Pathology

Mss

Lec3+4

Done by: Farah hasanat

SUPPURATIVE ARTHRITIS

Bacterial infