogenic tumors d) Fibrous tumors e) Fibro-osseus tumors	**A**
4. All of the following is true regarding osteoma except: a) Benign tumor of bone b) Usually occurs around knee c) May be solitary or multiple d) May be part of Gardner syndrome e) Composed of mixture of lamellar and woven bone	**B**

5. The most common primary malignant bone tumor is : a) Osteoblastoma b) Ewing sarcoma c) Chondrosarcoma d) Osteosarcoma e) None of the above	**D**
6. Osteosarcoma is characterized by all of the following except : a) Common in old age b) Arises from metaphysis of long bones c) Common arund knee d) Shows hemorrhage and necrosis e) May lead to sunray pattern or Codman's triangle	**A**
7. The hallmark microscopic sign to diagnose osteosarcoma is : a) Variable size and shape of cells b) Presence of malignant osteoid matrix formation c) Abundant malignant cartilage formation d) All of the above e) None of the above	**B**
8. Osteochondroma (exostosis) is characterized by all except : a) Common benign growth b) May be single or multiple c) Cartilaginous outgrowth covered by bony cap d) Usually arises from metaphysis of long bones	**C**
9. The following is a characteristic feature of chondroma: a) Benign cartilage forming tumor b) Common in hands and feet c) If multiple are called Ollier syndrome d) If associated with benign angiomas are called Maffucci syndrome e) All of the above	**E**

10. The following are not true about chondrosarcoma except : a) Occurs more frequent in pelvis b) Commonly involves distal exteremities c) Forms small lobulated mass d) Early blood spread e) Most patients are younger than 40 years	**A**
11. One of the following is a difference between osteoid osteoma & osteoblastoma: a) Osteoblastoma is well circumscribed lesion b) Osteoblastoma usually involves the cortex c) Osteoblastoma is larger than 2 cm in diameter d) Osteoblastoma is benign e) Osteoblastoma is surrounded by rim of sclerotic bone	**C**
12. Ewing sarcoma is not characterized by: a) Highly aggressive tumor b) The most common sarcoma of bone in children c) Has genetic aetiology d) May arise from long or flat bones e) May spread outside bone	**B**
13. Regarding Ewing sarcoma, Which is NOT true: a) Destructive infiltrative tumor b) Onion skin appearance in x ray c) Dense stroma by microscopic examination d) Common to arise from femur e) May have neural differentiation	**C**

14. The presence of Homer Wright rosettes in Ewing sarcoma indicates : a) Tumor is benign b) Tumor is locally malignant c) Tumor spread to lung d) Tumor arises from metaphysis e) Tumor has neural differentiation	**E**
15. Giant cell tumor of bone is characterized by all of the following except: a) Highly aggressive malignant tumor b) Arises from epiphysis of long bones c) May spread to lung d) Presence of giant cells with osteoclastic activity e) Leads to formation of lytic lesions of bones	**A**
16. Neoplastic proliferation of plasma cells with appearance of bone lytic lesions is present in: a) Ewing sarcoma b) Multiple myeloma c) Osteoclastoma d) All of the above e) None of the above	**B**
17. Patient with Paget's disease of bone is vulnerable to the development of: a) Osteomyelitis b) Osteoblastoma c) Fibrous dysplasia d) Osteosarcoma e) Ewing sarcoma	**D**

18. Sun-ray appearance is characteristic feature of: a) Osteoma b) Osteoblastoma c) Osteosarcoma d) Chondroma e) Chondrosarcoma	C
19. Osteosarcoma tends to occur in: a) Epiphysis b) Diaphysis c) Metaphysis d) Articular cartilage e) Tendons	C
20. The most common bone tumor is: a) Osteosarcoma b) Osteochondroma c) Giant cell tumor d) Metastatic tumors e) Chondrosarcoma	D
21. A patient with multiple osteomas. This is a part of:- a) Gardner syndrome b) Ollier disease c) Maffucci syndrome d) Li-Fraumeni syndrome e) McCune Albright syndrome	A
22. Ollier disease is characterized by multiple:- a) Exostosis b) Fibrous dysplasia c) Chondromas d) Bone secondaries	C

23. Multiple Myeloma is a tumor of:- a) Lymphocytes b) Plasma cells c) Mast cells d) Neuroectodermal cells of bone marrow e) Promyelocytes	**B**
24. Translocation t-(11,21) is characteristic for: a) Ewing sarcoma b) Osteosarcoma c) Multiple myeloma d) McCune Albright syndrome e) Cortical fibrous defect	**A**
25. Osteosarcoma is characterized by:- a) Is rare in the metaphysis of long bones b) Spreads mostly by lymphatic pathway c) Gives onion skin appearance on radiograph d) Has a good prognosis e) Occurs most commonly between the ages of 10 and 25 years	**E**
26. Multiple Chondromas + Benign angiomas is called:- a) Ollier syndrome b) Maffucci syndrome c) Gardener syndrome d) Multiple hereditary exostosis	**B**
27. The following carcinoma may produce osteosclerotic bone metastasis:- a) Bronchogenic carcinoma b) Thyroid carcinoma c) Renal cell carcinoma d) Breast carcinoma e) Prostatic carcinoma	**E**

28. Painful radiolucent lesion in distal femur (1 cm) which is relieved by aspirin: a) Osteosarcoma b) Chondroma c) Osteoid osteoma d) Osteoblastoma e) Osteoma	**C**
29. The most common site for chondrosarcoma among those is: a) Proximal femur b) Around the knee joint c) Metatarsal bones d) Scapula e) Mandible	**D**

Cases

1. ***A 10-year-old boy complains of pain and swelling around his right knee of 3 weeks duration that has not improved with rest. His mother denies a history of trauma to the knee. A radiograph shows a destructive lytic mass arising from the metaphysis of the distal femur. X-ray shows Sunray appearance of distal femur.***

   a) ***Your diagnosis of the case is.....***

      - Osteosarcoma.

   b) ***Most common Site - Age - Sex of the tumor is.....***

      - Metaphysis of long bones around knee
      - Young age 10-20 years
      - Male.

   c) ***When this tumor occurs in old ageit is always predisposed to by..***

      - Paget disease.

   d) ***Spread of this tumor is by..... .....and the prognosis is...***

      - Blood – Poor

2. ***A 65-year-old man complains of pain in his back, fatigue. An X-ray examination reveals numerous lytic lesions in the lumbar vertebral bodies. Laboratory studies disclose mild anemia and thrombocytopenia. A bone marrow biopsy: showed foci of abnormal plasma cell proliferation, which account for 18% of all hematopoietic cells.***

   a) ***Diagnosis of this case.***

      - Multiple myeloma (Plasmacytoma)

   b) ***Mention two other sites of this tumor***

      - Skull-Pelvic bone

3. **A 30 year old man has experienced pain in the region of his left knee for more than 1 month. A radiograph shows a 7 cm mass involving the distal femoral epiphyseal region. A biopsy shows multinucleated cells in a stroma predominantly composed of spindle shaped mononuclear cells.**

   a) **What is the diagnosis?**

      - Giant cell tumor of bone.

   b) **Behavior of this tumor is.....**

      - Locally malignant

   c) **Is this lesion Osteosclerotic or Osteolytic?**

      - Osteolytic.

4. **A 13 year old male presents with swelling and pain in the right leg. X ray reveals a mass expanding the diaphysis of the femur infiltrating the cortex from within with an onion skin appearance.**

   a) **What is the most possible diagnosis?**

      - Ewing sarcoma (PNET).

   b) **What is the genetic translocation detected in this lesion?**

      - Fusion of EWS gene with a member of the ETS family of transcription factors FL1 t-(114, 22) or ERG t-(21, 22).

   c) **Describe M/E of this lesion.**

      - Malignant round cell tumor (sheets of uniform small round cells with hyperchromatic nuclei and scanty glycogen-rich cytoplasm within little intervening stroma.
      - The presence of Homer-Wright rossettes (tumor cells circled around a central fibrillary space) indicates neural differentiation (ie: PNET > Ewing).

Level-1 Semester-2

Pathology - MSS

BERLIN

BEST PRICE

19 L.E

SCAN ME

Lecture 6

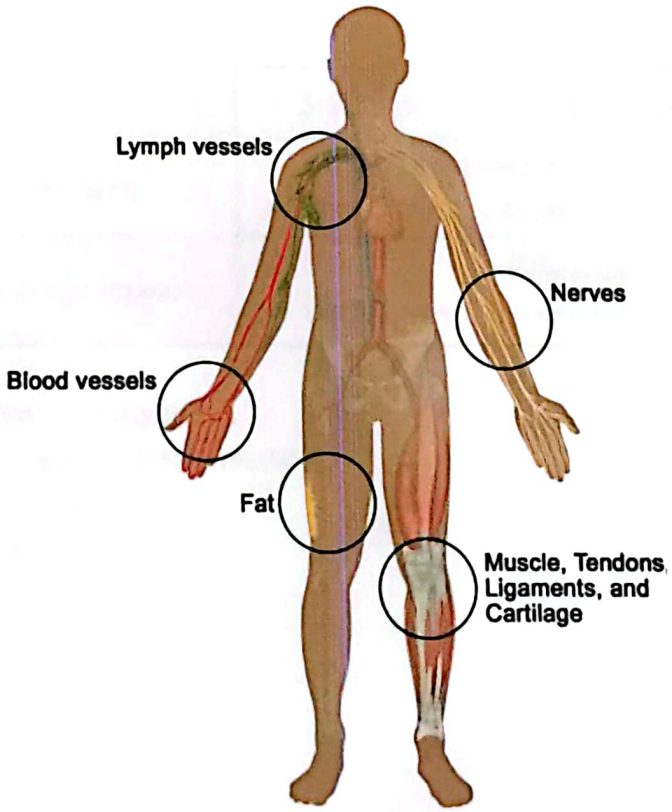
SOFT TISSUE TUMORS

DR M. YUSUF

SOFT TISSUE TUMORS

Definition of SOFT TISSUE

- ☑ **Soft tissue refers to non-epithelial tissue excluding the skeleton, joints, central nervous system, hematopoietic & lymphoid tissues.**
- ☑ **Soft tissue includes:**
  1. Adipose tissue.
  2. Fibrous tissue.
  3. Smooth & skeletal muscles.
  4. Blood & lymph vessels.
  5. Peripheral nerves.



SOFT TISSUE TUMOR

☑ **Classifications:**

① **According to tissue of origin:**

	Tumors of	Benign	Intermediate grade	Malignant
①	ADIPOSE TISSUE	Lipoma	--	Liposarcoma
②	FIBROUS TISSUE	--	Fibromatosis	--
③	SKELETAL MUSCLES	--	--	Rhabdomyosarcoma
④	SMOOTH MUSCLES	Leiomyoma	--	Leiomyosarcoma
⑤	PERIPHERAL NERVES	Schwannoma	--	--
⑥	VASCULAR ORIGIN	▪ Hemangioma ▪ Lymphangioma	--	Angiosarcoma
⑦	UNCERTAIN ORIGIN	--	--	Synovial sarcoma

② **Clinical classifications:**

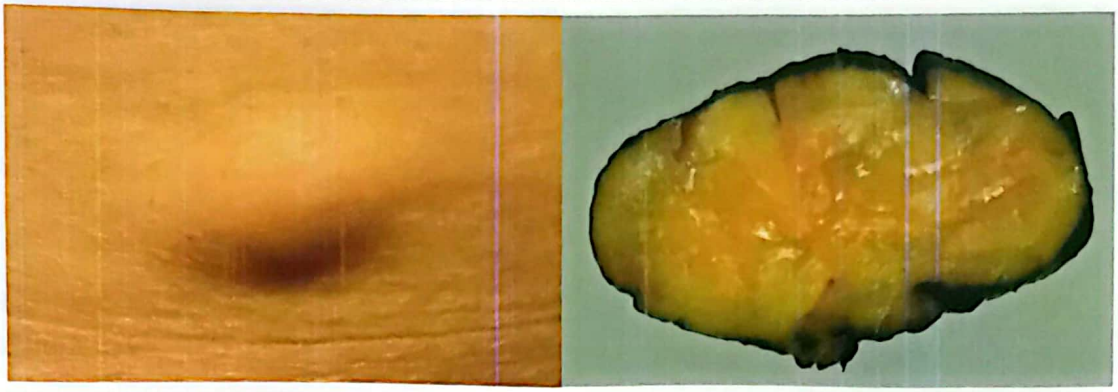
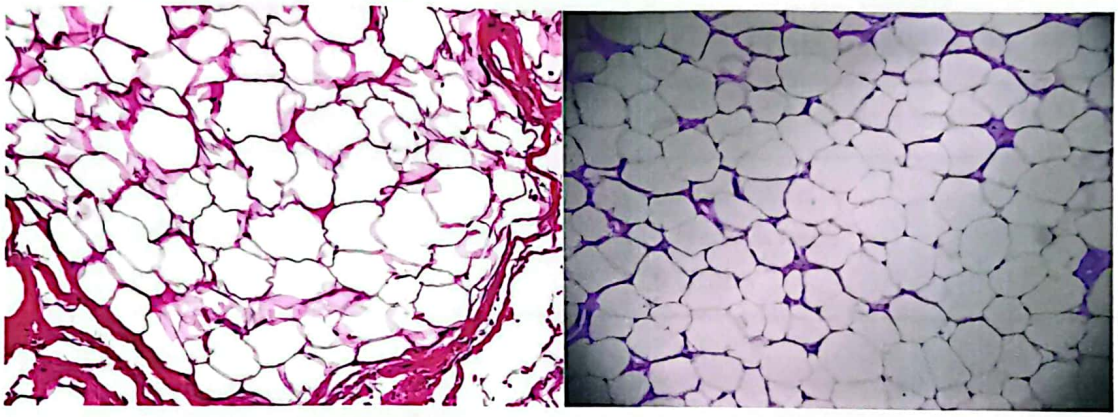
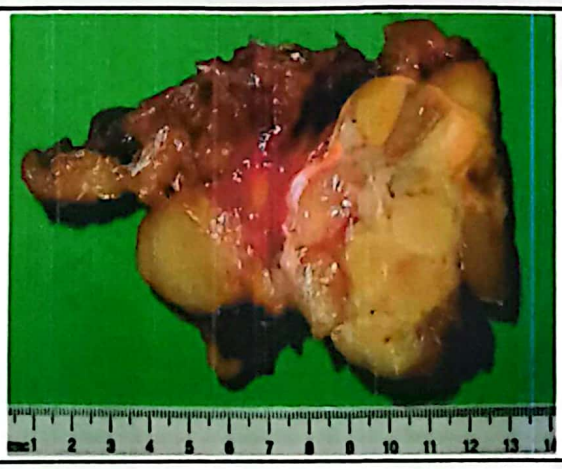
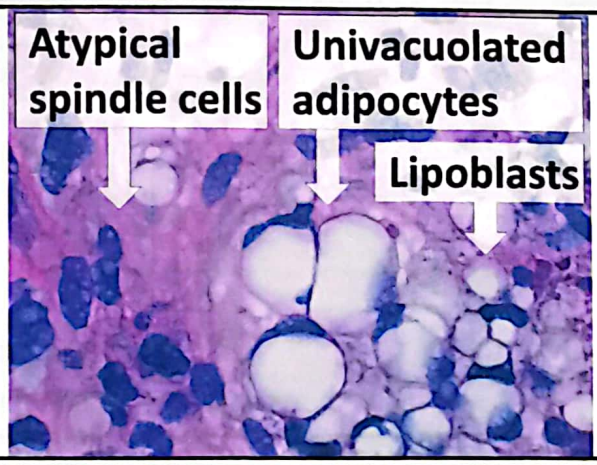
①	BENIGN	▪ Self-limited lesions that require minimal treatment
②	INTERMEDIATE GRADE	▪ Locally aggressive tumors ▪ With minimal metastatic risk
③	HIGHLY AGGRESSIVE MALIGNANCIES	**Called sarcomas** ▪ With significant metastatic risk and mortality.

③ **Pathologic classification → integrates…**

- Morphology (e.g., muscle differentiation).
- Immunohistochemistry.
- Molecular diagnostics.

① TUMORS OF ADIPOSE TISSUE

	A) Lipoma	B) Liposarcoma
DEFINTION	A **benign** tumor of fat	A **malignant** tumor of adipose tissue
INCIDENCE	The most common soft tissue tumor in adults	**One** of the most common sarcomas of **adulthood**
AGE	① Adulthood ② Uncommon in childhood	50-60 years
SITE	**Most common locations include...** ① Back ② Shoulder ③ Neck ④ Abdomen	① Deep soft tissue ② Peritoneum
C/P	☑ **A mass which is** ▪ Slowly growing ▪ Mobile ▪ Soft ▪ Located in the subcutaneous tissue & occasionally found in deeper tissue	Recurring rapidly growing large mass
NE		
A) The mass – Shape	Well-circumscribed	Well circumscribed
A) The mass – Surface	Lobulated	---
A) The mass – Consistency	Soft	---
A) The mass – Capsule	Thinly encapsulated	Not encapsulated
B) Cut surface	▪ **Adipose tissue shows** ↳ soft, pale, yellow, homogeneous, mature appearance.	Mucoid or bright yellow appearance mimicking lipoma
ME	① Thin fibrous capsule ② Thin internal fibrous septa. ③ Lobules composed of mature adipose tissue with cells have small, eccentric, compressed nuclei (**signet ring appearance**).	☑ **The diagnostic cell is the lipoblast** ↳ Appears as a mononuclear or multinucleated cells. ↳ The nucleus is often centrally located but exhibit small sharp indentations by multiple small lipid vacuoles.
IHC	S100 protein positive	S100 protein positive

LIPOMA		
	GROSS	
		
	MICROSCOPY	
LIPO-SARCOMA		
	GROSS	MICROSCOPY

② TUMORS OF FIBROUS TISSUE - FIBROMATOSIS

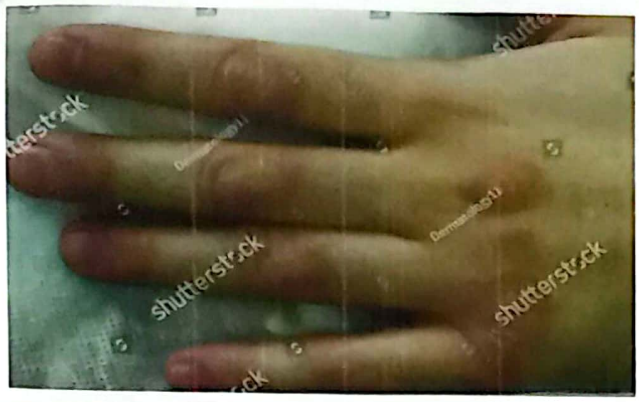
Definition of FIBROMATOSIS

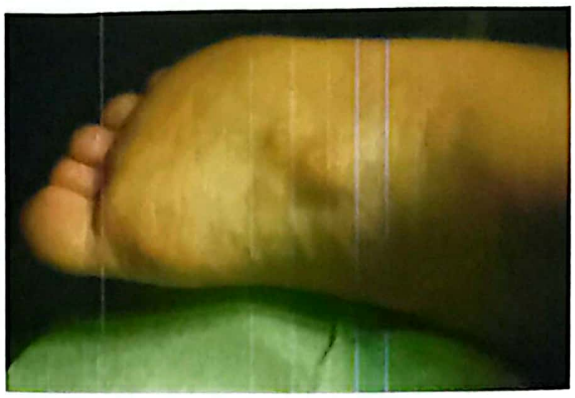
- Tumor of **intermediate grade** (locally aggressive).

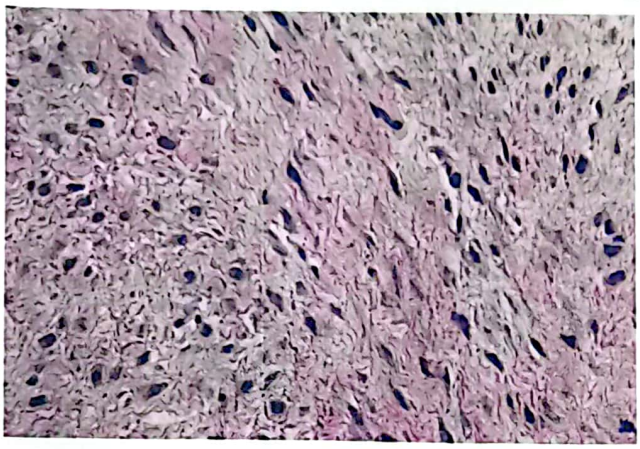
☑ **Types:**

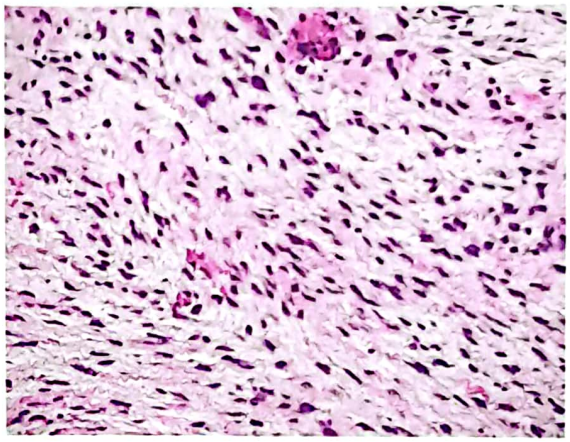
1. Superficial fibromatosis.
2. Deep (Desmoid type) fibromatosis.

	A) Superficial fibromatosis	B) Deep (Desmoid) fibromatosis
AGE	Adults	Teenagers to adults
SEX	**Male** > female	More in **females**
SITE	① Palmer ② Planter ③ Penile	① Abdominal ② Head & neck ③ Limbs
C/P	① Small ② Slow-growing ③ Subcutaneous nodule or thickening	
NE		
Number	Single or multiple	
Shape	Nodules	
Color	Gray-white	
Consistency	Firm	
ME	① Fascicles of bland fibroblasts ② Surrounded by abundant dense collagen ③ The tumor infiltrates the surrounding muscle fibers	
IHC	**β-catenin positive**	









FIBROMATOSIS

③ TUMORS OF SKELETAL TISSUE - RHABDOMYOSARCOMA

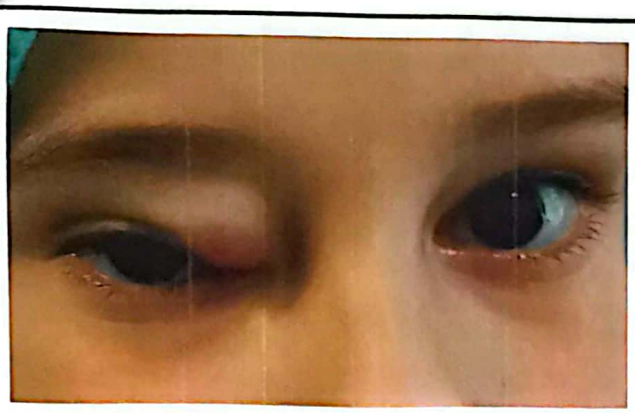
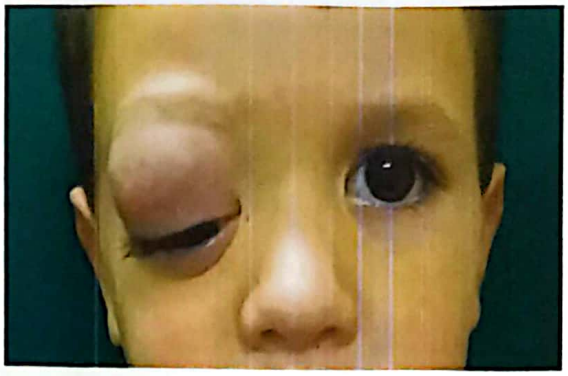
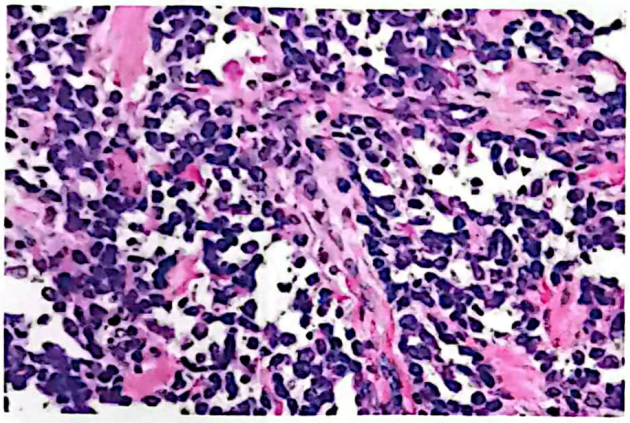
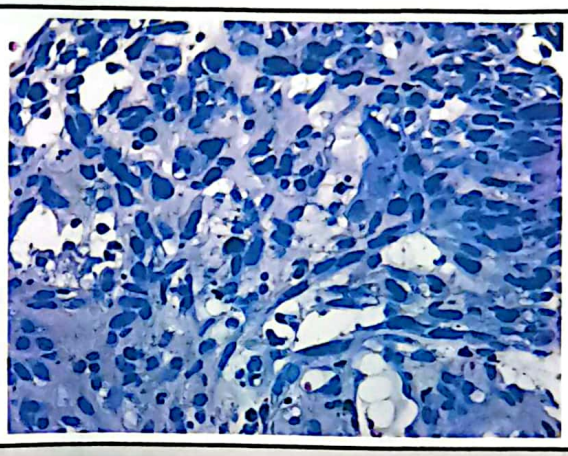
Definition of RHABDOMYOSARCOMA

- **Malignant** mesenchymal tumor with skeletal muscle differentiation.

☑ **Types:**

1. **Alveolar rhabdomyosarcoma**
2. **Embryonal**
3. **Pleomorphic**

AGE	▪ Alveolar and embryonal rhabdomyosarcoma is the most common soft tissue sarcoma of **childhood and adolescence.** ▪ Pleomorphic rhabdomyosarcoma is seen predominantly in **adults.**
SITE	**The pediatric forms often arise in:** ① Sinuses ② Head ③ Neck ④ Genitourinary tract
C/P	----------
NE	
Shape	Infiltrative mass
Color	Gray
Consistency	Soft
ME	
EMBRYONAL RHABDOMYOSARCOMA	▪ Sheets of both primitive **round and spindled** cells
ALVEOLAR RHABDOMYOSARCOMA	▪ Network of **fibrous septa** divide the cells into **aggregates,** creating a resemblance to pulmonary alveoli. ▪ The tumor cells are **uniformly round** with little cytoplasm.
PLEOMORPHIC RHABDOMYOSARCOMA	▪ **Numerous large,** sometimes **multinucleated,** bizarre **eosinophilic** tumor cells.
IHC	**Desmin & myogenin** positive

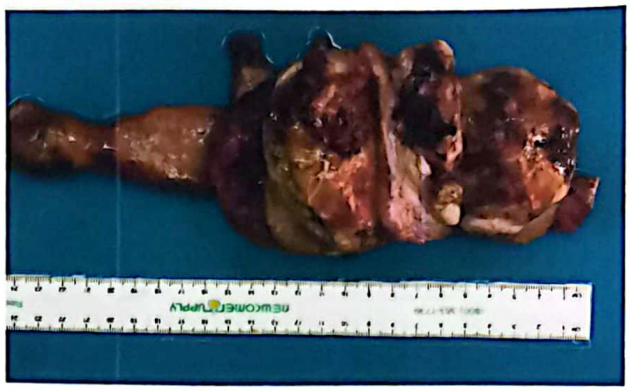
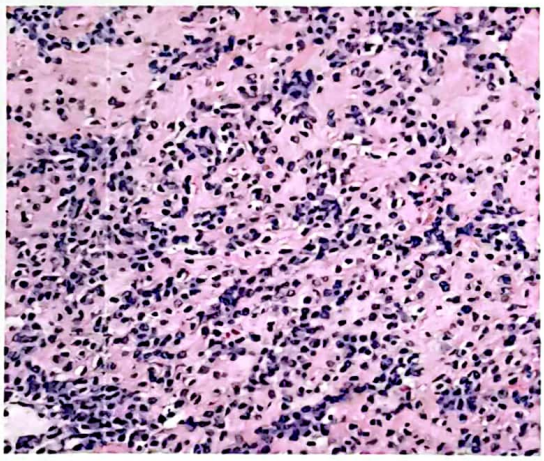
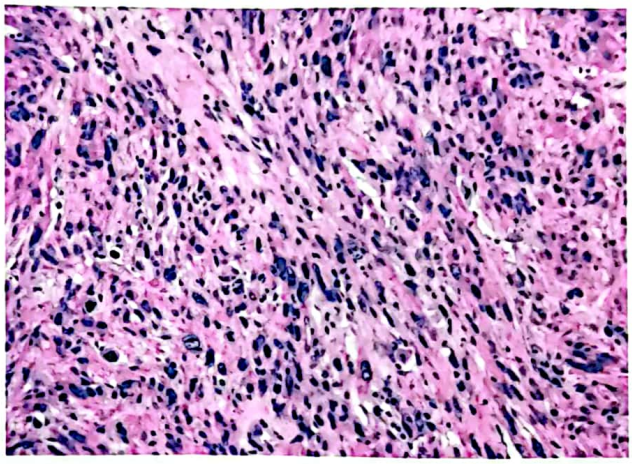





RHABDOMYOSARCOMA

④ TUMORS OF SMOOTH TISSUE

	A) Leiomyoma	B) Leiomyosarcoma
DEFINTION	**Benign** tumor of smooth muscle, is most common in the uterus but can arise in any soft tissue site	A **malignant** tumor of smooth muscles
AGE	**Cutaneous** type in adolescent and young adults	Adults
SEX	—	**Females** > males
SITE	① Skin ② Deep soft tissue ③ GIT ④ Uterus	① Deep soft tissues of the extremities ② Retroperitoneum

		A) Leiomyoma	B) Leiomyosarcoma
C/P		▪ Depends on location ▪ Can range from **painful cutaneous** swellings to **deep masses** in the extremities and abdomen.	Painless firm masses
NE			
A) The mass	Size	<2 cm "Deep tumors may be larger"	—
	Shape	Trabeculated	Relatively well-circumscribed mass
	Surface	Bulging	—
	Consistency	Firm	Fleshy
	Color	Gray-white	Gray-white
B) Cut surface		—	▪ **Whorled.** ▪ **<u>May be:</u>** ① Focal hemorrhage ② Necrosis, or ③ Cystic change
ME			
Cells		▪ Well-differentiated smooth muscle cells arranged in interlacing fascicles.	▪ Spindle cells arranged in interweaving fascicles
Cytoplasm		▪ Eosinophilic ▪ Perinuclear vacuoles	▪ Eosinophilic
Nuclei		▪ Oval, blunt-ended nuclei	▪ Blunt-ended, hyperchromatic nuclei
Atypia/mitotic activity		▪ No atypia or mitotic activity	▪ Cellular pleomorphism may be minimal to marked ▪ Mitotic rate usually 5 mitotic figures/10 hpf.
IHC		SMA & desmin positive	SMA & desmin positive

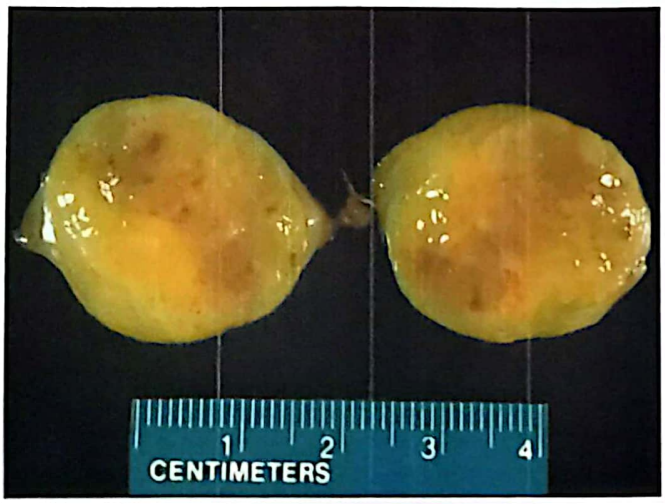
	LEIOMYOMA (FIBROID)	LEIOMYOSARCOMA
GROSS		
MICROSCOPE		

TUMORS OF PERIPHERAL NERVES - SCHWANNOMA

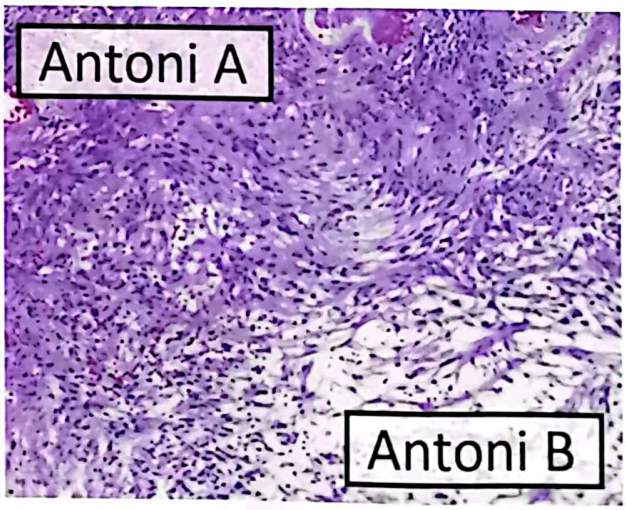
Definition of SCHWANNOMA

- **Benign** encapsulated tumors of peripheral nerves.

AGE	▪ Any age, mainly adults
SITE	▪ It may occur in soft tissues, internal organs, or spinal nerve roots
C/P	▪ Slowly growing painless tumor
NE	
Shape	Circumscribed masses
Site	Abutting an adjacent nerve
Capsule	Encapsulated
ME	▪ **Presence of:** ANTONI A AREAS: Dense hypercellular areas ANTONI B AREAS: Hypocellular - myxoid areas ▪ **Nuclear** palisading around fibrillary processes (Verocay bodies) ▪ **Cells** are **spindled** and contain elongated, wavy nuclei with tapered ends ▪ **Hyalinized vessels** are characteristic
IHC	**S100 protein** positive



GROSS



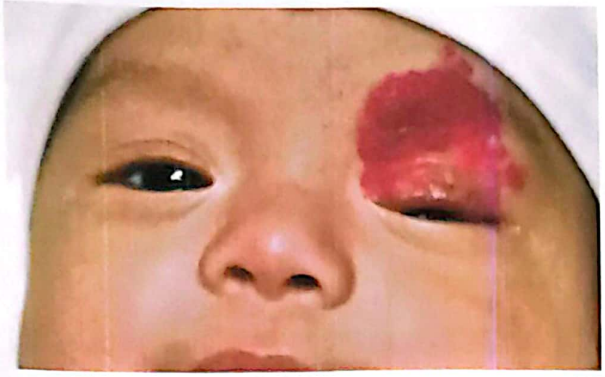
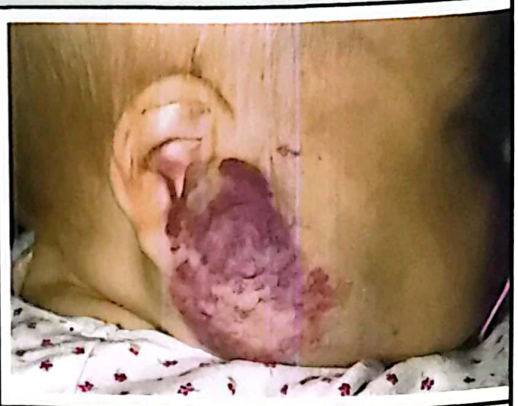
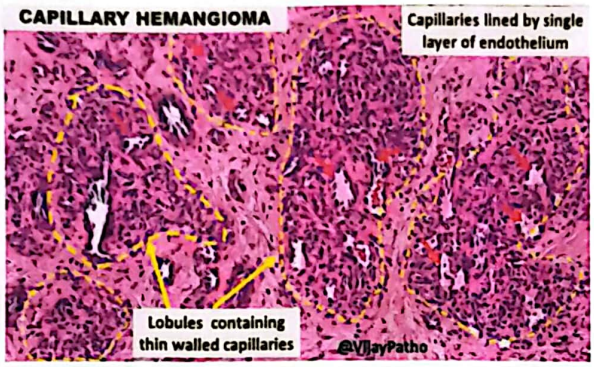
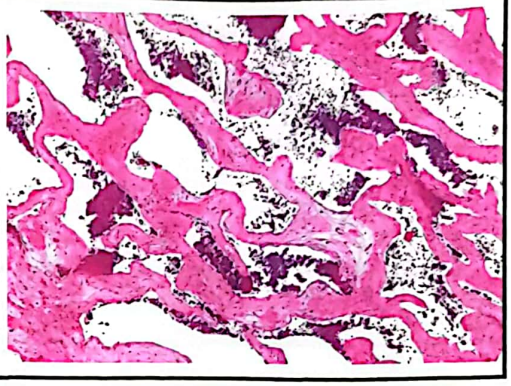
MICROSCOPY

SCHWANNOMA

⑥ TUMORS OF VASCULAR ORIGIN

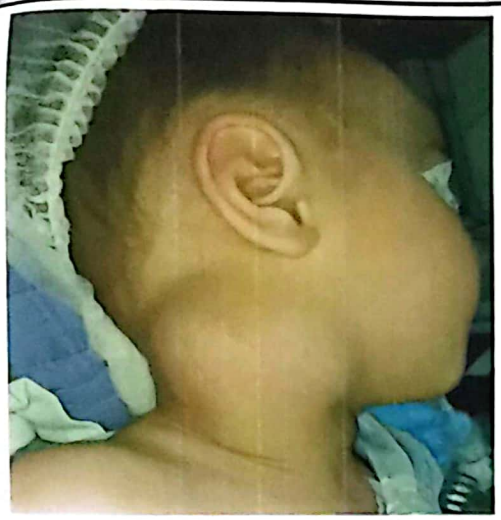
1) HEMANGIOMA

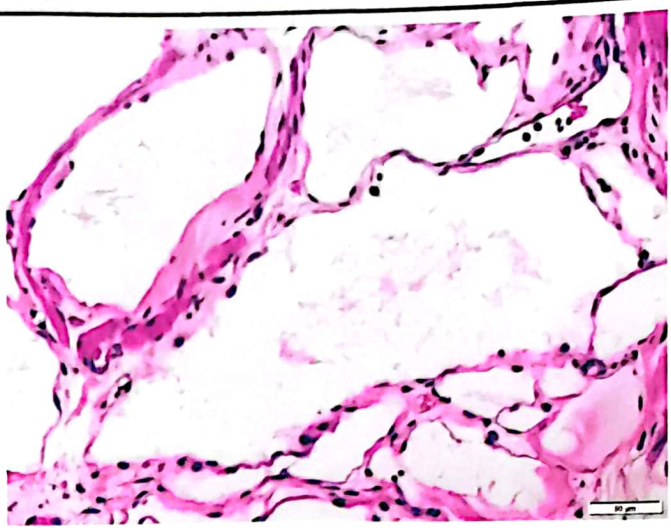
	A) Capillary hemangioma (infantile and juvenile hemangioma)	B) Cavernous hemangioma
DEFINTION	Benign vascular tumor	
AGE	Most common vascular tumor of **infancy**	Commonly seen in **children**
SITE	① Commonly occurs in head & neck ② May involve subcutaneous tissue or occasionally the viscera	Skin of the head and neck (port-wine nevus)
C/P	▪ Typically presents as a **crimson skin lesion** - becomes raised over time (strawberry hemangioma). ▪ Usually grows through **first year** of life and regresses over time.	----------
NE		
A) The mass – Site	Dermal or deeply seated	
A) The mass – Shape	Well circumscribed or infiltrative	
A) The mass – Surface	----------	
A) The mass – Consistency	----------	
A) The mass – Color	-Dark Red	
B) Cut surface	Spongy, **dark-red** cut surface	
ME	▪ **Lobular architecture** with arborizing, small vascular channels lined by plump to flattened endothelial cells, ▪ Separated by scanty **connective tissue stroma.**	▪ Typically found in **subcutaneous** tissue ▪ **Vascular spaces:** - Dilated - Blood-filled - Medium- to large-caliber - Lined by flat endothelial cells
IHC	CD34 - CD31, - Fli-1 highlight endothelial cells	

	CAPILLARY HEMANGIOMA	CAVERNOUS HEMANGIOMA
GROSS		
MICROSCOPY		

2) LYMPHANGIOMA

DEFINITION	▪ Rare **benign** tumors typically occurring as congenital tumors
AGE	▪ Most present before the age of 2 years
SITE	▪ Typically present as a poorly defined soft tissue or cutaneous mass in the head and neck or axillary region
NE	COMMONLY APPEARS
Color	Gray - white tumor
Consistency	Soft - cystic
ME	▪ Characterized by anastomosing, thin-walled, irregular **lymphatic channels** lined by flat endothelial cells. ▪ **Proteinaceous intraluminal fluid** contain lymphocytes & red blood cells. ▪ **Stromal fibrosis** and lymphoid aggregates are often seen.

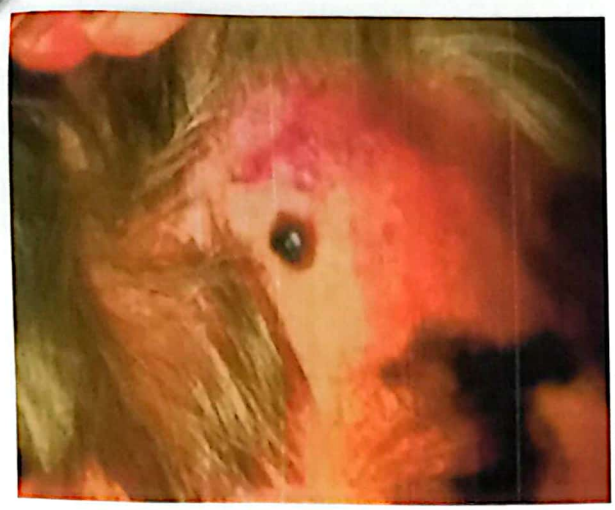


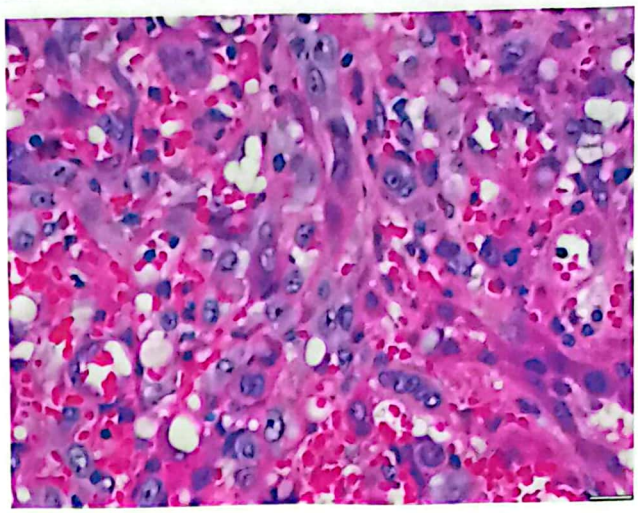


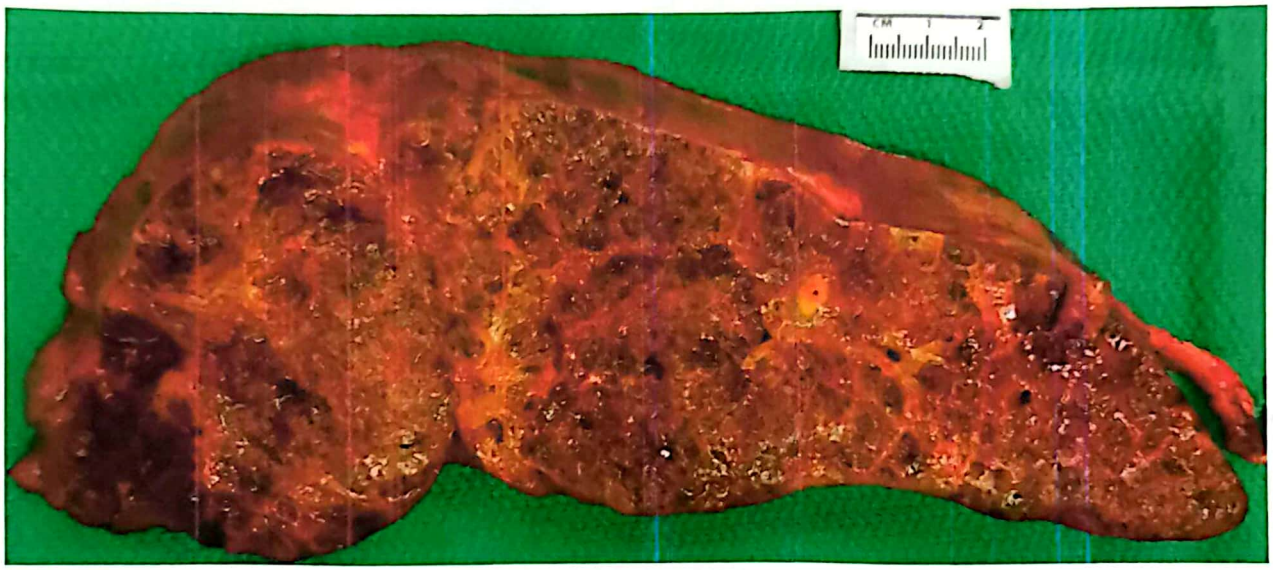
LYMPHANGIOMA

3) ANGIOSARCOMA

DEFINITION	▪ Rare highly aggressive malignancy
INCIDENCE	▪ Comprising less than 1% of sarcomas
AGE	▪ Usually seen in adults
SITE	▪ Predilection for skin and superficial soft tissue, breast, bone, liver, and spleen; rare in deep soft tissue
NE	
Size	Large
Shape	Hemorrhagic - ill-defined masses
Consistency	Spongy quality
Content	Blood-filled spaces
ME	▪ **Infiltrating complex** anastomosing **vascular channels.** ▪ With **intraluminal papillae.** ▪ Endothelial **multilayering.** ▪ Enlarged hyperchromatic **nuclei.**
IHC	CD31 - CD34 - Fli-1 positive



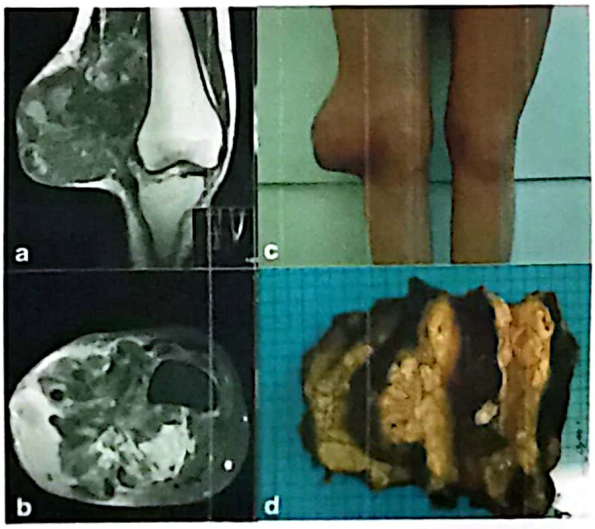


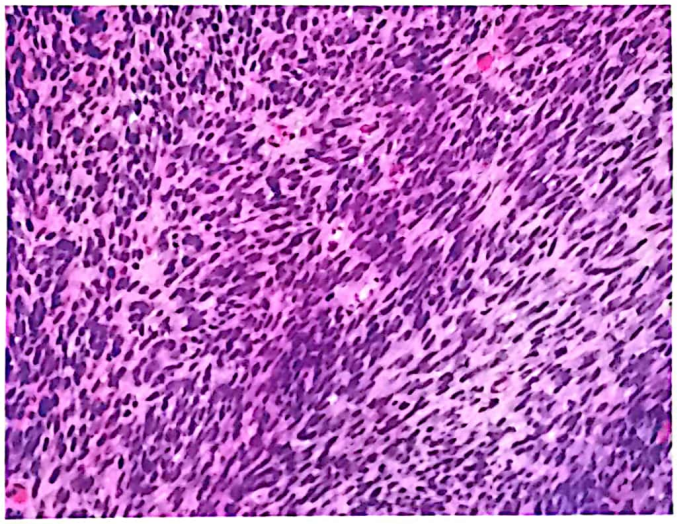


ANGIOSARCOMA

⑦ TUMORS OF UNCERTAIN ORIGIN – SYNOVIAL SARCOMA

NAMING	▪ Misnomer because this malignancy is **only rarely** found within **joints.**	
AGE	20-40 years	
SITE	▪ Mostly in **lower extremities,** ▪ But any site could be affected including viscera.	
C/P	▪ Presents as a **deep-seated,** often **painful** mass; ▪ Has often been present for years.	
NE		
Shape	Well-circumscribed mass	
Cut surface	Gray white or variegated	
Behavior	Rapidly growing tumors - tend to be more infiltrative	
ME	**MONOPHASIC SYNOVIAL SARCOMA**	**BIPHASIC SYNOVIAL SARCOMA**
	CONSISTS OF: ▪ Uniform spindle cells ▪ With scant cytoplasm ▪ Dense chromatin growing in short fascicles.	**GLANDLIKE STRUCTURES COMPOSED OF:** ▪ Cuboidal to columnar epithelioid cells. + **Spindle cell component.**
IHC	▪ CK in epithelial component ▪ CD99 in either or both components ▪ TLE1	



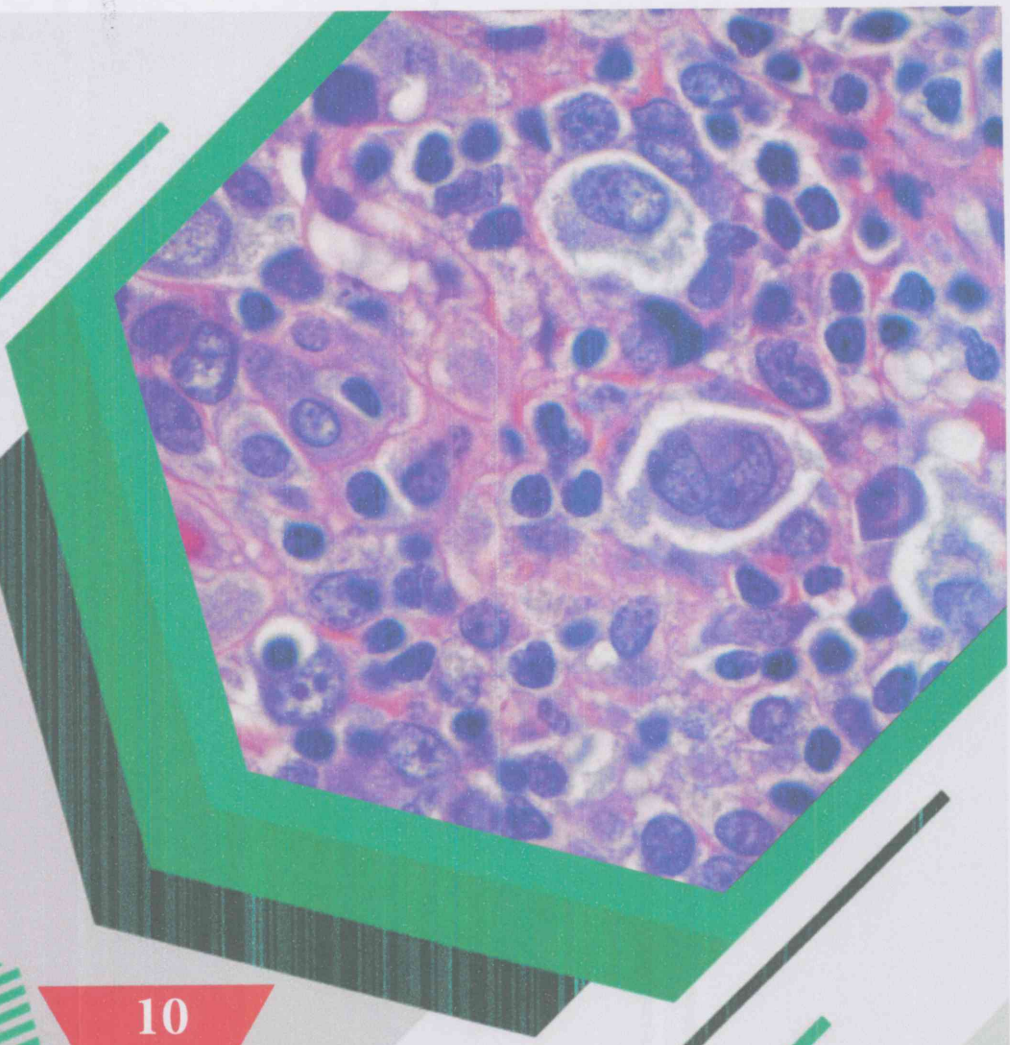


SYNOVIAL SARCOMA

SUMMARY OF IHC IN SOFT TISSUE TUMORS

		POSITIVE IN / CHARACTERISTIC FOR
1	S100 PROTEIN	▪ Tumors of adipose tissue and neural tissue
2	DESMIN	▪ Muscle differentiation
3	MYOGENIN	▪ Tumors of skeletal muscle origin
4	SMA	▪ Tumors of smooth muscle differentiation
5	B CATENIN	▪ Fibromatosis
6	CD31, CD34, FLI1	▪ Vascular tumors
7	CD99 AND TLE1	▪ Synovial sarcoma

Level 1
Semester2
MSK



10
L.E

L6

Pathology

Dr.Ahmed Hhassan

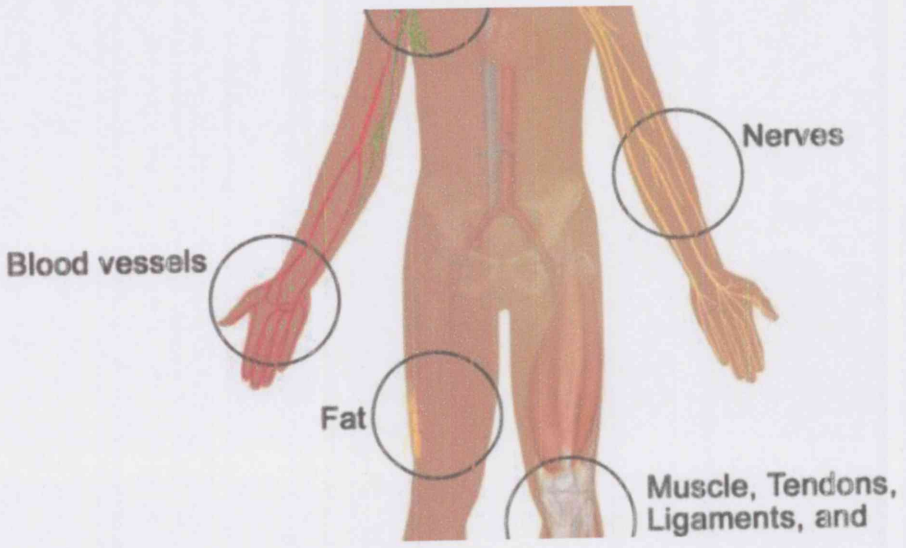
Soft tissue tumors

Classification of soft tissue tumors:

Tumors of:	e.g.	
Adipose tissue	• Lipoma	• Liposarcoma
Fibrous tissue	• Fibromatosis	
Skeletal muscles	• Rhabdomyosarcoma	
Smooth muscles	• Leiomyoma	• Leiomyosarcoma
Peripheral nerves	• Schwannoma	
Vascular origin	• Hemangioma • Angiosarcoma	• Lymphangioma
Uncertain origin	• Synovial sarcoma	

Soft tissue:

Def:	• Refers to **non-epithelial tissue** excluding the skeleton, joints, central nervous system, hematopoietic and lymphoid tissues.
Includes:	• Adipose tissue, fibrous tissue, smooth and skeletal muscles, blood and lymph vessels and peripheral nerves.



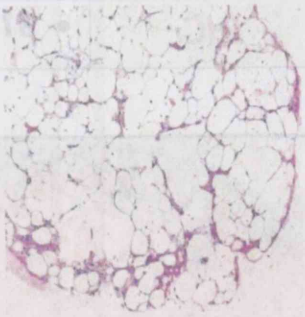
Classification of soft tissue tumors

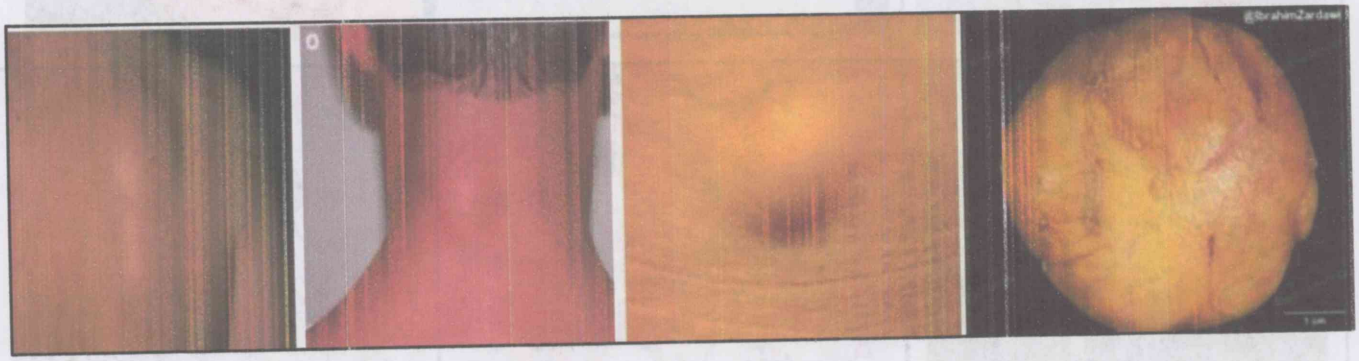
- **Clinically, soft tissue tumors are classified into:**
  1. **Benign**, self-limited lesions that require minimal treatment
  2. Intermediate grade, **locally aggressive** tumors with minimal metastatic risk
  3. Highly aggressive **malignancies (sarcomas)** with significant metastatic risk and mortality.

- **Pathologic classification** integrates morphology (e.g., muscle differentiation), immunohistochemistry, and molecular diagnostics.

Tumors of adipose tissue

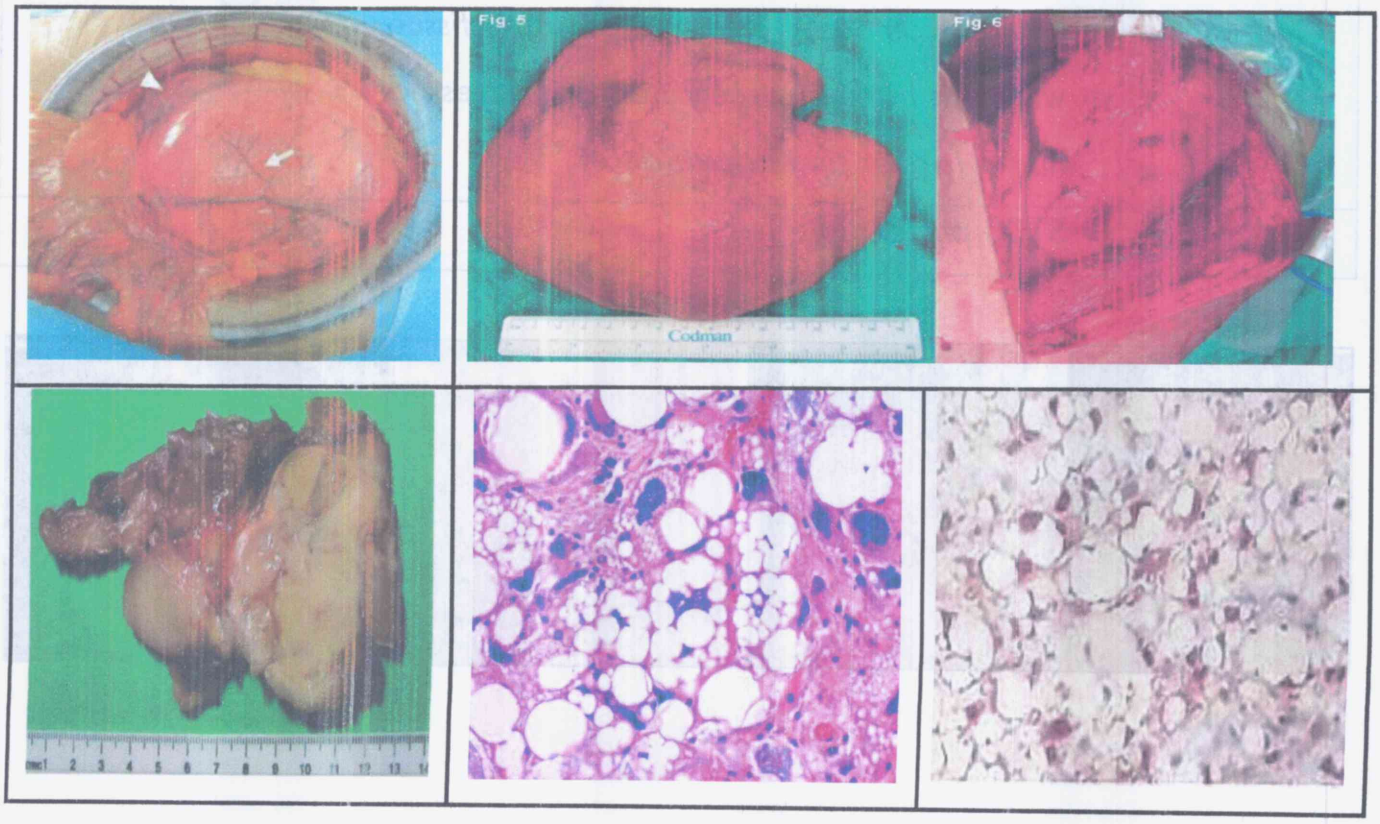
Lipoma

Def:	• Lipoma is a benign tumor of fat.
Incidence:	• **The most common soft tissue tumor in adults.**
Age:	• Adulthood uncommon in childhood
Site:	• Most common locations include back, shoulder, neck, abdomen
C/P:	• Slowly growing, mobile soft mass in the subcutaneous tissue; occasionally found in deeper tissue
N/E:	• Soft, well-circumscribed, lobulated tumors that are thinly encapsulated • **C/S:** soft, pale, yellow, homogeneous, mature-appearing adipose tissue
M/E:	• **Thin fibrous capsule** with thin, internal fibrous septa. • **Lobules** composed of mature adipose tissue with cells have small, eccentric, compressed nuclei (signet ring appearance). 
IHC:	• **S100 protein** positive



Liposarcoma

Def:	• Malignant tumor of **adipose tissue**.
Incidence:	• One of the most common sarcomas of adulthood
Age:	• 50-60 years
Site:	• Deep soft tissue and peritoneum
C/P:	• Recurring rapidly growing large mass.
N/E:	• Well circumscribed but **not encapsulated**, may have **mucoid cut surface** or **bright yellow appearance mimicking lipoma**.
M/E:	• The diagnostic cell is the **lipoblast**; appears as a mononuclear or multinucleated cells. • **The nucleus** is often centrally located but exhibit small sharp indentations by multiple small lipid vacuoles.
IHC:	• **S100 protein** positive.



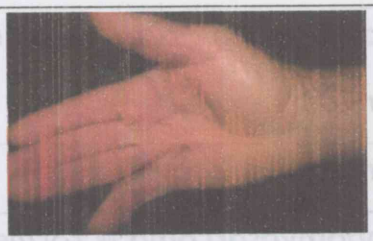
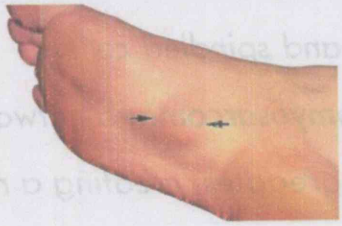
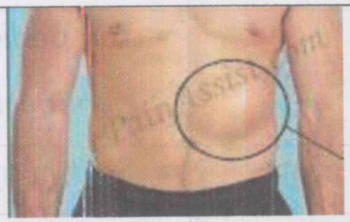
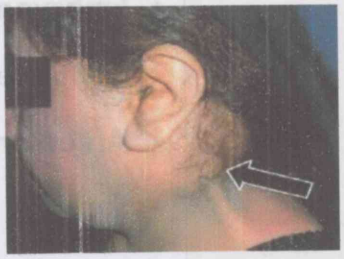
Tumors of fibrous tissue

Fibromatosis

Def:

- Tumor of **intermediate grade (locally aggressive).**

Types:

	Superficial fibromatosis	Deep (Desmoid type) fibromatosis
Age:	Adults. Male > female	Teenagers to adults More in females.
Site:	Palmer, Planter, Penile	Abdominal OR In head & neck and limbs.
	 	 

C/P:

- Small, slow-growing, subcutaneous nodule or thickening

N/E:

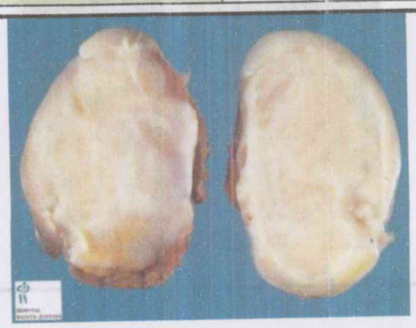
- Single or multiple, gray-white, firm nodules

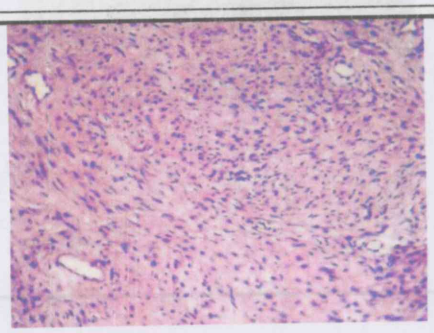
M/E:

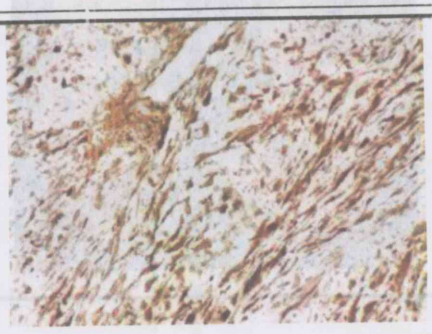
- Fascicles of **bland fibroblasts**, surrounded by **abundant dense collagen.** The tumor infiltrates the surrounding muscle fibers.

IHC:

- **β-catenin positive**



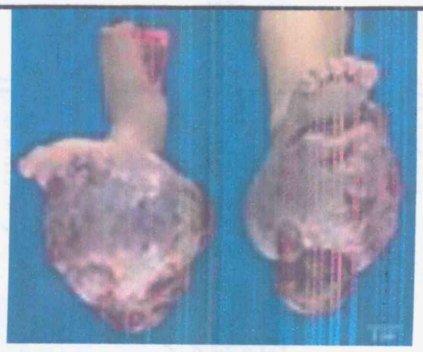


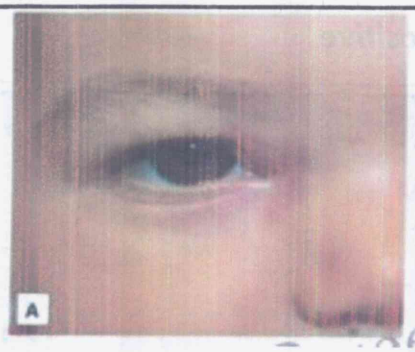


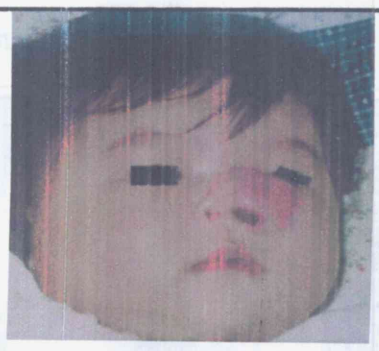
Tumors of skeletal muscles

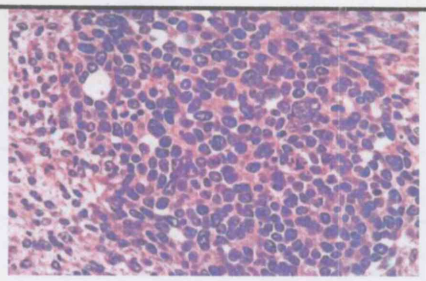
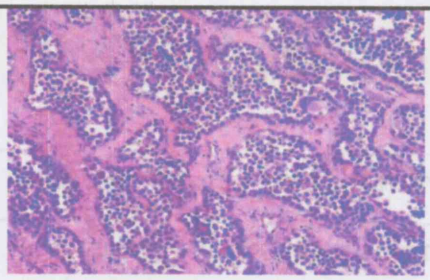
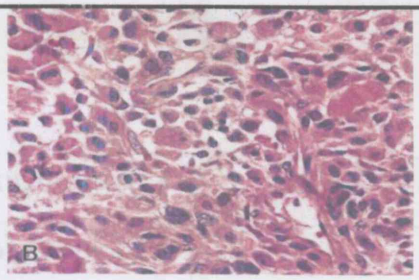
Rhabdomyosarcoma

Def:	• Malignant mesenchymal tumor with skeletal muscle differentiation
Types:	• Alveolar rhabdomyosarcoma • Embryonal • Pleomorphic
Age:	• **Alveolar and embryonal rhabdomyosarcoma** 's the most common soft tissue sarcoma of childhood and adolescence. • **Pleomorphic rhabdomyosarcoma** is seen predominantly in adults.
Site:	• The pediatric forms often arise in the sinuses, head and neck, and genitourinary tract
N/E:	• Soft gray infiltrative mass
M/E:	• **Embryonal rhabdomyosarcoma** is formed of sheets of both primitive round and spindled cells. • **Alveolar rhabdomyosarcoma**, a network of fibrous septa divide the cells into aggregates, creating a resemblance to pulmonary alveoli. The tumor cells are uniformly round with little cytoplasm- • **Pleomorphic rhabdomyosarcoma** is characterized by numerous large, sometimes multinucleated, bizarre eosinophilic tumor cells.
IHC:	• **Desmin & myogenin positive**





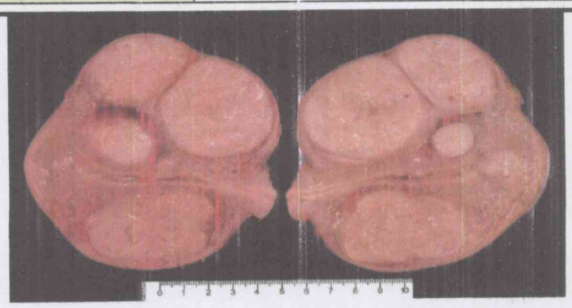


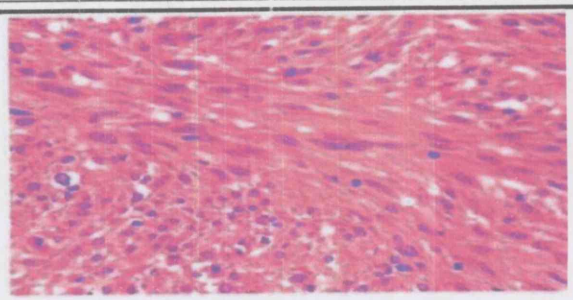
		
Embryonal	Alveolar	Pleomorphic

Tumors of smooth muscles

Leiomyoma

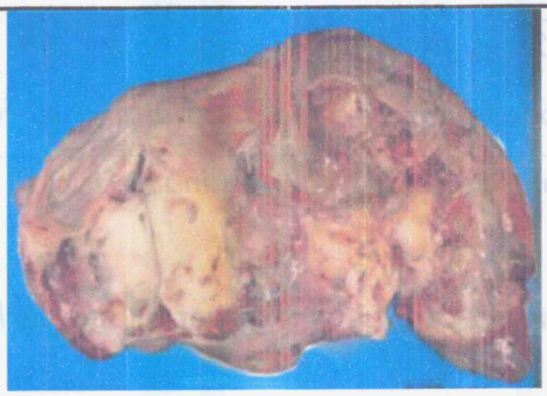
Def:	• A benign tumor of smooth muscle • **Most common in the uterus** but can arise in any soft tissue site.
Age:	• **Cutaneous type** in adolescent and young adults
Site:	• Skin, deep soft tissue, GIT and uterus.
C/P:	• Depends on location & can range from painful cutaneous swellings to deep masses in extremities & abdomen
N/E:	• Typically measures less than 2 cm; deep tumors may be larger • Sectioning shows a firm, trabeculated, gray-white, bulging surface
M/E:	• Well-differentiated smooth muscle cells arranged in interlacing fascicles. • The cells have **Eosinophilic cytoplasm** and oval, blunt-ended nuclei with **perinuclear vacuoles**. • **No atypia or mitotic activity**
IHC:	• **SMA & desmin positive**

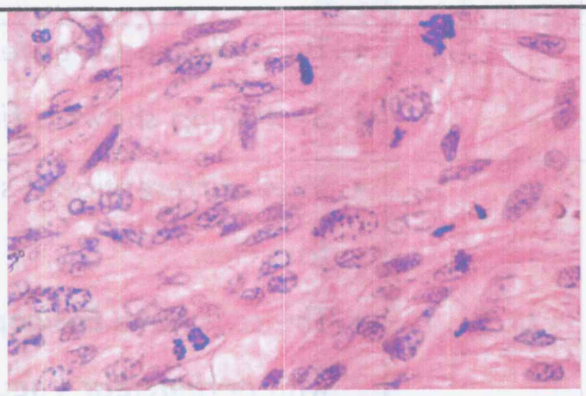




Leiomyosarcoma

Def:	• A malignant tumor of smooth muscles
Age:	• Adults, females more than males
Site:	• The deep soft tissues of the extremities and retroperitoneum
C/P:	• Painless firm masses
N/E:	• Relatively well-circumscribed, fleshy mass with **a gray-white, whorled**, cut surface • **Focal hemorrhage, necrosis, or cystic change** may be seen
M/E:	• They consist of eosinophilic spindle cells with **blunt-ended, hyperchromatic nuclei** arranged in interweaving fascicles. • **Cellular pleomorphism** may be minimal to marked • Mitotic rate usually **5 mitotic figures/10 hpf,**
IHC:	• **SMA & desmin positive**

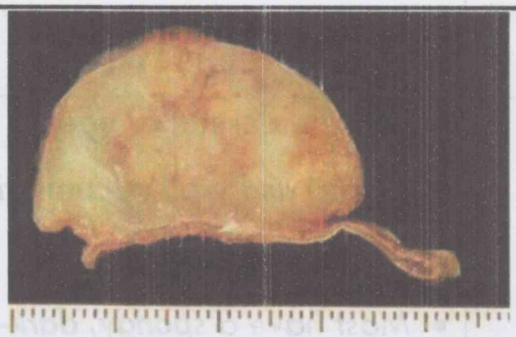


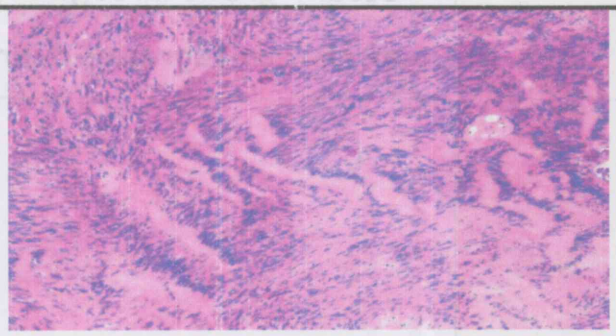


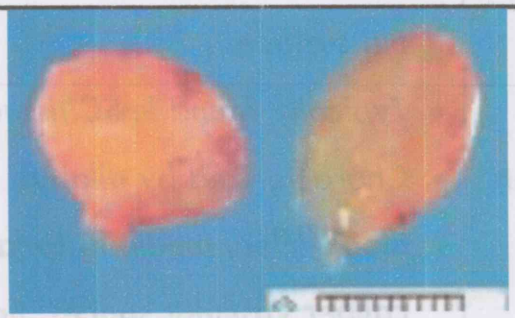
Tumors of peripheral nerves

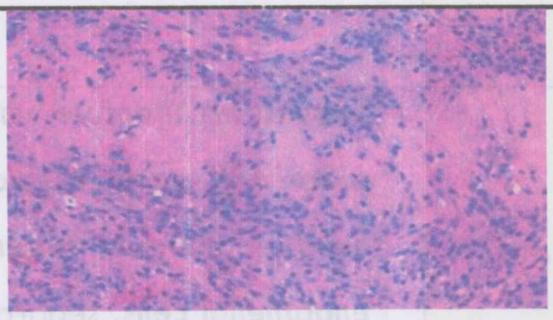
Schwannoma

Def:	• **Benign encapsulated** tumors of peripheral nerves.
Age:	• Any age, mainly adults
Site:	• It may occur in soft tissues, internal organs, or spinal nerve roots.
C/P:	• Slowly growing **painless tumor**
N/E:	• Circumscribed **encapsulated masses** abutting an adjacent nerve
M/E:	• Presence of **dense hypercellular areas (Antoni A areas)** and **hypocellular, myxoid areas (Antoni B areas)** • **Nuclear palisading** around fibrillary processes (**Verocay bodies**) • **Cells:** spindled & contain elongated, wavy nuclei with tapered ends • **Hyalinized vessels are characteristic**
IHC:	• **S100 protein** positive







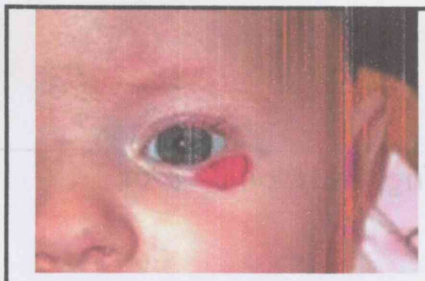
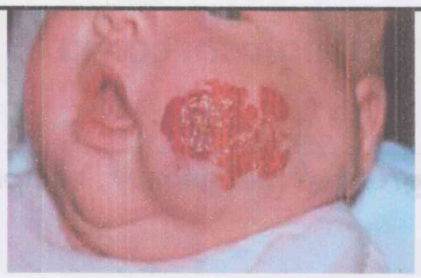
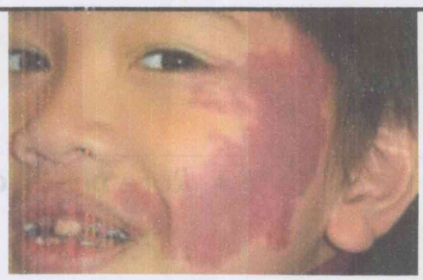
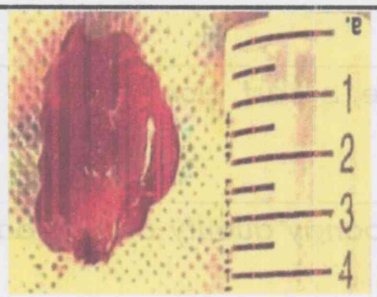


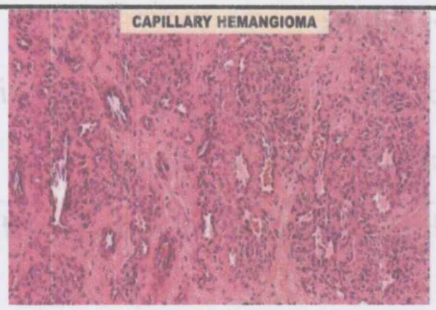
Tumors of vascular origin

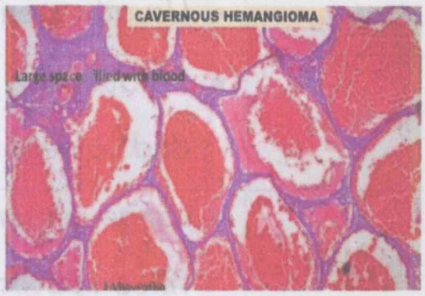
Hemangioma

- **Def:** Benign vascular tumor
- **Types:**

	Capillary hemangioma (infantile & juvenile hemangioma)	Cavernous hemangioma
Age:	• **Most common vascular tumor of infancy**	• Commonly seen in **children**
Site:	• Commonly occurs in the head and neck; may involve SC tissue or occasionally the viscera	• Skin of the head and neck (**port-wine nevus**)
C/P:	• Typically presents as a **crimson skin lesion** that becomes raised over time (strawberry hemangioma) • Usually grows through first year of life and **regresses over time**	
N/E:		• May be **dermal or deeply seated and well circumscribed or infiltrative** • Most have a **spongy, dark-red cut surface**
M/E:	• **Lobular architecture** with **arborizing, small vascular channels** lined by **plump to flattened endothelial cells**, separated by **scant connective tissue stroma**	• Typically found **in SC tissue** • Characterized **by dilated, blood-filled, medium- to large-caliber vascular spaces**, lined by **flat endothelial cells**
IHC:	• **CD34, CD31, and Fli-1 highlight endothelial cells**	

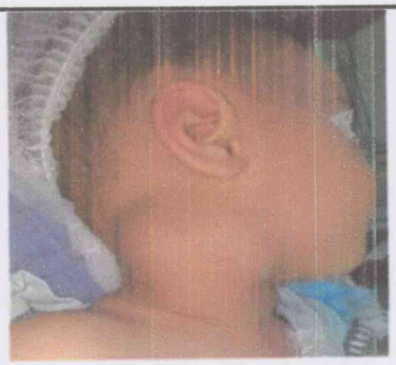
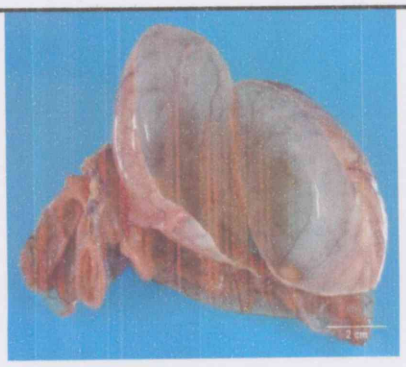
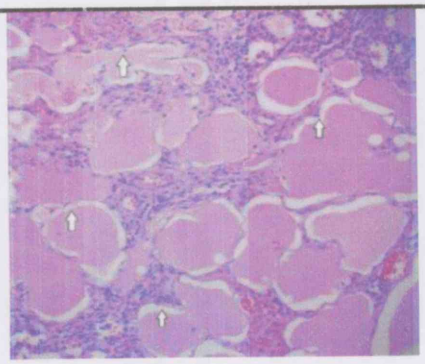









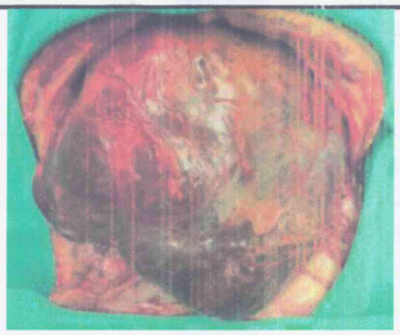
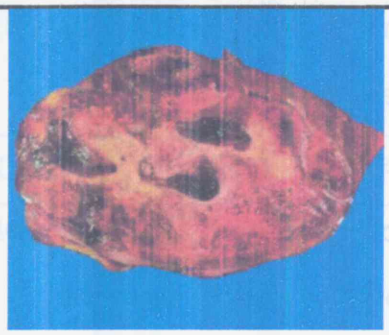
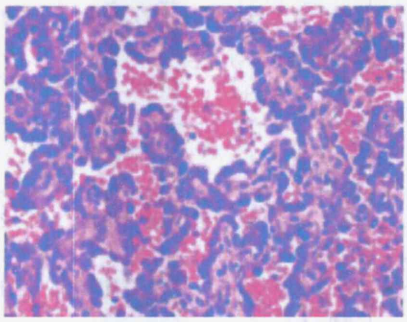
Lymphangioma

Def:	• Rare benign tumors typically **occurring as congenital tumors**
Age:	• Most present **before the age of 2 years**
Site:	• Typically present as a **poorly defined soft tissue or cutaneous mass** in the head and neck or axillary region.
N/E:	• Commonly appears as a **soft, cystic, gray-white tumor.**
M/E:	• Characterized by **anastomosing, thin-walled, irregular lymphatic channels** lined by **flat endothelial cells** • **Proteinaceous intraluminal fluid** containing lymphocytes & RBCs. • Stromal fibrosis and lymphoid aggregates are often seen

Angiosarcoma

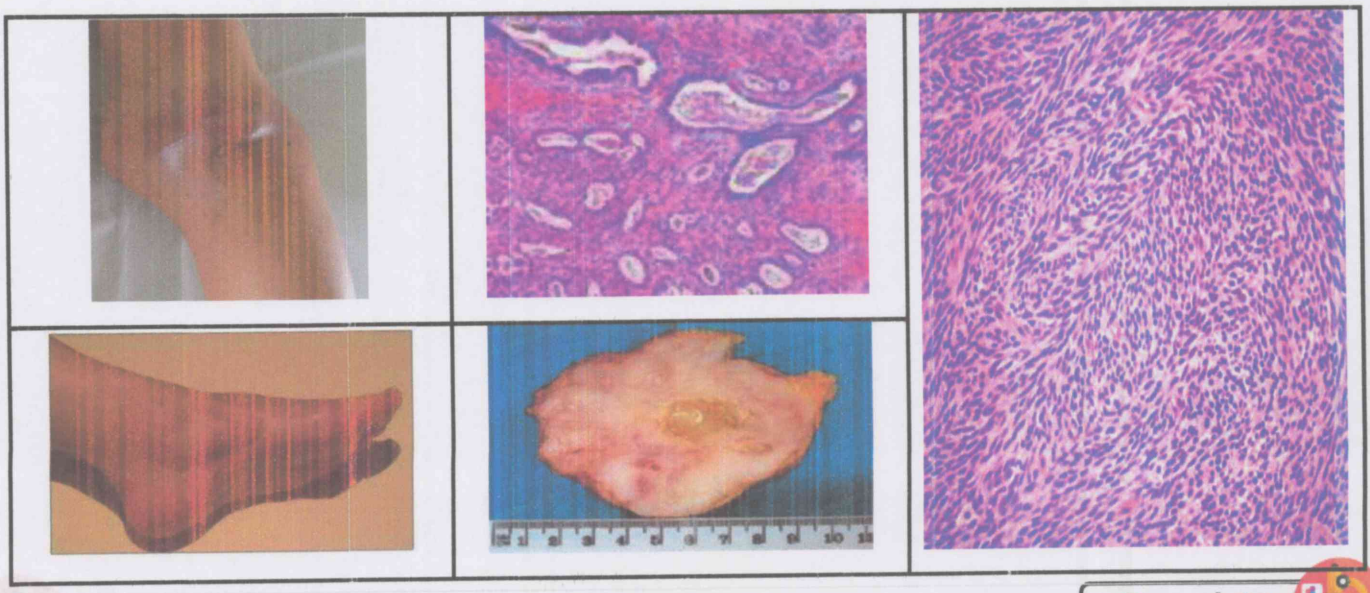
Def:	• Rare **highly aggressive malignancy**, comprising less than 1% of sarcomas.
Age:	• Usually seen in **adults**
Site:	• Predilection for skin and superficial soft tissue, breast, bone, liver, and spleen; rare in deep soft tissue
N/E:	• Large hemorrhagic, ill-defined masses with spongy quality and blood-filled spaces
M/E:	• Infiltrating complex anastomosing vascular channels with intraluminal papillae, endothelial multilayering, and **enlarged hyperchromatic nuclei.**
IHC:	• **CD31, CD34, and Fli-1 positive**

Tumors of uncertain origin

Synovial sarcoma

Def:	• **Misnomer** because this malignancy is only **rarely found within joints**
Age:	• 20-40 years
Sites:	• Mostly in **lower extremities**, but any site could be affected including viscera.
C/P:	• Presents as a **deep-seated, often painful mass**; has often been present for years
N/E:	• A well-circumscribed mass with a **gray white or variegated cut surface**; rapidly growing tumors **tend to be more infiltrative**.
M/E:	• **Monophasic or biphasic.** - **Monophasic:** consists of **uniform spindle cells** with scant cytoplasm and dense chromatin growing in short fascicles. - **Biphasic:** contains **gland-like structures** composed of **cuboidal to columnar epithelioid cells** in addition to **spindle cell component**
IHC:	• **CK** in epithelial component • **CD99** in either or both components • **TLE1**



Summary of IHC in soft tissue tumors

- **S100 protein** is positive in tumors of adipose tissue and neural tissue.
- **Desmin positivity** indicate muscle differentiation
- **Myogenin** is positive in tumors of skeletal muscle origin
- **SMA** is positive in tumors of smooth muscle differentiation.
- **β catenin positivity** is chareteristic for fibromatosis
- **CD31, CD34, FLi1** are characteristic for vascular tumors
- **CD99 and TLE1 positivity** are characteristic for synovial sarcoma.

Level 1
semester 2

MSS
Module

Pathology

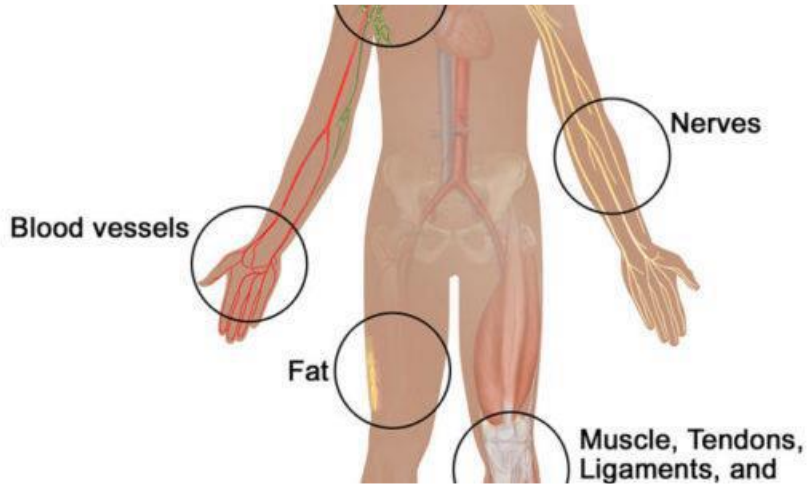
LECTURE 6

DR/ M. Sh.

SOFT TISSUE TUMORS

DEFINITION OF SOFT TISSUE

- Non-epithelial tissue excluding the skeleton, joints, central nervous system, hematopoietic and lymphoid tissues.
- Soft tissue includes adipose tissue, fibrous tissue, smooth and skeletal muscles, blood and lymph vessels and peripheral nerves.



CLASSIFICATION

A. ANATOMICAL CLASSIFICATION:

TUMORS OF	CALLED
ADIPOSE TISSUE	✦ Lipoma ✦ Liposarcoma
FIBROUS TISSUE	✦ Fibromatosis
SKELETAL MUSCLES	✦ Rhabdomyosarcoma
SMOOTH MUSCLES	✦ leiomyoma ✦ leiomyosarcoma
PERIPHERAL NERVES	✦ Schwannoma
VASCULAR ORIGIN	✦ Hemangioma ✦ Lymphangioma ✦ Angiosarcoma
UNCERTAIN ORIGIN	✦ Synovial sarcoma

B. PATHOLOGIC CLASSIFICATION:

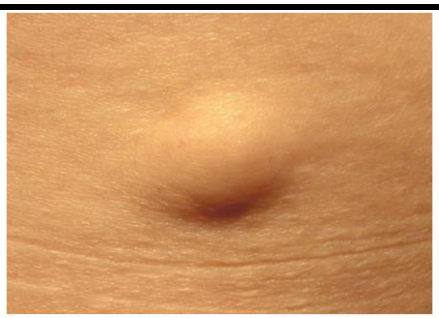
- Integrates morphology (e.g., muscle differentiation), immunohistochemistry, and molecular diagnostics.

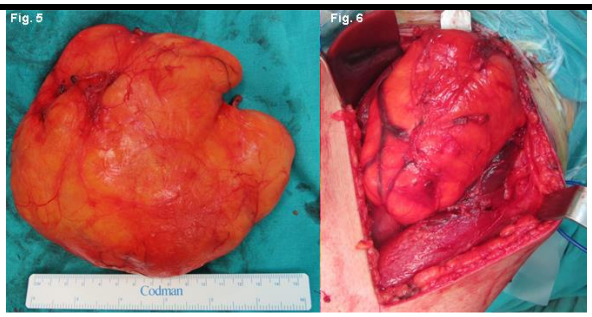
C. CLINICAL CLASSIFICATION:

BENIGN	✦ Self limited lesions that require minimal treatment
INTERMEDIATE GRADE	✦ Locally aggressive tumors with minimal metastatic risk
HIGHLY AGGRESSIVE MALIGNANCIES (SARCOMAS)	✦ With significant metastatic risk and mortality.

TUMORS OF ADIPOSE TISSUE

	LIPOMA	LIPOSARCOMA
DEF	✦ Benign tumor of fat.	✦ Malignant tumor of adipose tissue.
INCIDENCE	✦ Most common soft tissue tumor in adults.	✦ one of the most common sarcomas of adulthood
AGE	✦ Adulthood ✦ Uncommon in childhood	✦ 50-60 years
SITE	✦ back, shoulder, neck, and abdomen	✦ deep soft tissue and peritoneum
CLINICAL PICTURE	✦ Slowly growing, mobile soft mass in the subcutaneous tissue; occasionally found in deeper tissue	✦ Recurring rapidly growing large mass.
NE	✦ Soft, well-circumscribed, lobulated tumors that are thinly encapsulated ✦ Cut surface shows soft, pale, yellow, homogeneous, mature-appearing adipose tissue	✦ Well circumscribed but not encapsulated, may have mucoid cut surface or bright yellow appearance mimicking lipoma.
ME	✦ Thin fibrous capsule with thin, internal fibrous septa. ✦ Lobules composed of mature adipose tissue with cells have small, eccentric, compressed nuclei (signet ring appearance).	✦ The diagnostic cell is the lipoblast; appears as a mononuclear or multinucleated cells. The nucleus is often centrally located but exhibit small sharp indentations by multiple small lipid vacuoles.
IHC	✦ S100 protein positive	✦ S100 protein positive.



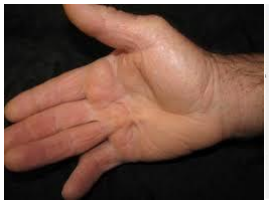
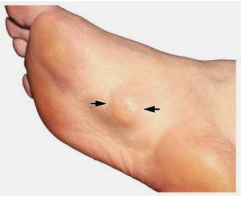
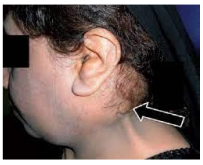


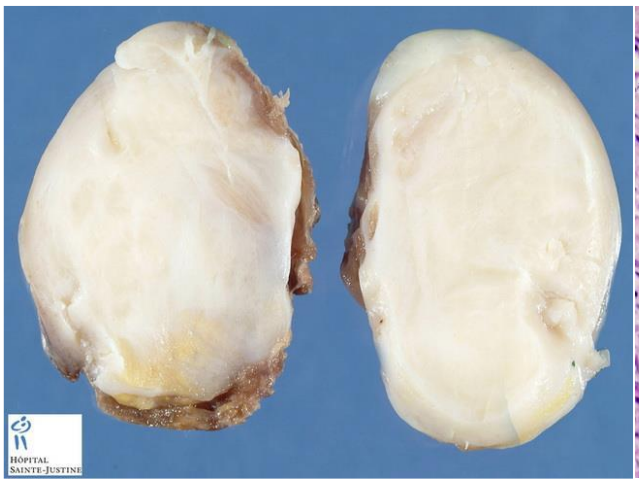
TUMORS OF FIBROUS TISSUE (FIBROMATOSIS)

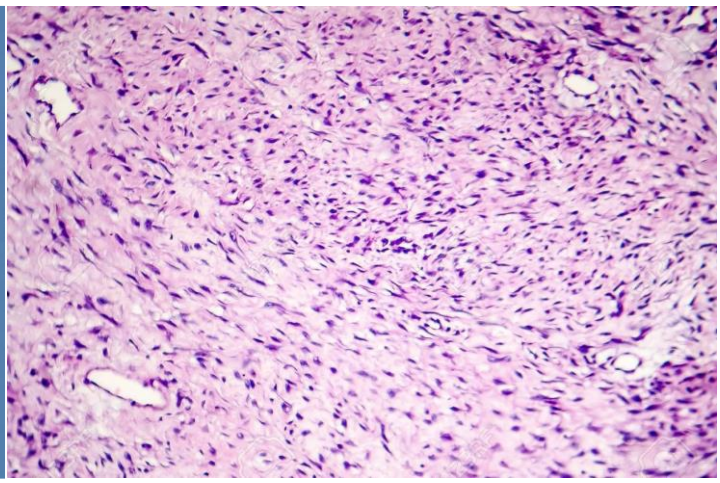
DEFINITION

- Tumor of intermediate grade (locally aggressive)

CLASSIFICATION

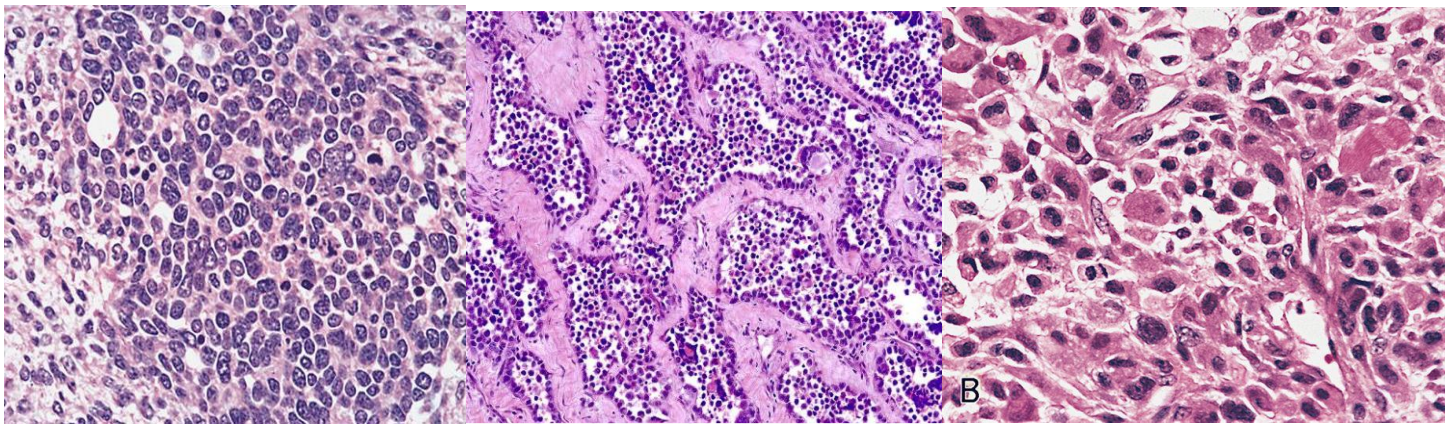
	SUPERFICIAL FIBROMATOSIS	DEEP (DESMOID TYPE) FIBROMATOSIS
AGE	✦ Adults	✦ Teenagers to adults
SEX	✦ Male> Female	✦ Female > Male
SITE	✦ palmer, planter, penile  	✦ Abdominal or in head & neck and limbs.  
CLINICAL PICTURE	✦ Small, slow-growing, subcutaneous nodule or thickening	
NE	✦ Single or multiple, gray-white, firm nodules	
ME	✦ Fascicles of bland fibroblasts, surrounded by abundant dense collagen. ✦ The tumor infiltrates the surrounding muscle fibers.	
IHC	✦ **β-catenin positive**	





TUMORS OF SKELETAL MUSCLES (RHABDOMYOSARCOMA)

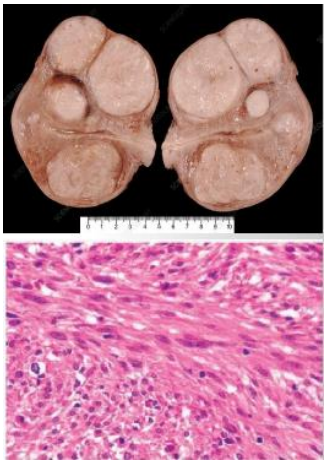
DEFINITION	✦ Malignant mesenchymal tumor with skeletal muscle differentiation
TYPES	1. Alveolar rhabdomyosarcoma 2. Embryonal 3. Pleomorphic
AGE	✦ **Alveolar and embryonal rhabdomyosarcoma** is the most common soft tissue sarcoma of childhood and adolescence. ✦ **Pleomorphic rhabdomyosarcoma** is seen predominantly in adults.
SITE	✦ The pediatric forms often arise in the sinuses, head and neck, and genitourinary tract
NE	✦ Soft gray infiltrative mass
ME	✦ **Embryonal rhabdomyosarcoma** is formed of sheets of both primitive round and spindled cells . ✦ **Alveolar rhabdomyosarcoma**, a network of fibrous septa divide the cells into aggregates, creating a resemblance to pulmonary alveoli. The tumor cells are uniformly round with little cytoplasm ✦ **Pleomorphic rhabdomyosarcoma** is characterized by numerous large, sometimes multinucleated, bizarre eosinophilic tumor cells.
IHC	✦ Desmin & myogenin positive

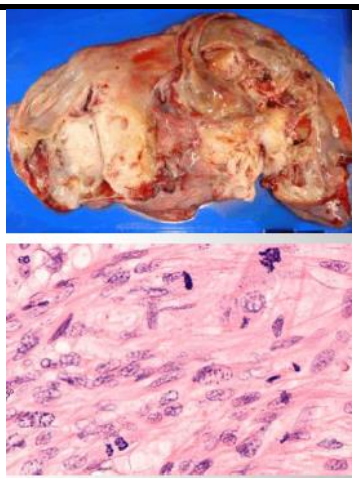


Embryonal Alveolar Pleomorphic

TUMORS OF SMOOTH MUSCLES

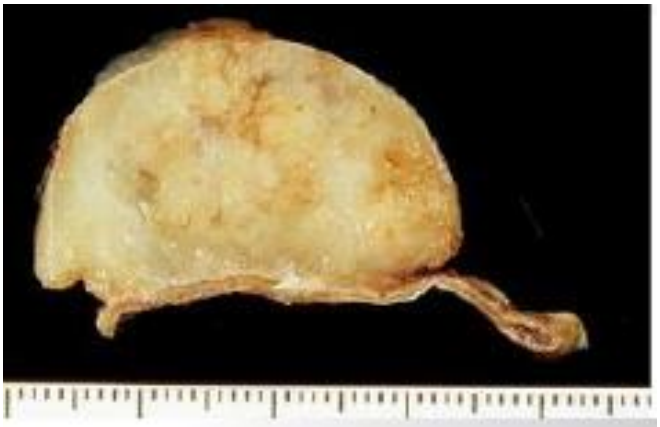
	LEIOMYOMA	LEIOMYOSARCOMA
DEF	✦ Benign tumor of smooth muscle, ✦ Most common in uterus but can arise in any soft tissue site.	✦ Malignant tumor of smooth muscles
AGE	✦ cutaneous type in adolescent and young adults	✦ Adults, females more than males
SITE	✦ Skin, deep soft tissue, GIT & uterus.	✦ Deep soft tissues of extremities and retroperitoneum
CLINICAL PICTURE	✦ depends on location and can range from painful cutaneous swellings to deep masses in the extremities and abdomen	✦ painless firm masses
NE	✦ Typically measures less than 2 cm ✦ Deep tumors may be larger ✦ Sectioning shows a firm, trabeculated, gray-white, bulging surface	✦ Relatively well-circumscribed, fleshy mass with a gray-white, whorled, cut surface ✦ Focal hemorrhage, necrosis, or cystic change may be seen
ME	✦ Well-differentiated smooth muscle cells arranged in interlacing fascicles. ✦ The cells have Eosinophilic cytoplasm and oval, blunt-ended nuclei with perinuclear vacuoles .No atypia or mitotic activity	✦ They consist of eosinophilic spindle cells with blunt-ended, hyperchromatic nuclei arranged in interweaving fascicles. ✦ Cellular pleomorphism may be minimal to marked ✦ Mitotic rate usually 5 mitotic figures/10 hpf,
IHC	✦ **SMA & desmin positive**	✦ **SMA & desmin positive**

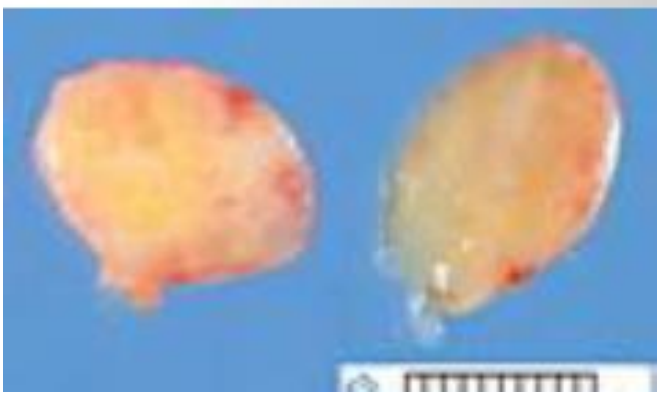


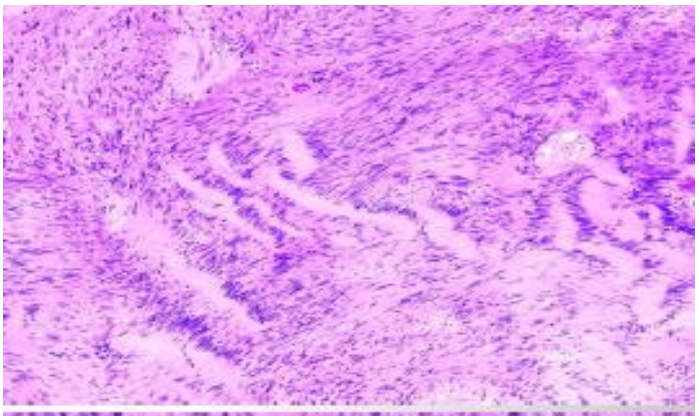


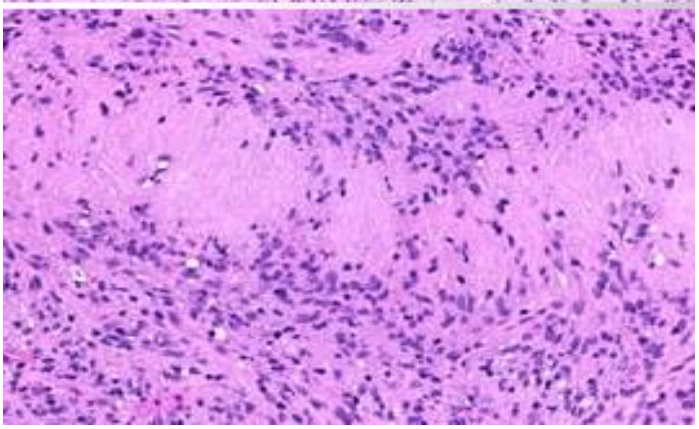
TUMORS OF PERIPHERAL NERVES (SCHWANNOMA)

DEFINITION	✦ Benign encapsulated tumors of peripheral nerves.
AGE	✦ Any age, mainly adults
SITE	✦ it may occur in soft tissues, internal organs, or spinal nerve roots.
C/P	✦ slowly growing painless tumor
NE	✦ circumscribed encapsulated masses abutting an adjacent nerve
ME	✦ Presence of dense hypercellular areas (Antoni A areas) and hypocellular, myxoid areas (Antoni B areas) ✦ Nuclear palisading around fibrillary processes (Verocay bodies) ✦ Cells are spindled and contain elongated, wavy nuclei with tapered ends ✦ Hyalinized vessels are characteristic
IHC	✦ S100 protein positive





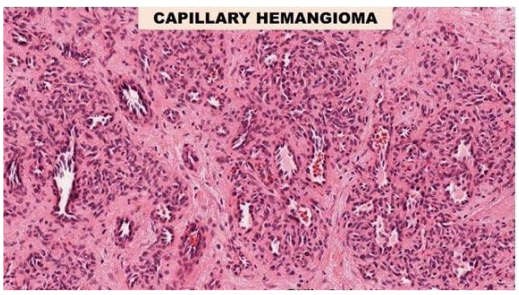
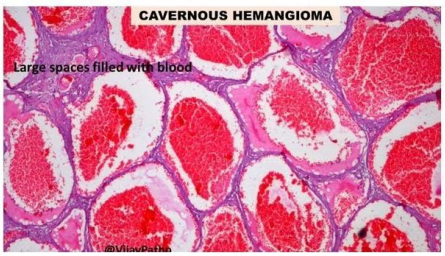
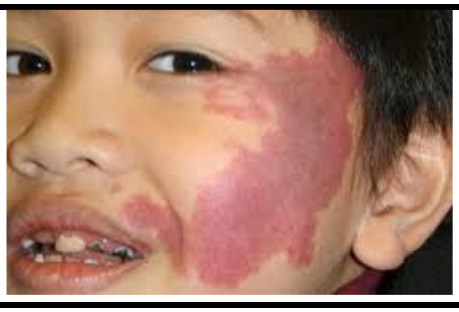




TUMORS OF VASCULAR ORIGIN

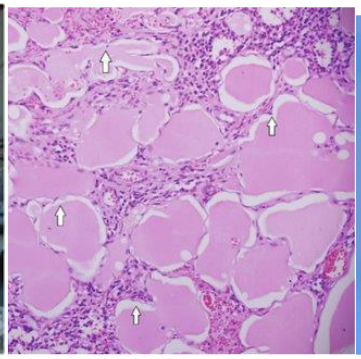
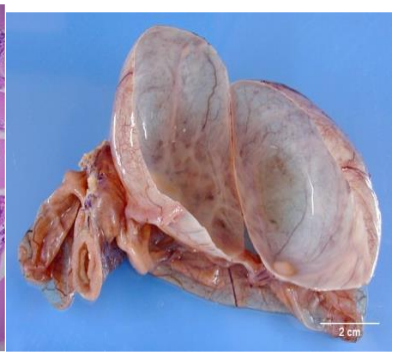
1 HEMANGIOMA

- Benign vascular tumor

	CAPILLARY (INFANTILE AND JUVENILE) HEMANGIOMA	CAVERNOUS HEMANGIOMA
AGE	✦ Most common vascular tumor of infancy	✦ Commonly seen in children
SITE	✦ Commonly occurs in head and neck ✦ May involve the subcutaneous tissue or occasionally the viscera	✦ skin of the head and neck (port-wine nevus)
CLINICAL PICTURE	✦ Typically presents as a crimson skin lesion that becomes raised over time (strawberry hemangioma ✦ Usually grows through first year of life and regresses over time	✦ Hemangiomas may be dermal or deeply seated and well circumscribed or infiltrative ✦ Most have a spongy, dark-red cut surface
ME	✦ Lobular architecture with arborizing, small vascular channels lined by plump to flattened endothelial cells, separated by scant connective tissue stroma 	✦ Typically found in subcutaneous tissue ✦ Characterized by dilated, blood-filled, medium- to large-caliber vascular spaces, lined by flat endothelial cells 
IHC	CD34, CD31, and Fli-1 highlight endothelial cells	
DEF		

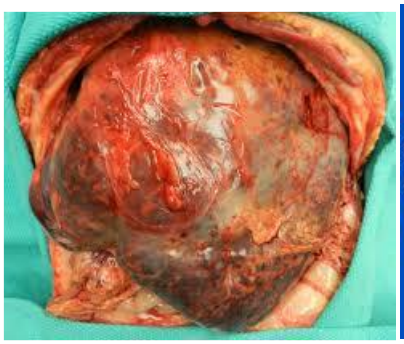
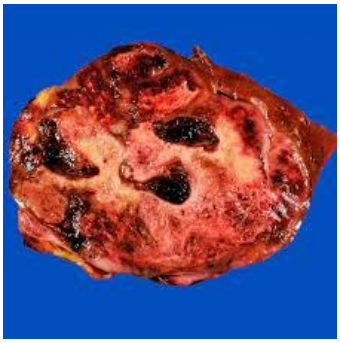
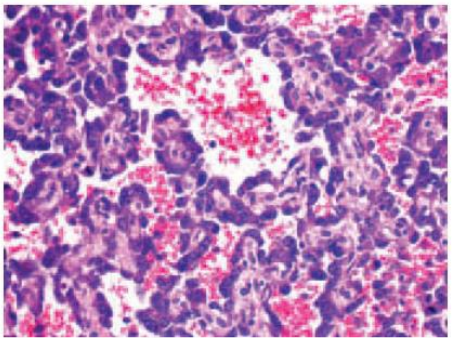
2 LYMPHANGIOMA

DEFINITION	✦ Rare benign tumors typically occurring as congenital tumors
AGE	✦ most present before the age of 2 years
SITE	✦ Typically present as a poorly defined soft tissue or cutaneous mass in the head and neck or axillary region
NE	✦ Commonly appears as a soft, cystic, gray-white tumor
ME	✦ Characterized by anastomosing, thin-walled, irregular lymphatic channels lined by flat endothelial cells ✦ Proteinaceous intraluminal fluid containing lymphocytes and red blood cells ✦ Stromal fibrosis and lymphoid aggregates are often seen

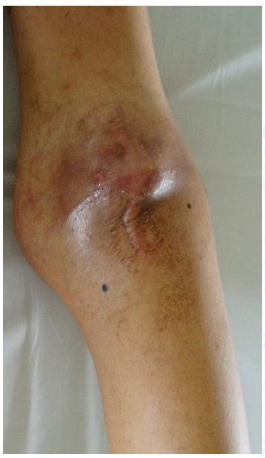
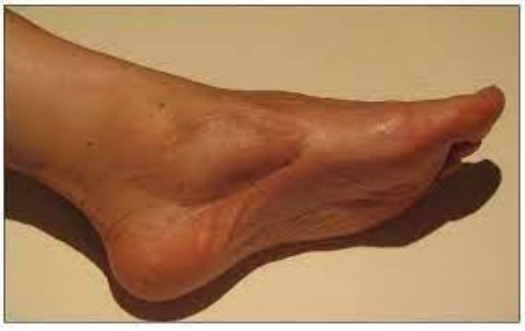
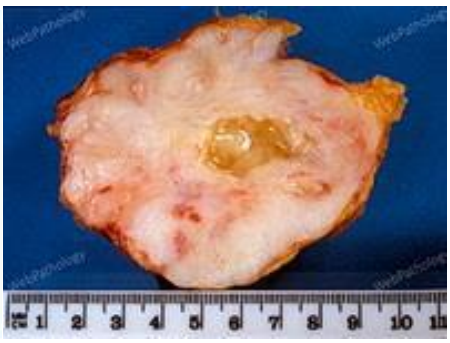
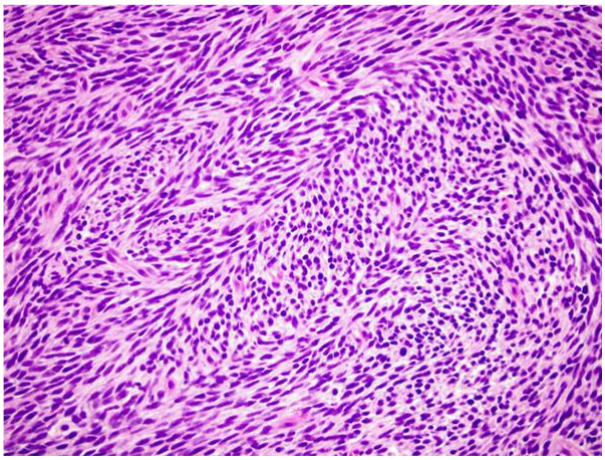
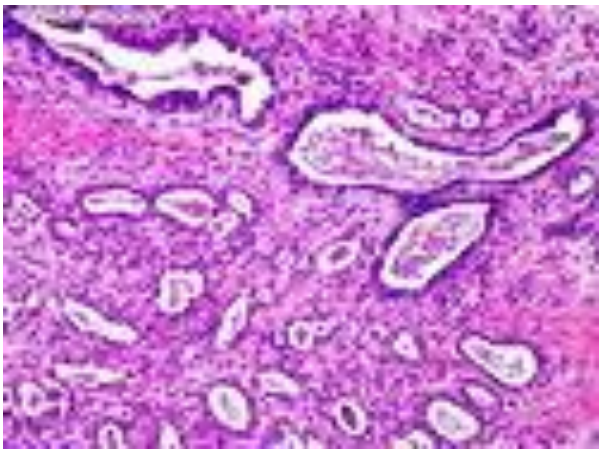
2 ANGIOSARCOMA

DEFINITION	✦ Rare highly aggressive malignancy, comprising less than 1% of sarcomas
AGE	✦ usually seen in adults
SITE	✦ Predilection for skin and superficial soft tissue, breast, bone, liver, and spleen; rare in deep soft tissue
NE	✦ large hemorrhagic, ill-defined masses with spongy quality and blood-filled spaces
ME	✦ infiltrating complex anastomosing vascular channels with intraluminal papillae, endothelial multilayering, and enlarged hyperchromatic nuclei
IHC	✦ CD31, CD34, and Fli-1 positive

TUMORS OF UNCERTAIN ORIGIN (SYNOVIAL SARCOMA)

DEFINITION	✦ Misnomer because this malignancy is only rarely found within joints
AGE	✦ 20-40 years
SITE	✦ Mostly in lower extremities ✦ Any site could be affected including viscera.
C/P	✦ Presents as a deep-seated, often painful mass; has often been present for years
NE	✦ a well-circumscribed mass with a gray white or variegated cut surface; rapidly growing tumors tend to be more infiltrative.
ME	✦ Monophasic synovial sarcoma consists of uniform spindle cells with scant cytoplasm and dense chromatin growing in short fascicles. ✦ The biphasic type contains glandlike structures composed of cuboidal to columnar epithelioid cells in addition to the spindle cell component
IHC	✦ CK in epithelial component ✦ CD99 in either or both components ✦ TLE1

SUMMARY OF IHC IN SOFT TISSUE TUMORS

S100 protein	✦ Positive in tumors of adipose tissue and neural tissue.
Desmin	✦ Positivity indicate muscle differentiation
Myogenin	✦ Positive in tumors of skeletal muscle origin
SMA	✦ Positive in tumors of smooth muscle differentiation.
β catenin	✦ Positivity is chareteristic for fibromatosis
CD31, CD34, FLil	✦ Characteristic for vascular tumors
CD99 and TLE1	✦ Positivity are characteristic for synovial sarcoma.

General Pathology + IBL (Written)

(L1 Introduction)

☒ **Enumerate 4 types of pathological biopsies.**

……

……

……

……

☒ **Mention importance of fixation in anatomic pathology.**

……

……

……

……

☒ **Mention importance of frozen section technique.**

……

……

☒ **Mention the scientific name.** اسئلة كليه

1. **A specimen taken from the lesion during life.**

……

2. **The process by which a disease develops.**

……

3. **The changes induced in the cells and organs of the body and caused by disease.**

……

(L2 Reversible Cell injury)

☒ **Enumerate 4 congenital causes of developmental growth disturbances.**

……
……
……
……

☒ **Enumerate 4 types of developmental growth disturbances.**

……
……
……
……

☒ **Enumerate 4 causes of cell injury.**

……
……
……
……

☒ **Mention 2 examples of atrophy.**

……
……

☒ **Mention 2 examples of Hypertrophy.**

……
……

☒ **Mention 2 examples of Hyperplasia.**

……
……

☒ **Mention 2 examples of metaplasia.**

……

……

☒ **Mention 2 causes of fatty change.**

……

……

(L3 irreversible Cell injury)

☒ **Define necrosis.**

……

……

☒ **Define Apoptosis.**

……

……

☒ **Enumerate Post necrotic changes in nucleus.**

……

……

……

☒ **Enumerate 4 types of necrosis.**

……

……

……

……

☒ **Define Autophagy.**

……

……

☒ **Compare between necrosis and apoptosis.**

	Necrosis	Apoptosis
Number of cells		
Gene activation		
ATP		
Cell membrane		
Characteristic feature		
Inflammation		
Nature (physiological / pathological)		

(L4 Tissue accumulation)

☒ **Mention 2 examples of hyalinosis.**

……

……

☒ **Mention 2 examples of localized amyloidosis.**

……

……

☒ **Mention 2 examples of systemic amyloidosis.**

……

……

☒ **Enumerate types of Pathological calcification.**

……

……

……

	Dystrophic calcification	metastatic calcification
Def		
Example		

	Localized hemosiderosis	Generalized hemosiderosis
cause		

(L5 Acute inflammation)

☒ **Enumerate Causes of Acute inflammation.**

……

……

……

☒ **Enumerate steps of inflammatory response. (5Rs)**

R:……

R:……

R:……

R:……

R:……

☒ **Compare between acute & chronic inflammation.**

	acute inflammation	chronic inflammation
Onset & duration		
cause		
Repair?		

☒ Compare between Exudate & transudate. مهم جداً جداً

	Exudate	transudate
Cause		
Protein content		
Clotting?		
Specific gravity		
Inflammatory cells		
Occurs in		

☒ Define chemotaxis.

……

……

☒ Enumerate Emigration steps. MRAT

……

……

……

……

☒ **Enumerate phagocytosis steps.**

……

……

……

……

☒ **Enumerate 2 vascular and 2 cellular changes.**

……

……

……

……

☒ **Enumerate cardinal signs of acute inflammation.** مهم جداً جداً

……

……

……

……

……

☒ **Enumerate types of suppurative inflammation.**

……

……

……

……

☒ **Enumerate types of non suppurative inflammation. SCP HNA**

……

……

……

……

☒ **Enumerate fate of acute inflammation.**

……

……

……

……

(L6 chronic inflammation)

☒ **Enumerate Causes of chronic inflammation.**

……

……

……

☒ **Compare between Acute & chronic inflammation.** مهم جداً جداً

	acute inflammation	chronic inflammation
Onset		
duration		
irritant		
phenomena		
Inflammatory cells		
Repair?		

☒ Enumerate systemic effect. FEAL

……

……

……

……

☒ Define granuloma.

……

……

☒ Enumerate cells forming granuloma. FL GEM

……

……

……

……

☒ Enumerate types of giant cells.

……

……

……

……

☒ Compare between types of granuloma.

infective granuloma	Non infective granuloma

(L7 Repair)

☒ **Enumerate types of repair.**

……

……

……

……

☒ **Compare between 1ry intension & 2nd intension.** مهم جداً جداً

	1ry intension	2nd intension
Tissue loss		
infection		
edges		
healing		
complications		
scar		

☒ **Enumerate factors affecting healing.**

……

……

……

……

☒ **Enumerate complications of healing.**

……

……

……

……

☒ **Enumerate complications of fibrosis.**

……

……

……

……

(L8 Infection)

☒ **Enumerate exogenous methods of infection.**

……

……

……

……

☒ **Define bacteremia / viremia.**

……

……

☒ **Define pyemia.**

……

……

☒ **Define toxemia.**

……

……

☒ **Define septicemia.**

……

……

☒ **Compare between types of systemic pyemia.**

	venous	arterial
sources		
effects		

☒ **Describe portal pyemia.**

	portal
sources	
effects	

☒ **Compare between bacteremia & septicemia.**

bacteremia	septicemia

(L9 Neoplasia)

☒ **Compare between Benign & Malignant tumors.**

	Benign tumors	Malignant tumors
Definition		
origin		
Rate of growth		
Mode of growth		

☒ **Compare between Benign & Malignant tumors.**

	Benign tumors	Malignant tumors
Behavior & prognosis		

☒ **Enumerate criteria of malignancy.**

……

……

……

……

☒ **Compare between carcinoma & sarcoma.**

carcinoma	sarcoma

☒ **Define locally malignant tumor.**

……

……

☒ **Mention 2 examples of locally malignant tumor.**

……

……

(L10 carcinogenesis)

☒ Enumerate 3 carcinogens of HCC.

……

……

……

☒ Define dysplasia.

……

……

☒ Enumerate 3 steps of carcinogenesis.

……

……

……

(L11 Disorders of lymphatic system) IBL

☒ Define acute lymphangitis.

……

……

☒ Define erysipelas.

……

……

☒ Enumerate causes of lymphadenopathy.

……

……

……

☒ **Define Hodgkin's lymphoma.**

……
……
……

☒ **Describe reed Sternberg cells.**

……
……
……
……

	Hodgkin's lymphoma	Non-Hodgkin's lymphoma
Presence of RS cells		
Prognosis		
immunophenotype		

☒ **Enumerate causes of Massive splenomegaly > 1000gm.**

……
……
……
……

Level-1 Semester-2

Pathology - MSS

BERLIN

SCAN ME

MCQ Lecture 5

BONE TUMORS

DR M. YUSUF

MCQ on Bone Tumors

1. A patient with multiple osteomas. This is a part of:- a) Gardner syndrome b) Ollier disease c) Maffucci syndrome d) Li-Fraumeni syndrome e) McCune Albright syndrome	**A**
2. Ollier disease is characterized by multiple:- a) Exostosis b) Fibrous dysplasia c) Chondromas d) Bone secondaries e) Osteomas	**C**
3. Patient with Paget's disease of bone is vulnerable to the development of:- a) Osteomyelitis b) Osteoblastoma c) Fibrous dysplasia d) Osteosarcoma e) Ewing sarcoma	**D**
4. The following bone disease may predispose to osteosarcoma:- a) Osteoporosis b) Rickets c) Osteomalacia d) Osteitis fibrosa cystica e) Paget's disease	**E**
5. The most common bone tumor is:- a) Osteosarcoma b) Osteochondroma c) Giant cell tumor d) Metastatic tumors e) Chondrosarcoma	**D**

6. Characteristics of osteosarcoma of bone include:- a) Primary occurrence develops at the age of 5th decade b) The tumor starts in epiphysis of long bones c) Formed of basophilic cells resembling lymphocytes d) New bone formation giving sun-ray appearance e) Tumor cells are PAS positive	**D**
7. Osteosarcoma is characterized by:- a) Is rare in the metaphysis of long bones b) Spreads mostly by lymphatic pathway c) Gives onion skin appearance on radiograph d) Has a good prognosis e) Occurs most commonly between the ages of 10 and 25 years	**E**
8. In osteosarcoma, all are true except:- a) Common in the metaphysis of long bones b) Spreads mostly by lymphatics c) May give "sunray spicules" appearance on radiograph d) Is the commonest primary malignant bone tumor e) Occurs most commonly between the ages of 10 and 25 years	**B**
9. Sunray appearance is characteristic feature of:- a) Osteoma b) Osteoblastoma c) Osteosarcoma d) Chondroma e) Chondrosarcoma	**C**
10. The following is not characteristic for osteosarcoma:- a) Common in the second decade of life b) Arises in the metaphysis c) Always appear as an osteosclerotic lesion d) Spreads early by blood e) Of high grade malignancy	**C**

11. In chondrosarcoma, all are true except:- a) Is a malignant tumor showing chondroid matrix b) Usually run a more prolonged course than osteosarcoma c) May arise from a pre-existing benign cartilaginous tumor d) Commonly arises in the pelvis or ribs e) Commonly occurs under the age of 30 years	**E**
12. Giant cell tumor may spread:- a) Only locally b) Only by lymphatics c) Only by blood d) Local + lymphatic + blood e) None of the above	**A**
13. Osteosarcoma tends to occur in:- a) Epiphysis b) Diaphysis c) Metaphysis d) Articular cartilage e) Tendons	**C**
14. Multiple Chondromas + Benign angiomas is called:- a) Ollier syndrome b) Maffucci syndrome c) Gardener syndrome d) Multiple hereditary exostosis e) McCune Albright syndrome	**B**
15. A patient 50 years with pathological fracture. X-ray revealed multiple osteolytic lesions in the vertebrae. These bony lesions are mostly:- a) Osteomyelitis b) Osteosarcoma c) Ewing's sarcoma d) Multiple myeloma e) Pott's disease	**D**

16. Multiple Myeloma is a tumor of:- a) Lymphocytes b) Plasma cells c) Mast cells d) Neuroectodermal cells of bone marrow e) Promyelocytes	**B**
17. The following carcinoma may produce osteosclerotic bone metastasis:- a) Bronchogenic carcinoma b) Thyroid carcinoma c) Renal cell carcinoma d) Breast carcinoma e) Prostatic carcinoma	**E**
18. Painful radiolucent lesion in distal femur (1 cm) which is relieved by aspirin:- a) Osteosarcoma b) Chondroma c) Osteoid osteoma d) Osteoblastoma e) Osteoma	**C**
19. Translocation t-(11,21) is characteristic for:- a) Ewing sarcoma b) Osteosarcoma c) Multiple myeloma d) McCune Albright syndrome e) Cortical fibrous defect	**A**
20. Which of the following malignant tumors most commonly presents in children:- a) Chondrosarcoma b) Ewing sarcoma / PNET c) Liposarcoma d) Leiomyosarcoma e) Undifferentiated high-grade pleomorphic sarcoma	**B**

21. **Ewing's sarcoma gives onion skin appearance on X-ray because of:-** a) Bone destruction b) Infiltration of bone cortex c) Subperiosteal new bone formation d) Presence of areas of necrosis e) Subperiosteal fibrosis	C
22. **Characteristics of Ewing sarcoma of bone include all of the followings except:-** a) Primary occurrence develops at age younger than 20 year b) The tumor starts at the epiphysis of long bone c) New bone formation in layers giving onion-skin pattern d) Formed of basophilic cells e) Tumor cells contain intra-cytoplasmic glycogen	B
23. **The most common site for chondrosarcoma among those is:-** a) Proximal femur b) Around the knee joint c) Metatarsal bones d) Scapula e) Mandible	D
24. **Osteosarcoma tends to occur in which of the following:-** a) Diaphysis b) Metaphysis c) Epiphysis d) Articular cartilage e) Tendon	B
25. **Microscopic examination of bone tumor revealed atypical spindle cells related to malignant osteoid formation and wide areas with malignant cartilage formations. The diagnosis is:-** a) Osteochondroma b) Chondrosarcoma c) Chondroblastic osteosarcoma d) Osteoblastic osteosarcoma e) Metaphyseal fibrous defect	C

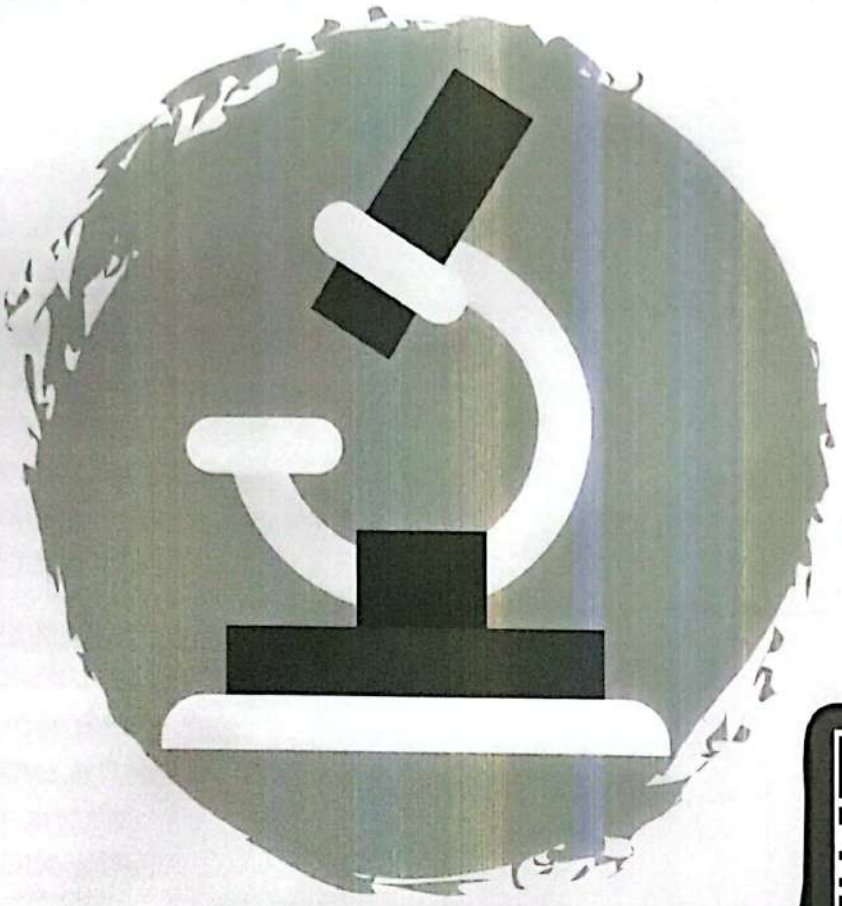
26. Microscopic examination of pathological bone fracture reveals malignant squamous epithelial cells with keratin formation. The diagnosis is:- a) Metastatic skin cancer b) Multiple myeloma c) Non-ossifying fibroma d) Paget's disease e) Fibrous dysplasia	**A**
27. The most common primary malignant bone tumor:- a) Osteosarcoma b) Osteochondroma c) Giant cell tumor of bone d) Metastatic tumors e) Chondrosarcoma	**A**
28. Microscopic examination of bone tumor revealed sheets of atypical round cells with glycogen rich cytoplasm and no osteoid formation. Diagnosis is:- a) Metastatic breast cancer b) Osteoblastoma c) Ewing's sarcoma d) Multiple myeloma e) Osteosarcoma	**C**
29. Onion skin appearance on X-ray is characteristic of:- a) Osteosarcoma b) Bone metastasis c) Ewing's sarcoma d) McCune Albright syndrome e) Osteoid osteoma	**C**
30. The nidus surrounded by sclerotic rim is a hallmark sign of:- a) Osteochondroma b) Osteoid osteoma c) Osteoma d) Chondroma e) Bone secondaries	**B**

31.<u>Teenager with multiple pulmonary lesions. Microscopic examination revealed malignant osteoid. Which of the following is mostly diagnosis:-</u> a) Multiple chondrosarcomas b) Metastatic osteoma c) Metastatic osteosarcoma d) Metastatic osteoblastoma e) Metastatic giant cell tumor of bone	**C**
32. <u>All of the followings are primary bone tumors except:-</u> a) Osteoma b) Metastatic tumors c) Chondroma d) Ewing sarcoma e) Giant cell tumor of bone	**B**
33. <u>The most common site affected by osteoma is:-</u> a) Femur b) Vertebral column c) Skull bones d) Ribs e) Pelvic bone	**C**
34. <u>The most common site affected by osteoblastoma:-</u> a) Femur b) Vertebral column c) Skull bones d) Ribs e) Pelvic bone	**B**
35. <u>The most common site affected by Ewing sarcoma:-</u> a) Femur b) Vertebral column c) Skull bones d) Ribs e) Pelvic bone	**A**

Level-1 Semester-2

Pathology - MSS

BERLIN



SCAN ME

MCQ Lecture 3

Joint Diseases

DR M. YUSUF

MCQ on Joint Diseases

1. Which type of arthritis is characterized by subchondral cyst formation:- a) Osteoarthritis b) Infectious arthritis c) Rheumatoid arthritis d) Metabolic Arthritis e) Tuberculous arthritis	**A**
2. The most probable type of arthritis affecting big joints of an old obese patient is:- a) Rheumatic arthritis b) Rheumatoid arthritis c) Osteoarthritis d) Gouty arthritis e) Syphilitic arthritis	**C**
3. Pannus of rheumatoid arthritis consists of:- a) Calcified synovium b) Necrotic fibrous tissue c) Degenerating cartilage d) Chronically inflamed synovium e) Dislocated joint	**D**
4. Auto-immune arthritis includes:- a) Osteoarthritis b) Rheumatoid arthritis c) Infective arthritis d) Gouty arthritis e) Syphilitic arthritis	**B**
5. About rheumatoid arthritis, which is true:- a) Usually associated with negative test for rheumatoid factor b) Is not associated with rheumatoid nodules c) Affects mainly large joints d) Usually has a microscopic appearance of villous hypertrophy of the synovium with inflammatory cells e) Bony ankylosis doesn't occur	**D**

6. Which of the followings is not a feature of rheumatoid arthritis:- a) Foreign body giant cell reaction to crystals b) An auto-immune disease c) Affects peripheral joints bilaterally and symmetrically d) Pannus formation e) Changes of the articular cartilage are mainly peripheral	**A**
7. Pannus in case of rheumatoid arthritis consists of:- a) Calcification b) Hyalinized fibrous scar c) Inflamed granulation tissue d) Proliferated synovial cells e) Lymphoid follicles	**D**
8. The main pathologic process in osteoarthritis is:- a) Inflammatory process b) Fibrosis c) Erosion of the articular surface d) Deposition of immune complexes e) New bone formation	**C**
9. The etiology of gout is:- a) Bacterial infection b) Abnormal uric acid metabolism c) Abnormal oxalic acid metabolism d) Abnormal cholesterol metabolism e) Unknown	**B**
10. A male patient has a cystic swelling over his wrist. The cyst contains a clear, gelatinous fluid and smooth wall. The most probable diagnosis is:- a) Rheumatic arthritis b) Rheumatoid arthritis c) Synovioma d) Ganglion cyst e) Pigmented villo-nodular synovitis	**D**

11. Which of the following increases in the serum and causes gouty arthritis:- a) Ca oxalate b) Triple phosphate c) Uric acid d) Creatinine e) Low Density Lipoproteins	**C**
12. The osteoarthritis is:- a) A metabolic disease b) A benign tumor c) An autoimmune disease d) A degenerative lesion e) A gene mutation lesion	**D**
13. A male patient presented with pain and swelling of knee joint. During the surgery the synovial membrane was thickened and brown in color. Under microscope it showed fibroblastic proliferation, giant cells & macrophages with hemosiderin pigment inside. Your most probable diagnosis is:- a) Synovioma b) Ganglion cyst c) Pigmented villo-nodular synovitis d) Rheumatic arthritis e) Rheumatoid arthritis	**C**
14. Osteophyte is a radiological feature of:- a) Gout b) Rheumatoid arthritis c) Osteoarthritis d) SLE e) Vasculitis	**C**
15. Which of these makes it more likely to get osteoarthritis:- a) Too little body weight b) Back pain c) Young age d) Excess body weight e) Regular exercise	**D**

16. Osteoarthritis occurs as a result of:- a) High levels of estrogen in older women b) Degeneration of joint due to wear and tear of articular cartilage c) Low levels of estrogen in older women d) Deficiency of calcium in young age e) Autoimmune process	**B**
17. Which of the following is the most important modifiable risk factor for severe osteoarthritis of the knee:- a) Muscle weakness b) Level of activity c) Overweight/obesity d) Trauma/injury e) Old age	**C**
18. Which joint is most affected by tophi of gout:- a) Ankles b) Small joints of the hands c) Shoulder joint d) Metatarsophalangeal joint of the big toe e) The knee joints	**D**
19. Type A synoviocytes are specialized:- a) Plasma cells b) Fibroblasts c) Lymphocytes d) Macrophages e) Osteoblasts	**D**
20. Type B synoviocytes are similar to:- a) Plasma cells b) Fibroblasts c) Lymphocytes d) Macrophages e) Osteoblasts	**B**

21. Gout is:- a) Infectious arthritis b) Degenerative arthritis c) Metabolic arthritis d) Seropositive immune arthritis e) Seronegative immune arthritis	**C**
22. Ankylosing spondylitis is:- a) Infectious arthritis b) Degenerative arthritis c) Metabolic arthritis d) Seropositive immune arthritis e) Seronegative immune arthritis	**E**
23. Which of the followings is intra-articular cause of osteoarthritis:- a) Obesity b) Bowing of legs c) Old age d) Congenital hip dysplasia e) Malunion of bone fracture	**D**
24. The most common joint affected in osteoarthritis in males:- a) Shoulder b) Hip c) Ankle d) Knee e) Wrist	**B**
25. The most common joint affected in osteoarthritis in females:- a) Shoulder b) Hip c) Ankle d) Knee e) Sterno-clavicular	**D**

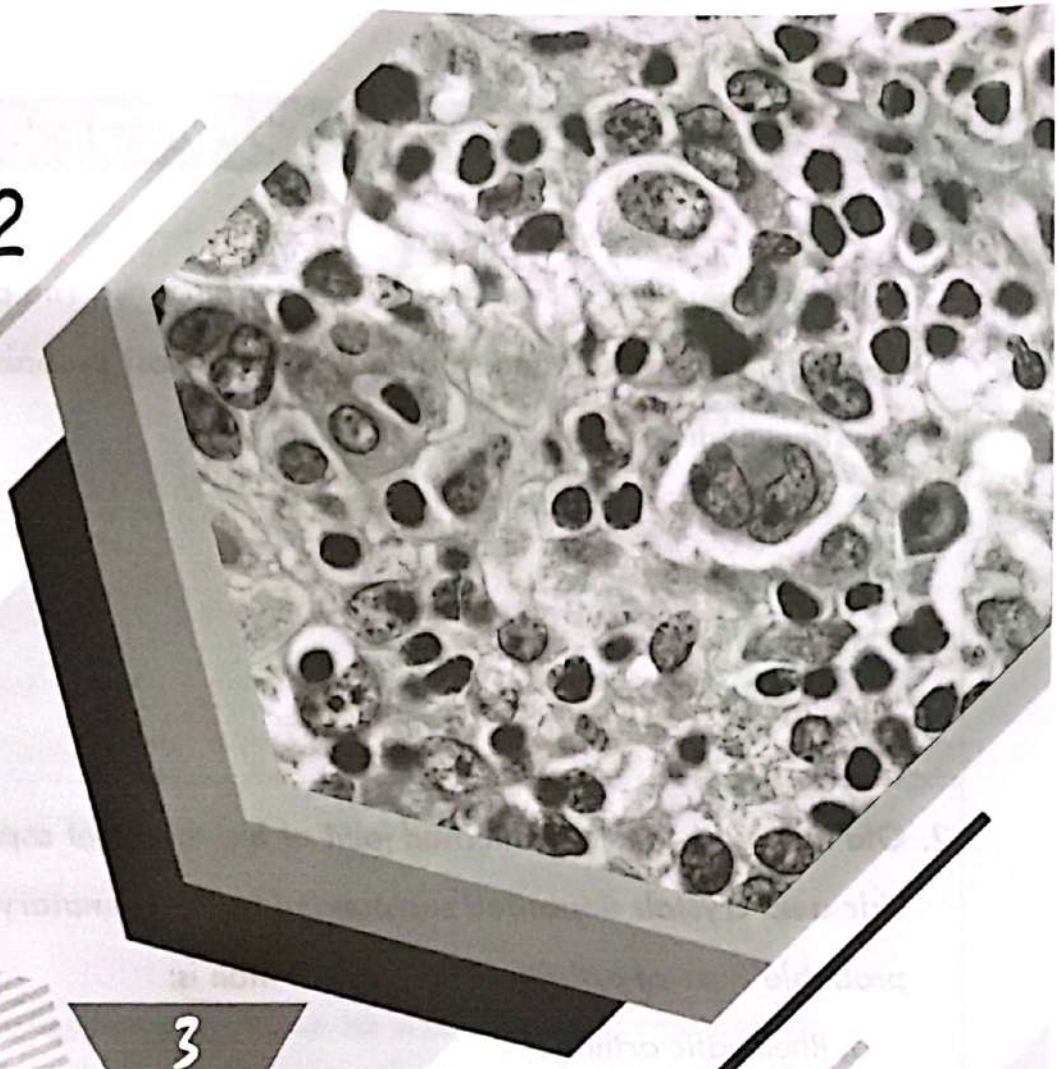
26. Which of the followings is not characteristic for osteoarthritis:- a) Immune complex deposition b) Fragmentation of articular surface c) Formation of osteophytes d) Cystic degeneration of underlying bone e) Calcification of cartilage margins	**A**
27. Central degeneration of articular cartilage is characteristic of:- a) Rheumatoid arthritis b) Gouty arthritis c) Infectious arthritis d) Osteoarthritis e) Metabolic arthritis	**D**
28. Seropositive arthritis is:- a) Rheumatoid arthritis b) Gouty arthritis c) Infectious arthritis d) Osteoarthritis e) Ankylosing spondylitis	**A**
29. The most common sites affected by rheumatoid arthritis:- a) Knee joint b) Hip joint c) Small joints of hand and feet d) Ankle joint e) Shoulder joint	**C**
30. Rheumatoid arthritis most commonly affects:- a) Middle aged males b) Middle aged females c) Old males d) Old female e) Young males	**B**

31. Rheumatoid factor is considered as:- a) Anti-IgG antibody b) Anti-nuclear antibody c) ACP antibody d) Anti-mitochondrial antibody e) Anti-IgM antibody	**A**
32. Synovial hyperplasia & prominent lymphoid follicles are characteristic of:- a) Osteoarthritis b) Gouty arthritis c) Suppurative arthritis d) Rheumatoid arthritis e) Seronegative arthritis	**D**
33. Peripheral erosion of articular cartilage is characteristic of:- a) Rheumatoid arthritis b) Gouty arthritis c) Infectious arthritis d) Osteoarthritis e) Metabolic arthritis	**A**
34. Increased osteoclastic activity and osteoporosis is characteristic of:- a) Rheumatoid arthritis b) Gouty arthritis c) Infectious arthritis d) Osteoarthritis e) Metabolic arthritis	**A**
35. All of the following are systemic effects of rheumatoid arthritis except:- a) Rheumatoid nodules b) Pannus formation c) 2ry amyloidosis d) Lymphadenopathy e) Vasculitis	**B**

36. Which of the following antibodies commonly seen in juvenile rheumatoid arthritis:- a) Anti-IgG antibody b) Anti-nuclear antibody c) ACP antibody d) Anti-mitochondrial antibody e) Anti-IgM antibody	**B**
37. The most common site affected by pigmented villo-nodular synovitis:- a) Shoulder b) Ankle c) Digits d) Knee e) Wrist	**D**
38. The most common site affected by giant cell tumor of tendon sheath:- a) Shoulder b) Ankle c) Digits d) Knee e) Wrist	**C**
39. Translocation of CSF gene can be associated with:- a) Gouty arthritis b) Rheumatoid arthritis c) Osteoarthritis d) Tendo-synovial giant cell tumor e) Ganglion cyst	**D**
40. The most common site affected by ganglion cyst:- a) Shoulder b) Ankle c) Elbow d) Knee e) Wrist	**E**

Level 1
Semester2

MSK



3
L.E

L3

MCQ Pathology

Dr.Ahmed Hhassan

Lecture (3) MCQs

1. A male patient has a cystic swelling over his wrist. The cyst contains a clear, gelatinous fluid and smooth wall. The most probable diagnosis is a. Rheumatic arthritis b. Rheumatoid arthritis c. Synovioma d. Ganglion cyst e. Pigmented villo-nodular synovitis	**D**
2. Old man with swollen inflamed joint of big toe, joint aspiration revealed Uric acid crystals deposited surrounded by inflammatory cells. The most probable type of arthritis affecting this man is: a. Rheumatic arthritis b. Rheumatoid arthritis c. Osteoarthritis d. Gouty arthritis e. Syphilitic arthritis.	**D**
3. Old man with swollen inflamed knee joint, joint aspiration revealed blood with many pus cells and turbid fluid. The most probable type of arthritis affecting this man is: a. Rheumatic arthritis b. Rheumatoid arthritis c. Osteoarthritis d. Gouty arthritis e. Suppurative arthritis.	**E**

4. The most probable type of arthritis affecting big joints of an old, obese patient is: a. Rheumatic arthritis b. Rheumatoid arthritis c. Osteoarthritis d. Gouty arthritis e. Syphilitic arthritis.	**C**
5. Pannus of rheumatoid arthritis consists of: a. Calcified synovium b. Necrotic fibrous tissue c. Degenerating cartilage d. Chronically inflamed synovium e. Dislocated joint	**D**
6. A male patient has a cystic swelling over his wrist. The cyst contains a clear, gelatinous fluid and smooth wall. The most probable diagnosis is a. Rheumatic arthritis b. Rheumatoid arthritis c. Synovioma d. Ganglion cyst e. Pigmented villo-nodular synovitis	**D**
7. A 40 years old woman presented with pleurisy and morning stiffness lasting for 60 minutes , swollen small joints of the hands with Erosion of the articular cartilage mainly at the periphery. The most probable type of arthritis affecting this patient is : a. Rheumatic arthritis b. Rheumatoid arthritis c. Osteoarthritis d. Gouty arthritis	**B**

8. Osteophytes are: a) Areas of congestion and inflammation in synovial membrane b) Areas of degeneration in central part of articular cartilage c) Exposed bone under degenerated cartilage d) Small bony projections formed at the joint periphery e) None of the above	**D**
9. The following is not true regarding Rheumatoid arthritis: a) Affects large weight bearing joints as hip and knee b) More common in females c) Occurs in middle age d) Anti IgG antibody is called Rheumatoid factor	**A**
10. Rheumatoid arthritis are not characterized by : a) Creeping chronic inflammation b) Destruction of central part of articular cartilage c) Pannus formation d) Fibrous ankylosis e) Osteoporosis	**B**
11. Pigmented villonodular synovitis is characterized by all except : a) Benign proliferation of synovium b) Shaggy with villous progections c) Solid tumor d) Fibroblasts are present e) Histiocytes contain hemoisederin pigment	**C**
12. Regarding synovial sarcoma, Which is least likely to be true: a) Affects young age b) Biphasic tumor c) Slow growth d) Blood spread e) Lymphatic spread	**E**

13. The Following is not a cause of infectious arthritis: a) Gouty arthritis b) Suppurative arthritis c) Traumatic arhtritis d) Tuberculosis e) Syphilis	**A**
14. The most common joint to be affected by gouty arthritis is : a) Metatarsophalangeal joint of little toe b) Metatarsophalangeal joint of big toe c) Wrist d) Shoulder e) Knee	**B**
15. All the following are Benign tumors of Joint except : a) Ganglion b) Synovial cyst c) Synovial sarcoma d) Giant Cell Tumor Of Tendon Sheath e) Pigmented villonodular synovitis	**C**
16. Rheumatoid arthritis Mainly affects which joint of the following : a) Knee joint in females b) Intervertebral joint c) Joint of the big toe d) Small joints of hands and feet e) Atlanto axial joint	**D**
17. Gouty arthritis Mainly affects which joint of the following : a) Knee joint in females b) Intervertebral joint c) Joint of the big toe d) Small joints of hands and feet	**C**

18. Osteoarthritis Mainly affects which joint of the following : a) Knee joint in females b) Intervertebral joint c) Joint of the big toe d) Small joints of hands and feet e) Atlanto axial joint	A
19. All of the following is true regarding osteoarthritis except : a) Degenerative disease b) Affects large joints c) Males are more affected than females d) Degeneration affects central part of articular cartilage e) Common in old age	C
20. The Following is not a cause of infectious arthritis a) Gouty arthritis b) Suppurative arthritis c) Traumatic arhtritis d) Tuberculosis e) Syphilis	A
21. The most common joint to be affected by gouty arthritis is a) Metatarsophalangeal joint of little toe b) Metatarsophalangeal joint of big toe c) Wrist d) Shoulder e) Knee	B
22. All of the following is true regarding osteoarthritis except a) Degenerative disease b) Affects large joints c) Males are more affected than females d) Degeneration affects central part of articular cartilage	C

23. Osteophytes are a) Areas of congestion and inflammation in synovial membrane b) Areas of degeneration in central part of articular cartilage c) Exposed bone under degenerated cartilage d) Small bony projections formed at the joint periphery e) None of the above	**D**
24. The following is not true regarding Rheumatoid arthritis a) Affects large weight bearing joints as hip and knee b) More common in females c) Occurs in middle age d) Anti IgG antibody is called Rheumatoid factor e) None of the above	**A**
25. Rheumatoid arthritis are not characterized by a) Creeping chronic inflammation b) Destruction of central part of articular cartilage c) Pannus formation d) Fibrous ankylosis e) Osteoporosis	**B**

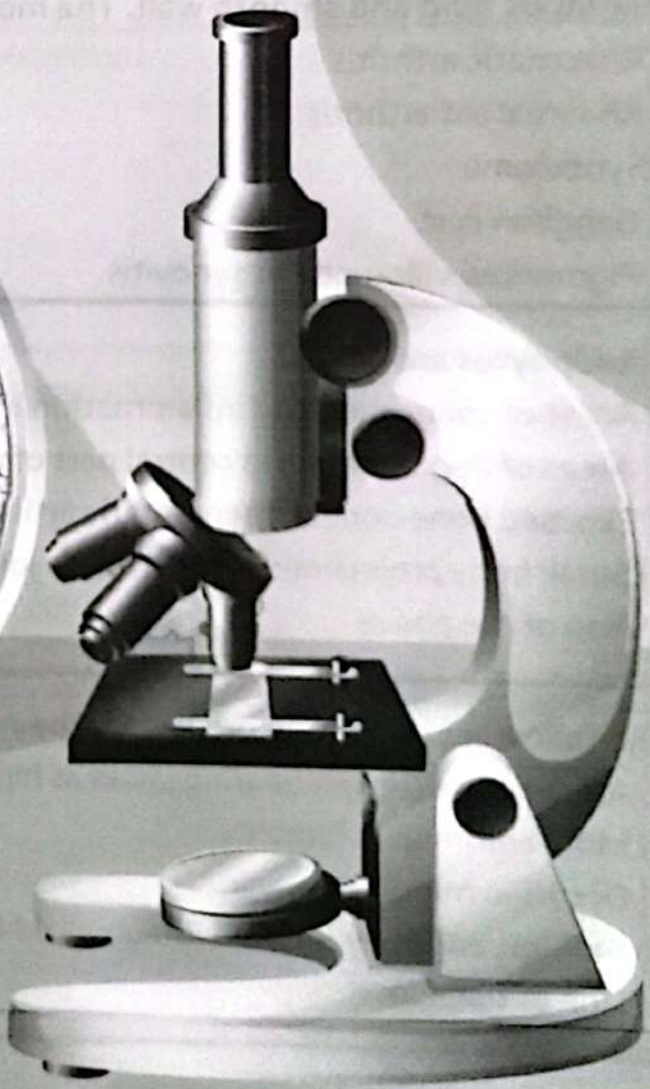
Level 1
semester 2

Pathology

MCQ

LECTURE 3

3
L.E



DR/ M. Sh.

MCQ ON LECTURE 3

1- The most probable type of arthritis affecting big joints of an old, obese patient is : a. Rheumatic arthritis b. Rheumatoid arthritis c. Osteoarthritis d. Gouty arthritis e. Syphilitic arthritis.	C
2- Pannus of rheumatoid arthritis consists of : a. Calcified synovium b. Necrotic fibrous tissue c. Degenerating cartilage d. Chronically inflamed synovium e. Dislocated joint	D
3- A male patient has a cystic swelling over his wrist. The cyst contains a clear, gelatinous fluid and smooth wall. The most probable diagnosis is a. Rheumatic arthritis b. Rheumatoid arthritis c. Synovioma d. Ganglion cyst e. Pigmented villo-nodular synovitis	D
4- Osteophytes are : a) Areas of congestion and inflammation in synovial membrane b) Areas of degeneration in central part of articular cartilage c) Exposed bone under degenerated cartilage d) Small bony projections formed at the joint periphery *e) Non of the above*	D
5- The following is not true regarding Rheumatoid arthritis : a) Affects large weight bearing joints as hip and knee b) More common in females c) Occurs in middle age d) Anti IgG antibody is called Rheumatoid factor e) Non of the above	A

6- Rheumatoid arthritis are not characterized by : a) Creeping chronic inflammation b) Destruction of central part of articular cartilage c) Pannus formation d) Fibrous ankylosis e) Osteoporosis	B
7- Pigmented villonodular synovitis is characterized by all except : a) Benign proliferation of synovium b) Shaggy with villous progections c) Solid tumor d) Fibroblasts are present e) Histiocytes contin henoisiderin pigment	C
8- Regarding synovial sarcoma , Which is least likely to be true : a) Affects young age b) Biphasic tumor c) Slow growth d) Blood spread e) Lymphatic spread	E
9- The Following is not a cause of infectious arthritis : a) Gouty arthritis b) Suppurative arthritis c) Traumatic arhtritis d) Tuberculosis e) Syphilis	A
10- The most common joint to be affected by gouty arthritis is : a) Metatarsophalangeal joint of little toe b) Metatarsophalangeal joint of big toe c) Wrist d) Shoulder e) Knee	B
11- All the following are Benign tumors of Joint except : a) Ganglion b) Synovial cyst c) Synovial sarcoma d) Giant Cell Tumor Of Tendon Sheath e) Pigmented villonodular synovitis	C

12- Old man with swollen inflamed joint of big toe , joint aspiration revealed Uric acid crystals deposited surrounded by inflammatory cells **The most probable type of arthritis affecting this man is :** a. Rheumatic arthritis b. Rheumatoid arthritis c. Osteoarthritis d. Gouty arthritis e. Syphilitic arthritis.	D
13- A 40 years old woman presented with pleurisy and morning stiffness lasting *for 60 minutes , swollen small joints of the hands with Erosion of the articular* cartilage mainly at the periphery **The most probable type of arthritis affecting this patient is :** a. Rheumatic arthritis b. Rheumatoid arthritis c. Osteoarthritis d. Gouty arthritis e. Syphilitic arthritis.	B
14- Old man with swollen inflamed knee joint , joint aspiration revealed blood with many pus cells and turbid fluid ***The most probable type of arthritis affecting this man is :*** a. Rheumatic arthritis b. Rheumatoid arthritis c. Osteoarthritis d. Gouty arthritis e. Suppurative arthritis.	E
15- Rheumatoid arthritis Mainly affects which joint of the following : a) Knee joint in females b) Intervertebral joint c) Joint of the big toe d) Small joints of hands and feet e) Atlanto axial joint	D
16- Gouty arthritis Mainly affects which joint of the following : a) Knee joint in females b) Intervertebral joint c) Joint of the big toe d) Small joints of hands and feet	C

17- Osteoarthritis Mainly affects which joint of the following : a) Knee joint in females *b) Intervertebral joint* c) Joint of the big toe d) Small joints of hands and feet e) Atlanto axial joint	A
18- All of the following is true regarding osteoarthritis except : a) Degenerative disease b) Affects large joints c) Males are more affected than females d) Degeneration affects central part of articular cartilage e) Common in old age	C
19- The Following is not a cause of infectious arthritis a) Gouty arthritis b) Suppurative arthritis c) Traumatic arhtritis d) Tuberculosis e) Syphilis	A
20- The most common joint to be affected by gouty arthritis is a) Metatarsophalangeal joint of little toe b) Metatarsophalangeal joint of big toe c) Wrist d) Shoulder e) Knee	B
21- All of the following is true regarding osteoarthritis except a) Degenerative disease b) Affects large joints c) Males are more affected than females d) Degeneration affects central part of articular cartilage e) Common in old age	C
22- Osteophytes are *a) Areas of congestion and inflammation in synovial membrane* b) Areas of degeneration in central part of articular cartilage c) Exposed bone under degenerated cartilage d) Small bony projections formed at the joint periphery e) Non of the above	D

23- The following is not true regarding Rheumatoid arthritis a) Affects large weight bearing joints as hip and knee b) More common in females c) Occurs in middle age d) Anti IgG antibody is called Rheumatoid factor e) Non of the above	A
24- Rheumatoid arthritis are not characterized by a) Creeping chronic inflammation b) Destruction of central part of articular cartilage c) Pannus formation d) Fibrous ankylosis e) Osteoporosis	B
25- Pigmented villonodular synovitis is characterized by all except a) Benign proliferation of synovium b) Shaggy with villous progections c) Solid tumor d) Fibroblasts are present e) Histiocytes contain henoisiderin pigment	C
26- Regarding synovial sarcoma , Which is least likely to be true a) Affects young age b) Biphasic tumor c) Slow growth d) Blood spread e) Lymphatic spread	E

Level-1 Semester-2

Pathology - MSS

BERLIN

SCAN ME

MCQ Lecture 1

Osteodystrophy

DR M. YUSUF

MCQ on Osteodystrophy

1. The following is NOT a cause of osteoporosis:- a) Old age b) Chronic osteomyelitis c) Cushing syndrome d) Hyperthyroidism e) Malnutrition	**B**
2. In Paget disease of bone, which is true:- a) Rarely affects skull b) May cause heart failure c) May be complicated by the development of osteochondroma d) Is associated with lower levels of serum alkaline phosphatase e) Usually appears before the age of 40	**B**
3. Mosaic pattern of bone trabeculae is characteristic feature of:- a) Osteoporosis b) Rickets c) Osteomalacia d) Osteitis fibrosa cystica e) Paget's disease	**E**
4. The following bone disease may predispose to osteosarcoma:- a) Osteoporosis b) Rickets c) Osteomalacia d) Osteitis fibrosa cystica e) Paget's disease	**E**
5. Osteoporosis is a:- a) Congenital disease b) Inflammatory disease c) Metabolic disorder d) Inherited disorder e) Neoplastic disorder	**C**

6. In osteoporosis, which is true:- a) Decreased incidence of bone fracture b) An association with Cushing syndrome c) A lack of active Vitamin D d) Reduction of bone mineralization e) Thickening of cortical bones	**B**
7. Rickets is a:- a) Congenital disease b) Inflammatory disease c) Metabolic disorder d) Inherited disorder e) Neoplastic disorder	**C**
8. Rickets is characterized by:- a) Defective bone formation b) Decrease in the total mass of bone without structural abnormalities c) Decrease in the total mass of bone with other structural abnormalities d) Deficient mineralization of bone e) Disturbance of the architecture of bone	**D**
9. The cause of rickets is:- a) Immobilization b) Endocrine disorder c) Vit D deficiency d) Primary biliary cirrhosis e) Hyperparathyroidism	**C**
10. Craniotabes is characteristic feature of:- a) Osteoporosis b) Rickets c) Osteomalacia d) Osteitis fibrosa cystica e) Paget's disease	**B**

11. All the followings are signs of rickets except:- a) Rachitic rosary b) Harrison sulcus c) Frontal bossing d) Leontiasis ossea e) Pigeon chest	**D**
12. All these changes occur in rickets except:- a) Thickening of costo-chondral junction b) Failure of calcification of osteoid tissue c) Bossing of frontal and parietal skull bones d) Hypercalcemia e) Delayed eruption of teeth	**D**
13. Which of the followings is characterized by deficient synthesis of collagen type 1 fibers:- a) Osteopetrosis b) Osteogenesis imperfecta c) Rickets d) Paget disease e) Osteitis fibrosa cystica	**B**
14. Brittle bone disease is caused by:- a) Increased osteoclast activity b) Decreased osteoclast activity c) Hereditary deficiency of collagen type 1 d) Vitamin D deficiency e) Hyperparathyroidism	**C**
15. Quantitative reduction in otherwise normal bone refers to:- a) Osteopetrosis b) Rickets c) Osteoporosis d) Osteogenesis imperfecta e) Osteitis deformans	**C**

16. Which of the followings is a congenital bone disease:- a) Rickets b) Osteomalacia c) Achondroplasia d) Osteoporosis e) Paget disease	**C**
17. Which of the followings is a metabolic bone disease:- a) Osteopetrosis b) Achondroplasia c) Osteomalacia d) Osteomyelitis e) Osteosarcoma	**C**
18. Mode of inheritance in Osteogenesis imperfecta:- a) Autosomal dominant b) Autosomal recessive c) X-linked dominant d) X-linked recessive e) Multimodal inheritance	**A**
19. Blue sclera, hearing defect & dental abnormalities are associated with:- a) Osteopetrosis b) Osteomalacia c) Osteoporosis d) Osteogenesis imperfecta e) Paget disease	**D**
20. Marble bone disease is associated with:- a) Osteogenesis imperfecta b) Osteopetrosis c) Osteomalacia d) Osteomyelitis e) Osteoporosis	**B**

21. **Which of the following lesions is associated with dense stone like bone formation:-** a) Osteomalacia b) Rickets c) Osteopetrosis d) Osteogenesis imperfecta e) Osteoporosis	C
22. **Which of the following lesions is caused by impaired osteoclast activity:-** a) Osteogenesis imperfecta b) Osteoporosis c) Osteopetrosis d) Osteomyelitis e) Osteosarcoma	C
23. **Mode of inheritance in lethal form of osteopetrosis:-** a) X-linked in adults b) X-linked in infants c) Autosomal dominant in adults d) Autosomal recessive in infants e) Autosomal dominant in infants	D
24. **Bone marrow suppression is a common association with:-** a) Osteogenesis imperfecta b) Osteopetrosis c) Osteomalacia d) Paget disease e) Osteochondroma	B
25. **The main cause in the development of osteopetrosis:-** a) Defect synthesis in collagen type 1 b) Vitamin D deficiency c) Hyperparathyroidism d) Impaired osteoclast activity e) Increased osteoclast activity	D

26. Qualitative abnormality with defect in bone mineralization is seen in:- a) Rickets b) Osteoporosis c) Osteopetrosis d) Osteogenesis imperfecta e) Paget disease	**A**
27. Scurvy is caused by deficiency in which vitamin:- a) Vit A b) Vit D c) Vit B d) Vit C e) Vit K	**D**
28. Subperiosteal hemorrhage can be seen in which hormone deficiency:- a) Vit A b) Vit B c) Vit C d) Vit D e) Vit E	**C**
29. Gigantism & acromegaly are caused by:- a) Hyperpituitarism b) Hypopituitarism c) Hyperthyroidism d) Hypothyroidism e) Hypogonadism	**A**
30. Which renal disease can lead to renal osteodystrophy:- a) Chronic renal failure b) Renal cyst c) Renal cell carcinoma d) Acute renal failure e) Acute glomerulonephritis	**A**

31. Which of the following is classified as primary osteoporosis:- a) Postmenopausal osteoporosis b) Endocrinopathy c) Malnutritional osteoporosis d) Drug-induced osteoporosis e) Osteoporosis with immobilization	**A**
32. Involutional type-osteoporosis is seen in:- a) Malnutrition b) Corticosteroids c) Hyperthyroidism d) Aging individuals e) Young and juveniles	**D**
33. The most common risk factor of osteoporosis is:- a) Malnutrition b) Malabsorption c) Post-menopausal estrogen deficiency d) Hyperthyroidism e) Cushing syndrome	**C**
34. Idiopathic type-osteoporosis is seen in:- a) Young and juveniles b) Post-menopausal estrogen deficiency c) Aging individuals d) Cushing syndrome e) Hyperthyroidism	**A**
35. All of the following endocrine disorders can lead to osteoporosis except:- a) Hypogonadism b) Hypergonadism c) Hyperthyroidism d) Hyperparathyroidism e) Cushing syndrome	**B**

36. The commonest site affected by osteoporosis:- a) Femur b) Vertebral bodies c) Pelvic bones d) Metacarpal bones e) Skull bones	**B**
37. Significant loos of weight may occur as a result of:- a) Rickets b) Osteomalacia c) Osteopetrosis d) Vertebral osteoporosis e) Osteogenesis imperfecta	**D**
38. The main radiological modality for diagnosis osteoporosis is:- a) Conventional radiography b) Ultra sound c) DEXA scan d) MRI e) Angiography	**C**
39. DEXA scan is performed mainly for:- a) Measurement of bone mineralization b) Detection of periosteal elevation c) Detection of collagen type d) Measurement of bone density e) None of the above	**D**
40. Bisphosphonates are used for treatment of:- a) Osteoporosis b) Osteopetrosis c) Rickets d) Osteomalacia e) Osteomyelitis	**A**

41. Vitamin D deficiency in adults leads to:- a) Rickets b) Osteomalacia c) Osteoporosis d) Osteomyelitis e) Osteosarcoma	**B**
42. Accumulation of unmineralized matrix is a characteristic feature of:- a) Osteoporosis b) Paget disease c) Hyperparathyroidism d) Rickets e) Osteopetrosis	**D**
43. All of the followings are features of osteomalacia except:- a) Bending of femur and tibia b) Contracted pelvis c) Bone marrow failure d) Increased lumbar lordosis e) High susceptibility to fractures	**C**
44. Childhood manifestation of defective bone mineralization refers to:- a) Osteoporosis b) Osteomalacia c) Paget disease d) Rickets e) Osteogenesis imperfecta	**D**
45. All of the followings are causes of rickets except:- a) Increased Vit D uptake b) Decreased exposure to sunlight c) Premature infants d) Hypocalcemia e) Defective absorption of Vit D	**A**

46. Which of the following features is consistent with rachitic metaphysis:- a) Calcified matrix between chondrocyte columns b) Non degeneration of cartilage cells c) Cartilage cells replaced by capillary loops d) Lamellar bone formation e) Osteoid matrix deposition	**B**
47. All of the followings are skull manifestations of rickets except:- a) Craniotabes b) Delayed closure of fontanelles c) Delayed dentition d) Harrison sulcus e) Frontal bossing	**D**
48. Flat occipital skull bones is known as:- a) Bossing b) Rachitic rosary c) Craniotabes d) Platybasia e) Trefoil appearance	**C**
49. Swelling of costo-chondral junctions in rickets is known as:- a) Frontal bossing b) Craniotabes c) Pigeon chest d) Rachitic rosary e) Harrison sulcus	**D**
50. Protrusion of sternum in rickets leads to the appearance of:- a) Frontal bossing b) Craniotabes c) Pigeon chest d) Rachitic rosary e) Harrison sulcus	**C**

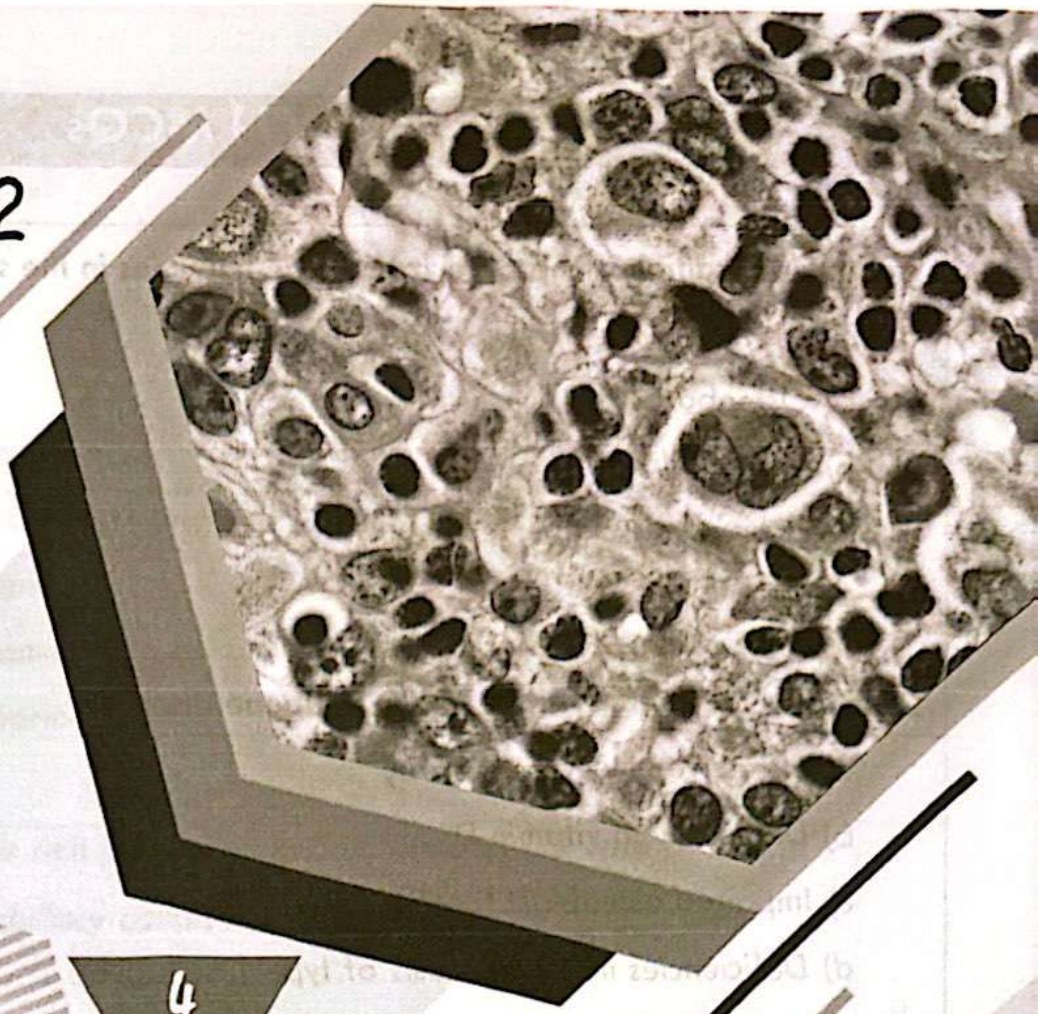
51. Which of the following is not a chest manifestation of rickets:- a) Craniotabes b) Rachitic rosary c) Harrison sulcus d) Pigeon chest e) Protruded sternum	**A**
52. Vertebral manifestations of rickets include all of the followings except:- a) Lordosis b) Scoliosis c) Kyphosis d) Trefoil appearance e) None of the above	**D**
53. Trefoil appearance in rickets is characteristic for:- a) Skull b) Chest c) Pelvis d) Vertebrae e) Femur	**C**
54. Increased osteoclast activity may occur as a consequence of:- a) Osteopetrosis b) Hyperparathyroidism c) Rickets d) Osteomalacia e) Osteogenesis imperfecta	**B**
55. Which of the following bone disorders can occur with MEN syndrome:- a) Osteogenesis imperfecta b) Osteopetrosis c) Osteomalacia d) Osteitis fibrosa cystica e) Paget disease	**D**

56. Chronic renal disease is associated with all of the followings except:- a) Secondary hyperparathyroidism b) Metabolic alkalosis c) Hyperphosphatemia d) Decreased activation of Vitamin D e) Osteomalacia	**B**
57. Which disorder isn't associated with hyperparathyroidism:- a) Marble bone change b) Osteoporosis c) Brown tumor d) Osteitis fibrosa cystica e) Osteitis fibrosa	**A**
58. Brown tumor is a characteristic finding of:- a) Osteopetrosis b) Rickets c) Osteogenesis imperfecta d) Osteomalacia e) Hyperparathyroidism	**E**
59. Osteitis fibrosa cystica can be found in case of:- a) Osteomalacia b) Rickets c) Osteogenesis imperfecta d) Hyperparathyroidism e) Osteomyelitis	**D**
60. Reparative giant cell granuloma of hyperparathyroidism refers to:- a) Osteitis fibrosa cystica b) Osteoporosis c) Brown tumor d) Rickets e) Paget disease	**C**

61. **Increased number of bizarre osteoclasts at moth-eaten bone trabeculae can be seen in:-** a) Osteomalacia b) Osteopetrosis c) Osteogenesis imperfecta d) Osteitis fibrosa e) Osteosarcoma	**D**
62. **SQSTM 1 gene mutation is involved in which of the following lesions:-** a) Osteogenesis imperfecta b) Osteopetrosis c) Rickets d) Hyperparathyroidism e) Paget disease	**E**
63. **Juvenile Paget disease of bone is associated with mutation in:-** a) SQSTM1 gene b) P53 gene c) RANK gene d) RB gene e) C-myc gene	**C**
64. **Viral infection of osteoclasts is involved in the pathogenesis of:-** a) Osteomalacia b) Paget disease c) Brown tumor d) Osteopetrosis e) Osteogenesis imperfecta	**B**
65. **Lion face (Leontiasis ossea) is a characteristic finding in:-** a) Paget disease b) Osteomalacia c) Rickets d) Osteogenesis imperfecta e) Osteomyelitis	**A**

66. Invagination of skull base in paget disease is referred to as:- a) Craniotabes b) Leontiasis ossea c) Platybasia d) Frontal bossing e) Kyphosis	**C**
67. Chalk stick type fracture of long bones is characteristic of:- a) Osteomalacia b) Paget disease c) Osteoporosis d) Osteopetrosis e) Osteomyelitis	**B**
68. Secondary osteosarcoma can occur as a result of:- a) Paget disease b) Osteomalacia c) Osteomyelitis d) Osteogenesis imperfecta e) Osteitis fibrosa cystica	**A**
69. Which of the following bone disorders may be associated with heart failure:- a) Osteomalacia b) Osteogenesis imperfecta c) Osteomyelitis d) Paget disease e) Rickets	**D**
70. The jigsaw puzzle like appearance of bone trabeculae is characteristic of:- a) Osteopetrosis b) Osteomalacia c) Paget disease d) Rickets e) Osteitis fibrosa cystica	**C**

Level 1
Semester2
MSK



4
L.E

L1

MCQ Pathology

Dr.Ahmed Hhassan

Lecture (1) MCQs

1. Which condition is characterized by deficiencies in the synthesis of type I collagen? a) Osteoporosis b) Osteomalacia c) Osteogenesis imperfecta d) Paget's disease	**C**
2. What is the primary cause of brittle bone disease? a) Excessive osteoclast activity b) Deficiency in vitamin D c) Impaired osteoblast function d) Deficiencies in the synthesis of type 1 collagen	**D**
3. Which disorder is characterized by a quantitative reduction in bone tissue mass without an underlying disease or medication? a) Osteoporosis b) Osteomalacia c) Osteopetrosis d) Osteitis fibrosa cystica	**A**
4. Which diagnostic method is used to measure bone density? a) X-ray b) Magnetic resonance imaging (MRI) c) Dual-energy x-ray absorptiometry (DEXA) d) Computed tomography (CT) scan	**C**

5. Osteogenesis imperfecta is caused by deficiencies in the synthesis of which type of collagen? a) Type I collagen b) Type II collagen c) Type III collagen d) Type IV collagen	A
6. What is the 1ry cause of osteomalacia in adults and rickets in children? a) Deficiency of vitamin D b) Deficiency of vitamin C c) Excess sodium fluoride content d) Hyperthyroidism	A
7. Which type of bone is rich in marrow and is found at the ends of long bones within the medullary canal? a) Cortical bone b) Cancellous bone c) Lamellar bone d) Osteoid bone	B
8. Which type of bone is characterized by an irregular arrangement of collagen fibers and signifies a pathologic condition in adults? a) woven bone b) Cancellous bone c) Lamellar bone d) Osteoid bone	A
9. Which cells within the bone produce osteoid, the bone protein? a) Osteoblasts b) Osteocytes c) Osteoclasts d) Chondrocytes	A

10. Which type of osteoporosis occurs in postmenopausal women and is characterized by a quantitative reduction in bone tissue mass without an underlying disease or medication? a) Idiopathic osteoporosis b) Involutional osteoporosis c) Secondary osteoporosis d) Metabolic osteoporosis	**B**
11. Which genetic disorder is characterized by a brittle bone disease and is caused by deficiencies in the synthesis of type I collagen? a) Osteogenesis imperfecta b) Achondroplasia c) Osteopetrosis d) Paget's disease	**A**
12. What is the primary risk factor for developing osteoporosis in postmenopausal women? a) Genetic factors b) Reduced physical activity c) Estrogen deficiency d) Vitamin D deficiency	**C**
13. Which type of bone is responsible for forming the adult skeleton? a) Cortical bone b) Cancellous bone c) Lamellar bone d) Osteoid bone	**C**

14. Which condition is characterized by the formation of dense, stone-like bone that occupies most of the available marrow space but provides poor structural support? a) Osteogenesis imperfecta b) Osteopetrosis c) Osteoporosis d) Osteomalacia	**B**
15. Which vitamin deficiency is associated with subperiosteal hemorrhages? a) Vitamin A deficiency b) Vitamin C deficiency c) Vitamin D deficiency d) Vitamin K deficiency	**B**
16. Gigantism and acromegaly are caused by hypersecretion of hormones from which gland? a) Pituitary gland b) Thyroid gland c) Adrenal gland d) Parathyroid gland	**A**
17. Which condition is characterized by impaired osteoclast function or formation, leading to decreased bone resorption and an excess of bone formation? a) Osteoporosis b) Osteomalacia c) Osteopetrosis d) Osteogenesis imperfecta	**C**

18. Which condition is characterized by abnormal bone remodeling, resulting in enlarged and deformed bones? a) Osteogenesis imperfecta b) Achondroplasia c) Osteopetrosis d) Paget's disease	**D**
19. What is the primary cause of rickets in children? a) Vitamin D deficiency b) Vitamin C deficiency c) Excess sodium fluoride content d) Hyperparathyroidism	**A**
20. What is the cause of rickets in children? a) Insufficient exposure to sunlight b) Decreased intake or absorption of vitamin D c) Prematurity d) Increased demands for calcium e) all of the above	**E**
21. In rickets, what happens to the cartilage cells at the epiphyseal line? a) They calcify and degenerate b) They continue to proliferate and lay down chondroid matrix c) They transform into osteoblasts d) They are replaced by capillary loops	**B**
22. Which skeletal deformity is commonly seen in rickets? a) Bow legs b) Kyphosis c) Pigeon chest d) Lordosis	**A**

23. Which hormone plays a central role in Ca homeostasis and ↑ bone resorption? a) Parathyroid hormone (PTH) b) Calcitonin c) Thyroid-stimulating hormone (TSH) d) Growth hormone (GH)	A
24. Which condition is characterized by increased osteoclast activity, bone resorption, and osteopenia due to excess production and activity of PTH? a) Osteoporosis b) Osteopetrosis c) Osteitis fibrosa cystica d) Paget's disease	C
25. What is the hallmark feature of Paget's disease of bone in the sclerotic phase? a) Mosaic pattern of lamellar bone b) Numerous large osteoclasts and resorption pits c) Prominent osteoblasts lining bone surfaces d) Enlargement of the craniofacial skeleton	A
26. Vitamin D deficiency leading to impaired mineralization and accumulation of unmineralized matrix primarily affects: a) Cartilage cells b) Osteoblasts c) Osteoclasts d) Capillary loops	A

27. Which of the following is a characteristic feature of rickets in children? a) Delayed closure of sutures and fontanels b) barrel chest c) Kyphosis, lordosis, or scoliosis d) Enlargement of the craniofacial skeleton	A
28. Which hormone is responsible for increased osteoclast activity, bone resorption, and osteopenia in hyperparathyroidism? a) Parathyroid hormone (PTH) b) Thyroid-stimulating hormone (TSH) c) Growth hormone (GH) d) Insulin-like growth factor (IGF)	A
29. Which condition is characterized by the replacement of bone and bone marrow by fibrosis, bizarre osteoclasts, and the development of cysts? a) Osteoporosis b) Osteitis fibrosa cystica c) Paget's disease d) Osteosarcoma	B
30. Which phase of Paget's disease of bone is characterized by a predominant osteoblastic activity? a) Osteolytic stage b) Mixed osteoclastic-osteoblastic stage c) Osteosclerotic stage d) Quiescent stage	B
31. What is the major cause of vitamin D deficiency in adults? a) Defective intake or exposure to sunlight b) Increased demands for calcium c) Prematurity d) Decreased absorption of vitamin D	A

32. Which condition is associated with an incidental radiographic finding, axial skeleton or proximal femur involvement, and the potential development of leontiasis ossea? a) Osteoporosis b) Rickets c) Paget's disease d) Osteosarcoma	**C**
33. In rickets, what happens to the ends of long bones? a) They become calcified b) They thicken due to the deposition of unmineralized matrix c) They degenerate and are replaced by capillary loops d) They develop green stick fractures	**B**
34. Which feature is characteristic of osteomalacia in the skull? a) Delayed dentition b) Rosary chest c) Kyphosis d) Craniotabes (flat occipital bones)	**D**
35. In rickets, what happens to the cartilage cells at the epiphyseal line? a) They calcify and degenerate b) They continue to proliferate and lay down chondroid matrix c) They transform into osteoblasts d) They are replaced by capillary loops	**B**
36. What is the characteristic skeletal deformity seen in rickets? a) Bow legs (genu varum) b) Knock knees (genu valgum) c) Scoliosis d) Clubfoot (talipes equinovarus)	**A**

37. What is the radiographic finding associated with Paget's disease characterized by areas of increased bone density with a mosaic pattern? a) Osteolytic lesions b) Osteosclerotic lesions c) Fracture lines d) Osteochondromas	**B**
38. Osteomalacia is a metabolic disorder characterized by: a) Increased bone resorption b) Excess deposition of calcium in bone c) Impaired mineralization of bone matrix d) Deficiency of osteoclasts	**C**
39. Osteitis fibrosa cystica is a complication of: a) Osteoporosis b) Rickets c) Osteomalacia d) Paget's disease	**D**
40. Which stage of Paget's disease is characterized by a mixture of increased osteoclastic and osteoblastic activity? a) Osteolytic stage b) Osteosclerotic stage c) Quiescent stage d) Mixed osteoclastic-osteoblastic stage	**D**
41. Patient with Paget's disease of bone, is vulnerable to development of: A. Osteomyelitis B. Osteoblastoma C. Fibrous dysplasia D. Osteosarcoma	**D**

Level-1 Semester-2

Pathology - MSS

BERLIN

8L.E

SCAN ME

MCQ Lecture 1

Osteodystrophy

DR M. YUSUF

MCQ on Osteodystrophy

1. **The following is NOT a cause of osteoporosis:-** a) Old age b) Chronic osteomyelitis c) Cushing syndrome d) Hyperthyroidism e) Malnutrition	B
2. **In Paget disease of bone, which is true:-** a) Rarely affects skull b) May cause heart failure c) May be complicated by the development of osteochondroma d) Is associated with lower levels of serum alkaline phosphatase e) Usually appears before the age of 40	B
3. **Mosaic pattern of bone trabeculae is characteristic feature of:-** a) Osteoporosis b) Rickets c) Osteomalacia d) Osteitis fibrosa cystica e) Paget's disease	E
4. **The following bone disease may predispose to osteosarcoma:-** a) Osteoporosis b) Rickets c) Osteomalacia d) Osteitis fibrosa cystica e) Paget's disease	E
5. **Osteoporosis is a:-** a) Congenital disease b) Inflammatory disease c) Metabolic disorder d) Inherited disorder e) Neoplastic disorder	C

6. In osteoporosis, which is true:- a) Decreased incidence of bone fracture b) An association with Cushing syndrome c) A lack of active Vitamin D d) Reduction of bone mineralization e) Thickening of cortical bones	B
7. Rickets is a:- a) Congenital disease b) Inflammatory disease c) Metabolic disorder d) Inherited disorder e) Neoplastic disorder	C
8. Rickets is characterized by:- a) Defective bone formation b) Decrease in the total mass of bone without structural abnormalities c) Decrease in the total mass of bone with other structural abnormalities d) Deficient mineralization of bone e) Disturbance of the architecture of bone	D
9. The cause of rickets is:- a) Immobilization b) Endocrine disorder c) Vit D deficiency d) Primary biliary cirrhosis e) Hyperparathyroidism	C
10. Craniotabes is characteristic feature of:- a) Osteoporosis b) Rickets c) Osteomalacia d) Osteitis fibrosa cystica e) Paget's disease	B

11. All the followings are signs of rickets except:- a) Rachitic rosary b) Harrison sulcus c) Frontal bossing d) Leontiasis ossea e) Pigeon chest	D
12. All these changes occur in rickets except:- a) Thickening of costo-chondral junction b) Failure of calcification of osteoid tissue c) Bossing of frontal and parietal skull bones d) Hypercalcemia e) Delayed eruption of teeth	D
13. Which of the followings is characterized by deficient synthesis of collagen type 1 fibers:- a) Osteopetrosis b) Osteogenesis imperfecta c) Rickets d) Paget disease e) Osteitis fibrosa cystica	B
14. Brittle bone disease is caused by:- a) Increased osteoclast activity b) Decreased osteoclast activity c) Hereditary deficiency of collagen type 1 d) Vitamin D deficiency e) Hyperparathyroidism	C
15. Quantitative reduction in otherwise normal bone refers to:- a) Osteopetrosis b) Rickets c) Osteoporosis d) Osteogenesis imperfecta e) Osteitis deformans	C

16. Which of the followings is a congenital bone disease:- a) Rickets b) Osteomalacia c) Achondroplasia d) Osteoporosis e) Paget disease	C
17. Which of the followings is a metabolic bone disease:- a) Osteopetrosis b) Achondroplasia c) Osteomalacia d) Osteomyelitis e) Osteosarcoma	C
18. Mode of inheritance in Osteogenesis imperfecta:- a) Autosomal dominant b) Autosomal recessive c) X-linked dominant d) X-linked recessive e) Multimodal inheritance	A
19. Blue sclera, hearing defect & dental abnormalities are associated with:- a) Osteopetrosis b) Osteomalacia c) Osteoporosis d) Osteogenesis imperfecta e) Paget disease	D
20. Marble bone disease is associated with:- a) Osteogenesis imperfecta b) Osteopetrosis c) Osteomalacia d) Osteomyelitis e) Osteoporosis	B

21. Which of the following lesions is associated with dense stone like bone formation:- a) Osteomalacia b) Rickets c) Osteopetrosis d) Osteogenesis imperfecta e) Osteoporosis	C
22. Which of the following lesions is caused by impaired osteoclast activity:- a) Osteogenesis imperfecta b) Osteoporosis c) Osteopetrosis d) Osteomyelitis e) Osteosarcoma	C
23. Mode of inheritance in lethal form of osteopetrosis:- a) X-linked in adults b) X-linked in infants c) Autosomal dominant in adults d) Autosomal recessive in infants e) Autosomal dominant in infants	D
24. Bone marrow suppression is a common association with:- a) Osteogenesis imperfecta b) Osteopetrosis c) Osteomalacia d) Paget disease e) Osteochondroma	B
25. The main cause in the development of osteopetrosis:- a) Defect synthesis in collagen type 1 b) Vitamin D deficiency c) Hyperparathyroidism d) Impaired osteoclast activity e) Increased osteoclast activity	D

26. Qualitative abnormality with defect in bone mineralization is seen in:- a) Rickets b) Osteoporosis c) Osteopetrosis d) Osteogenesis imperfecta e) Paget disease	A
27. Scurvy is caused by deficiency in which vitamin:- a) Vit A b) Vit D c) Vit B d) Vit C e) Vit K	D
28. Subperiosteal hemorrhage can be seen in which hormone deficiency:- a) Vit A b) Vit B c) Vit C d) Vit D e) Vit E	C
29. Gigantism & acromegaly are caused by:- a) Hyperpituitarism b) Hypopituitarism c) Hyperthyroidism d) Hypothyroidism e) Hypogonadism	A
30. Which renal disease can lead to renal osteodystrophy:- a) Chronic renal failure b) Renal cyst c) Renal cell carcinoma d) Acute renal failure e) Acute glomerulonephritis	A

31. Which of the following is classified as primary osteoporosis:- a) Postmenopausal osteoporosis b) Endocrinopathy c) Malnutritional osteoporosis d) Drug-induced osteoporosis e) Osteoporosis with immobilization	*A*
32. Involutional type-osteoporosis is seen in:- a) Malnutrition b) Corticosteroids c) Hyperthyroidism d) Aging individuals e) Young and juveniles	*D*
33. The most common risk factor of osteoporosis is:- a) Malnutrition b) Malabsorption c) Post-menopausal estrogen deficiency d) Hyperthyroidism e) Cushing syndrome	*C*
34. Idiopathic type-osteoporosis is seen in:- a) Young and juveniles b) Post-menopausal estrogen deficiency c) Aging individuals d) Cushing syndrome e) Hyperthyroidism	*A*
35. All of the following endocrine disorders can lead to osteoporosis except:- a) Hypogonadism b) Hypergonadism c) Hyperthyroidism d) Hyperparathyroidism e) Cushing syndrome	*B*

36. The commonest site affected by osteoporosis:- a) Femur b) Vertebral bodies c) Pelvic bones d) Metacarpal bones e) Skull bones	B
37. Significant loos of weight may occur as a result of:- a) Rickets b) Osteomalacia c) Osteopetrosis d) Vertebral osteoporosis e) Osteogenesis imperfecta	D
38. The main radiological modality for diagnosis osteoporosis is:- a) Conventional radiography b) Ultra sound c) DEXA scan d) MRI e) Angiography	C
39. DEXA scan is performed mainly for:- a) Measurement of bone mineralization b) Detection of periosteal elevation c) Detection of collagen type d) Measurement of bone density e) None of the above	D
40. Bisphosphonates are used for treatment of:- a) Osteoporosis b) Osteopetrosis c) Rickets d) Osteomalacia e) Osteomyelitis	A

41. Vitamin D deficiency in adults leads to:- a) Rickets b) Osteomalacia c) Osteoporosis d) Osteomyelitis e) Osteosarcoma	B
42. Accumulation of unmineralized matrix is a characteristic feature of:- a) Osteoporosis b) Paget disease c) Hyperparathyroidism d) Rickets e) Osteopetrosis	D
43. All of the followings are features of osteomalacia except:- a) Bending of femur and tibia b) Contracted pelvis c) Bone marrow failure d) Increased lumbar lordosis e) High susceptibility to fractures	C
44. Childhood manifestation of defective bone mineralization refers to:- a) Osteoporosis b) Osteomalacia c) Paget disease d) Rickets e) Osteogenesis imperfecta	D
45. All of the followings are causes of rickets except:- a) Increased Vit D uptake b) Decreased exposure to sunlight c) Premature infants d) Hypocalcemia e) Defective absorption of Vit D	A

46. Which of the following features is consistent with rachitic metaphysis:- a) Calcified matrix between chondrocyte columns b) Non degeneration of cartilage cells c) Cartilage cells replaced by capillary loops d) Lamellar bone formation e) Osteoid matrix deposition	B
47. All of the followings are skull manifestations of rickets except:- a) Craniotabes b) Delayed closure of fontanelles c) Delayed dentition d) Harrison sulcus e) Frontal bossing	D
48. Flat occipital skull bones is known as:- a) Bossing b) Rachitic rosary c) Craniotabes d) Platybasia e) Trefoil appearance	C
49. Swelling of costo-chondral junctions in rickets is known as:- a) Frontal bossing b) Craniotabes c) Pigeon chest d) Rachitic rosary e) Harrison sulcus	D
50. Protrusion of sternum in rickets leads to the appearance of:- a) Frontal bossing b) Craniotabes c) Pigeon chest d) Rachitic rosary e) Harrison sulcus	C

51. Which of the following is not a chest manifestation of rickets:- a) Craniotabes b) Rachitic rosary c) Harrison sulcus d) Pigeon chest e) Protruded sternum	A
52. Vertebral manifestations of rickets include all of the followings except:- a) Lordosis b) Scoliosis c) Kyphosis d) Trefoil appearance e) None of the above	D
53. Trefoil appearance in rickets is characteristic for:- a) Skull b) Chest c) Pelvis d) Vertebrae e) Femur	C
54. Increased osteoclast activity may occur as a consequence of:- a) Osteopetrosis b) Hyperparathyroidism c) Rickets d) Osteomalacia e) Osteogenesis imperfecta	B
55. Which of the following bone disorders can occur with MEN syndrome:- a) Osteogenesis imperfecta b) Osteopetrosis c) Osteomalacia d) Osteitis fibrosa cystica e) Paget disease	D

56. Chronic renal disease is associated with all of the followings except:- a) Secondary hyperparathyroidism b) Metabolic alkalosis c) Hyperphosphatemia d) Decreased activation of Vitamin D e) Osteomalacia	B
57. Which disorder isn't associated with hyperparathyroidism:- a) Marble bone change b) Osteoporosis c) Brown tumor d) Osteitis fibrosa cystica e) Osteitis fibrosa	A
58. Brown tumor is a characteristic finding of:- a) Osteopetrosis b) Rickets c) Osteogenesis imperfecta d) Osteomalacia e) Hyperparathyroidism	E
59. Osteitis fibrosa cystica can be found in case of:- a) Osteomalacia b) Rickets c) Osteogenesis imperfecta d) Hyperparathyroidism e) Osteomyelitis	D
60. Reparative giant cell granuloma of hyperparathyroidism refers to:- a) Osteitis fibrosa cystica b) Osteoporosis c) Brown tumor d) Rickets e) Paget disease	C

61. Increased number of bizarre osteoclasts at moth-eaten bone trabeculae can be seen in:- a) Osteomalacia b) Osteopetrosis c) Osteogenesis imperfecta d) Osteitis fibrosa e) Osteosarcoma	D
62. SQSTM 1 gene mutation is involved in which of the following lesions:- a) Osteogenesis imperfecta b) Osteopetrosis c) Rickets d) Hyperparathyroidism e) Paget disease	E
63. Juvenile Paget disease of bone is associated with mutation in:- a) SQSTM1 gene b) P53 gene c) RANK gene d) RB gene e) C-myc gene	C
64. Viral infection of osteoclasts is involved in the pathogenesis of:- a) Osteomalacia b) Paget disease c) Brown tumor d) Osteopetrosis e) Osteogenesis imperfecta	B
65. Lion face (Leontiasis ossea) is a characteristic finding in:- a) Paget disease b) Osteomalacia c) Rickets d) Osteogenesis imperfecta e) Osteomyelitis	A

66. Invagination of skull base in paget disease is referred to as:- a) Craniotabes b) Leontiasis ossea c) Platybasia d) Frontal bossing e) Kyphosis	C
67. Chalk stick type fracture of long bones is characteristic of:- a) Osteomalacia b) Paget disease c) Osteoporosis d) Osteopetrosis e) Osteomyelitis	B
68. Secondary osteosarcoma can occur as a result of:- a) Paget disease b) Osteomalacia c) Osteomyelitis d) Osteogenesis imperfecta e) Osteitis fibrosa cystica	A
69. Which of the following bone disorders may be associated with heart failure:- a) Osteomalacia b) Osteogenesis imperfecta c) Osteomyelitis d) Paget disease e) Rickets	D
70. The jigsaw puzzle like appearance of bone trabeculae is characteristic of:- a) Osteopetrosis b) Osteomalacia c) Paget disease d) Rickets e) Osteitis fibrosa cystica	C

Level-1 Semester-2

Pathology - MSS

BERLIN

SCAN ME

MCQ Lecture 2

Osteomyelitis

DR M. YUSUF

MCQ on Osteomyelitis

1. What is the site at which acute suppurative hematogenous osteomyelitis begins:- a) Metaphysis b) Epiphysis c) Diaphysis d) Synovium e) Joint space	**A**
2. Sequestrum in osteomyelitis consists of:- a) Osseous metaplasia of skeletal muscles b) Necrotic bone c) Malignant bone d) Sinuses from the infection to skin surface e) Sub-periosteal new bone formation	**B**
3. Involcurum in osteomyelitis consists of:- a) Osseous metaplasia of skeletal muscles b) Necrotic bone c) Malignant bone d) Sinuses from the infection to skin surface e) Sub-periosteal new bone formation	**E**
4. The characteristic inflammatory cell is chronic osteomyelitis is:- a) Macrophage b) Lymphocyte c) Plasma cell d) Eosinophil e) Neutrophil	**C**
5. All of the followings are true about acute osteomyelitis except:- a) Is most commonly caused by staphylococcus aureus b) May be complicated by septicemia c) May result in the formation of sequestrum d) More commonly affects females above 60 years old e) Acute hematogenous osteomyelitis usually affects the metaphysis	**D**

6. <u>The characteristic inflammatory cell in acute osteomyelitis is:-</u> a) Plasma cells b) Neutrophils c) Lymphocytes d) Macrophages e) Eosinophils	**B**
7. <u>Pott's disease is:-</u> a) Tuberculosis of vertebral bodies b) Tuberculosis of long bones c) Acute non hematogenous osteomyelitis d) Acute hematogenous osteomyelitis e) Malignant tumor of cartilage	**A**
8. <u>The commonest site of hematogenous osteomyelitis is:-</u> a) Epiphysis of long bones b) Metaphysis of long bones c) Short bones d) Flat bones e) Synovial joint	**B**
9. <u>In acute hematogenous osteomyelitis, all are true except:-</u> a) Most commonly caused by staph aureus b) Not associated with subperiosteal abscess c) May be complicated by septicemia d) May result in the formation of sequestrum e) Produces Involucrum	**B**
10. <u>A necrotic dead piece of bone in osteomyelitis is called:-</u> a) Involucrum b) Sequestrum c) Woven bone d) Lamellar bone e) Cancellous bone	**B**

11. Pyogenic osteomyelitis is associated with all of the following except:- a) Subperiosteal abscess b) Pott's disease c) Sequestrum formation d) Sinus with skin e) Involcurum formation	**B**
12. The followings are features of osteomyelitis except:- a) Is frequently caused by staphylococcus aureus b) Commonly involves the epiphysis of long bones c) May be a cause of amyloid disease if becomes chronic d) May be a cause of pathological fracture e) Sequestrum is a separated necrotic bone by osteoclastic resorption	**B**
13. Cloaca in osteomyelitis means:- a) Metaphysis of skeletal muscle b) Necrotic bone c) Malignancy bone d) Sinuses to skin surface e) Sub-periosteal new bone formation	**D**
14. In acute hematogenous osteomyelitis in children, infection usually doesn't reach the joint cavity because:- a) The causative organism is usually weak b) Infection usually doesn't spread c) The epiphyseal cartilage is a good barrier d) Fibroblasts prevent the spread to the joint e) Osteoclasts erode the necrotic bone	**C**
15. What is the commonest site for Pott's disease:- a) Diaphysis of long bones b) Metaphysis of long bones c) Ribs and skull d) Small bones of the hands and feet e) Vertebral bodies of the vertebral column	**E**

16. **Which of the followings is not a complication of acute hematogenous osteomyelitis:-** a) Recurrence b) Chronicity c) Amyloidosis d) Pathological fracture e) Sinus formation	C
17. **Acute hematogenous osteomyelitis in children most commonly occurs in:-** a) Epiphysis of long bones b) Vertebral bodies c) Diaphysis of long bones d) Short bones e) Metaphysis of long bones	E
18. **Bones mostly affected in acute hematogenous osteomyelitis:-** a) Lower femur and upper tibia (Around knee) b) Lower tibia c) Around the shoulder joint d) Upper femur e) Around the elbow joint	A
19. **Metaphysis of lower femur and upper tibia in children are more susceptible for acute hematogenous osteomyelitis because:-** a) They are slowly growing b) They are rapidly growing and highly vascular c) They have narrow blood vessels d) They lie near to the skin e) They are avascular	B
20. **Acute osteomyelitis in adults most commonly occurs in which of the following sites:-** a) Metaphysis of long bones b) Epiphysis of long bones c) Short bones d) Lower end of femur e) Vertebral bodies	E

21. Bordie abscess forms as a result of:- a) Chronicity and surrounding by sclerotic bone b) Direct spread of infection c) Malignant transformation d) Pathological fracture e) Rupture of an acute abscess	**A**
22. Recurrent multifocal OM is classified as:- a) Acute bacterial osteomyelitis b) Chronic bacterial osteomyelitis c) Culture negative osteomyelitis d) TB osteomyelitis e) Fungal osteomyelitis	**C**
23. The most common organism responsible for acute osteomyelitis is:- a) Strept pneumonia b) Klebsiella c) Salmonella d) Staph aureus e) Pseudomonas	**D**
24. The most common organism responsible for post-traumatic osteomyelitis is:- a) Strept pneumonia b) Klebsiella c) Salmonella d) Staph aureus e) Pseudomonas	**E**
25. The main cause of osteomyelitis is sickle cell patients is:- a) Strept pneumonia b) Klebsiella c) Salmonella d) Staph aureus e) Pseudomonas	**C**

26. Hematogenous osteomyelitis can result from all of the followings except:- a) Trauma b) Endocarditis c) Hemodialysis d) Indwelling catheter e) IV drug addiction	**A**
27. The most common route of infection in acute osteomyelitis is:- a) Trauma b) Surgery c) Diabetes d) Hematogenous infection e) Decubitus ulcers	**D**
28. Strept agalactiae infection is associated with osteomyelitis in:- a) Sickle cell patients b) Post traumatic c) Neonatal age group d) IV drug addicts e) Post traumatic osteomyelitis	**C**
29. Which of the followings is not a routine laboratory investigation in acute osteomyelitis:- a) Anti-nuclear antibodies b) Complete blood count c) CRP d) ESR e) Blood culture	**A**
30. Which of the followings is not a radiological finding in acute OM:- a) Soft tissue swelling b) Osteopetrosis c) Radiolytic lesion d) Periosteal reaction e) Cortical loss	**B**

31. The radiological modality with negative predictive value in osteomyelitis:- a) MRI b) CT c) U/S d) DEXA scan e) X-ray	**A**
32. Chronicity in acute OM can result from:- a) Delayed treatment b) Weak host immunity c) Inadequate antibiotics d) Incomplete surgical debridement e) All of the above	**E**
33. Empty osteocyte cavities in bone trabeculae is characteristic of:- a) Involcurum b) Sinus tract c) Sequestrum d) Micro-abscess e) Fibrinous exudate	**C**
34. Microabscesses in acute osteomyelitis is defined as:- a) Presence of 5 or more segmented neutrophils b) Presence of 5 or more mononuclear cells c) Presence of 5 or more plasma cells d) Presence of 10 or more segmented neutrophils e) Presence of 5 or more giant cells around dead bone	**A**
35. The most common site of chronic osteomyelitis is:- a) Shoulder bone b) Vertebral bodies c) Femur d) Carpals & metacarpals e) Tarsals & metatarsals	**E**

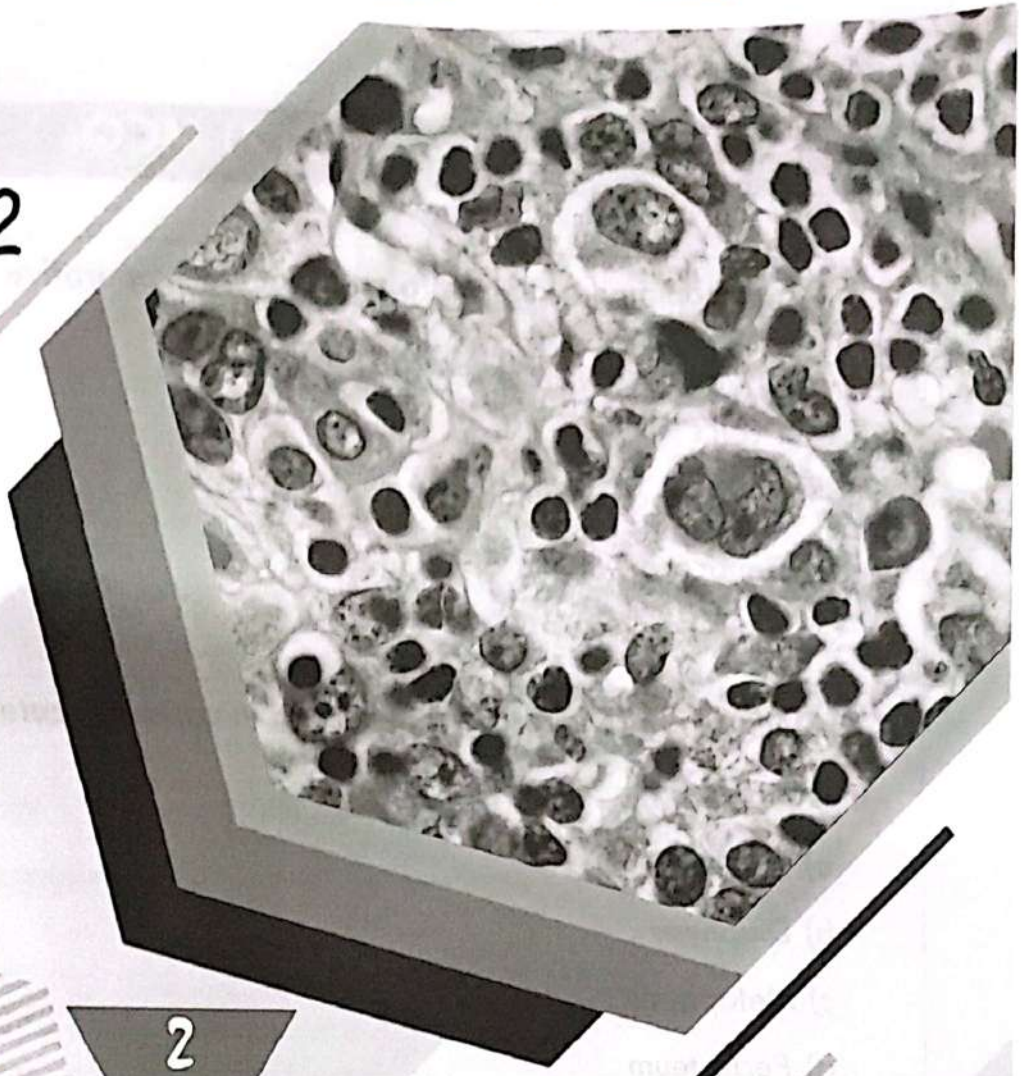
36. The most common mode of infection in chronic osteomyelitis:- a) Hematogenous spread b) Contiguous spread c) Lymphatic spread d) Trans-membranous spread e) Septicemia	***B***
37. The most important poor prognostic factor in chronic OM:- a) Presence of skeletal deformity b) Presence of endocarditis c) Old age group d) Diabetes mellitus e) Hypertension	***D***
38. The main malignant transformation in chronic osteomyelitis is:- a) Osteosarcoma in bone b) Chondrosarcoma c) Squamous cell carcinoma in sinus tract d) Giant cell tumor of bone e) Giant cell tumor in sinus tract	***C***
39. All of the followings are microscopic features of chronic OM except:- a) Plasma cell infiltrate b) Variable fibrosis c) Necrotic bone d) Neutrophilic infiltrate e) None of the above	***D***
40. Which of the followings is characterized by inflammatory symptoms in children that resolves with time:- a) Recurrent multifocal OM b) Sclerosing OM c) Bordie abscess d) TB osteomyelitis e) Fungal osteomyelitis	***A***

41. Which of the followings is not characteristic for recurrent multifocal OM:- a) Common in children b) Malignant transformation c) Erythema d) Pain e) Resolves with time	**B**
42. The most common site of sclerosing OM in children:- a) Humerous b) Pubis c) Femur d) Jaw e) Tibia	**D**
43. The most common site of sclerosing OM in adults:- a) Humerous b) Pubis c) Femur d) Jaw e) Tibia	**B**
44. Which of the following diseases is characterized by extensive bone formation:- a) Recurrent multifocal OM b) Acute OM c) Sclerosing OM of Garre d) TB OM e) Fungal OM	**C**
45. All are true about sclerosing OM except:- a) Associated with severe inflammatory symptoms b) Associated with pain c) Common in children in jaw d) In adults affects pubis e) Extensive bone formation	**A**

46. Which of the following is localized form of Om in long bone:- a) Sclerosing OM b) Bordie abscess c) Recurrent multifocal OM d) TB OM e) Fungal OM	**B**
47. Pott's disease of the spine usually affects:- a) Cervical & thoracic regions b) Thoracic & sacral regions c) Cervical & lumbar regions d) Thoracic & lumbar regions e) Lumbar & sacral regions	**D**
48. Which lesion is characterized by caseating granuloma formation:- a) Sclerosing OM b) Acute OM c) TB OM d) Recurrent multifocal OM e) Bordie abscess	**C**
49. Fungal OM in adults usually affects:- a) Skull bones b) Ribs c) Humeral & femoral bones d) Vertebral bodies e) Pelvic bones	**D**
50. Fungal OM in pediatrics usually affects:- a) Skull bones b) Ribs c) Humeral & femoral bones d) Vertebral bodies e) Pelvic bones	**C**

Level 1
Semester2

MSK



2
L.E

L2

MCQ Pathology

Dr.Ahmed Hhassan

Lecture (2) MCQs

1. The most common organism to cause acute suppurative osteomyelitis is: a) Staph aureus b) E coli c) Streptococcus hemolyticus d) Gonococci e) Menigiococci	**A**
2. The following site is resistant to spread in cases of acute hematogenous osteomyelitis: a) Epiphysis b) Diaphysis c) Metaphysis d) Periosteum e) Endosteum	**A**
3. The following is not a cause of hematogenous suppurative osteomyelitis a) Staph aureus b) E.Coli c) Klebsiella d) Streptococci e) None of the above	**C**
4. Acute hematogenous osteomyelitis affects a) Epiphysis b) Diaphysis c) Metaphysis d) Periosteum e) Endosteum	**C**

5. The characteristic inflammatory cell in acute osteomyelitis is: a) *Plasma cells* b) *Neutrophils* c) *Lymphocytes* d) *Macrophages* e) *Eosinophils*	**B**
6. In acute suppurative osteomyelitis, the inflamed bone become necrotic due to: a) *Bacterial toxins* b) *Ischemia caused by inflammatory thrombosis* c) *Ischemia due to compression of vessels by exudates* d) *All of the above* e) *None of the above*	**D**
7. All of the followings are true about acute osteomyelitis except: a) *is most commonly caused by staphylococcus aureus* b) *May be complicated by septicemia* c) *May result in the formation of sequestrum* d) *More commonly affects females above 60 years old* e) *Acute hematogenous osteomyelitis usually affects the knee region*	**D**
8. The most common joint to be affected by acute hematogenous osteomyelitis is: a) *Shoulder* b) *Knee* c) *Elbow* d) *Sacroiliac* e) *Ankle*	**B**

9. Separated necrotic bone is called a) Sequestrum b) Involucrum c) Cloaca d) Brodie abscess e) None of the above	A
10. The commonest site of hematogenous osteomyelitis is: a) Epiphysis of long bones b) Metaphysis of long bones c) Short bones d) Flat bones	B
11. Sequestrum in osteomyelitis consists of: a) Osseous metaplasia of skeletal muscles b) Necrotic bone c) Malignant bone d) Sinuses from the infection to skin surface e) Sub-periosteal new bone formation	B
12. The characteristic inflammatory cell is chronic osteomyelitis is: a) Macrophage b) Lymphocyte c) Plasma cell d) Eosinophil e) Neutrophil	B
13. A necrotic dead piece of bone in osteomyelitis is called: a) Involucrum b) Sequestrum c) Woven bone d) Lamellar bone e) Cancellous bone	B

14. Pott's disease of the spine is caused by: a) Staph b) Strept c) Syphilis d) Tuberculosis e) Unknown cause	**D**
15. In Tuberculous osteomyelitis which is true: *a) Type of acute osteomyelitis* *b) Still very common in developed countries.* *c) Never follow pulmonary tuberculosis* *d) Called paget's disease of bone* *e) Liquifaction of necrotic bones of the vertebral bodies leads to kyphosis and scoliosis*	***E***
16. Sinus tract of Chronic osteomyelitis is liable for: *a) Adenocarcinoma* *b) Malignant melanoma* *c) Basal cell carcinoma* *d) Squamous cell carcinoma* *e) Fibrinoid necrosis*	***D***
17. All the following are complications of Acute hematogenous osteomyelitis except: *a) Toxaemia* *b) Septicemia.* *c) Thrombophlebitis* *d) Primary amyloidosis.* *e) Pathological fractures.*	***D***

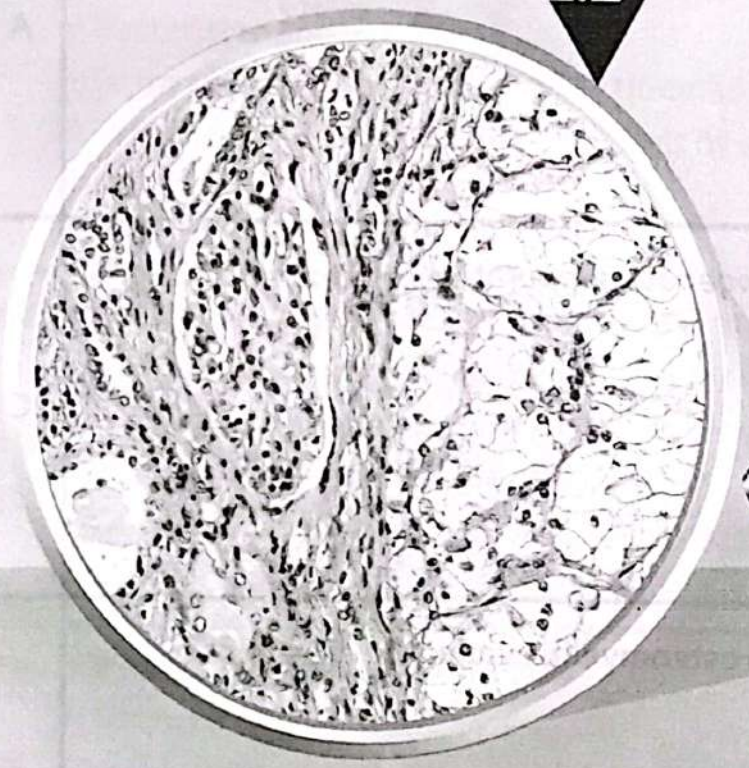
Level 1
semester 2

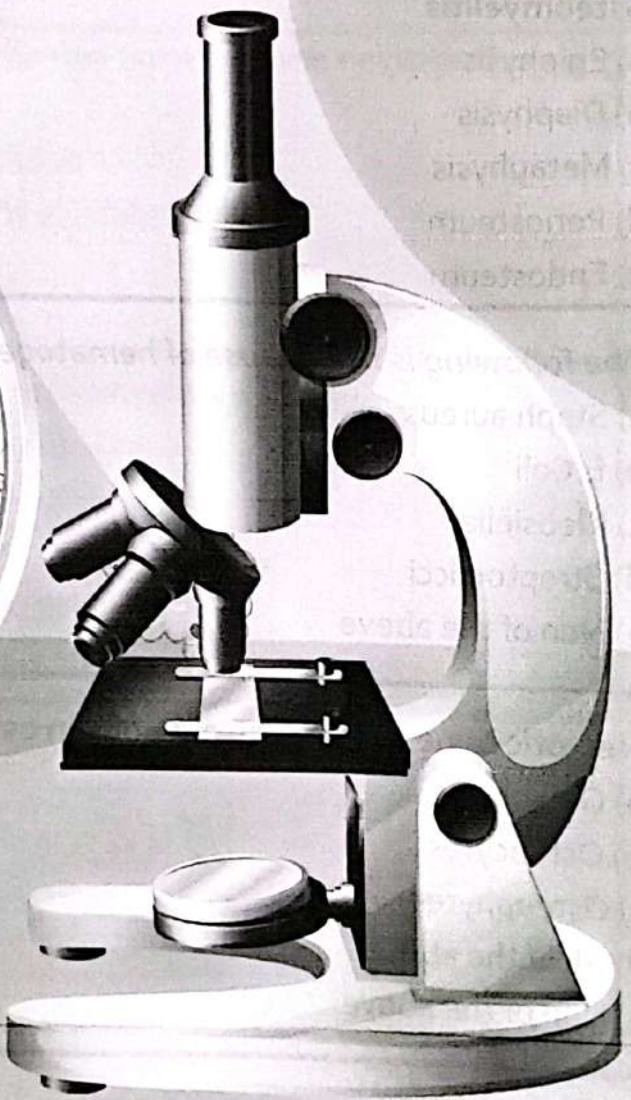
Pathology

MCQ

LECTURE 2

3
L.E





DR/ M. Sh.

MCQ ON LECTURE 2

1. The most common organism to cause acute suppurative osteomyelitis is a) Staph aureus b) E coli c) Streptococcus hemolyticus d) Gonococci e) Menigiococci	A
2. The most common joint to be affected by acute suppurative hematogenous osteomyelitis is a) Shoulder b) Knee c) Elbow d) Sacroiliac e) Ankle	B
3. The following site is resistant to spread in cases of acute hematogenos osteomyelitis a) Epiphysis b) Diaphysis c) Metaphysis d) Periosteum e) Endosteum	A
4. The following is not a cause of hematogenous suppurative osteomyelitis a) Staph aureus b) E.Coli c) Klebsiella d) Streptococci e) Non of the above	C
5. Necrotic bone separates from bone in osteomyelitis under the effect of a) Osteoblast b) Osteocytes c) Osteophytes d) All of the above e) Non of the above	E

6. Chronic osteomyelitis is characterized by all except a) Disappearance of neutrophils b) Appearance of lymphocytes and plasma cells c) Malignancy may be a complication d) Decreased reparative activity e) Secondary amyloidosis may occur	D
7. Acute suppurative hematogenous osteomyelitis affects *a) Epiphysis* b) Diaphysis c) Metaphysis d) Periosteum e) Endosteum	C
8. The characteristic inflammatory cell in acute osteomyelitis is:- a) Plasma cells b) Neutrophils c) Lymphocytes d) Macrophages e) *Eosinophils*	B
9. In acute supuurative osteomyelitis , the inflamed bone become necrotic due to a) Bacterial toxins b) Ischemia caused by inflammatory thrombosis c) Ischemia due to compression of vessels by exudates d) All of the above e) Non of the above	D
10. All of the followings are true about acute osteomyelitis except:- a) is most commonly caused by staphylococcus aureus b) May be complicated by septicemia c) May result in the formation of sequestrum d) More commonly affects females above 60 years old e) Acute hematogenous osteomyelitis usually affects the knee region	D
11. Separated necrotic bone is called a) Sequestrum b) Involucrum c) Cloaca d) Brodie abscess e) Non of the above	A

12. The part of bone that is resistant to spread of suppurative osteomyelitis is a) Epiphysis b) Metaphysis c) Diaphysis d) Any of the above e) Non of the above	A
13. The commonest site of hematogenous osteomyelitis is:- a) Epiphysis of long bones b) Metaphysis of long bones c) Short bones d) Flat bones	B
14. New deposited bone in acute hematogenous suppurative osteomyelitis is called a) Sequestrum b) Involucrum c) Cloaca d) Brodie abscess e) Non of the above	B
15. The openings in newly formed bone in acute hematogenous suppurative osteomyelitis is called a) Sequestrum b) Involucrum c) Cloaca d) Brodie abscess e) Non of the above	C
16. Acute suppurative hematogenous osteomyelitis may be complicated by a) Toxemia and septicemia b) Direct spread c) Pathological fracture d) Chronicity e) All of the above	E

17. Involcurum in osteomyelitis consists of:- a) Osseous metaplasia of skeletal muscles b) Necrotic bone c) Malignant bone d) Sinuses from the infection to skin surface e) Sub-periosteal new bone formation	**E**
18. Dense sclerotic bone surrounding large acute abscess is called a) Brodie abscess b) Sequestrum abscess c) Cloaca abscess d) Involucrum abscess e) TB abscess	**A**
19. Cloaca in osteomyelitis means: a) Metaphysis of skeletal muscles. b) Necrotic bone. c) Malignancy bone d) Sinuses to skin surfaces e) Sub-periosteal new bone formation	**D**
20. Sequestrum in osteomyelitis consists of:- a) Osseous metaplasia of skeletal muscles b) Necrotic bone c) Malignant bone d) Sinuses from the infection to skin surface e) Sub-periosteal new bone formation	**B**
21. The characteristic inflammatory cell is chronic osteomyelitis is:- a) Macrophage b) Lymphocyte c) Plasma cell d) Eosinophil e) Neutrophil	**B**
22. A necrotic dead piece of bone in osteomyelitis is called:- a) Involucrum b) Sequestrum c) Woven bone d) Lamellar bone e) Cancellous bone	**B**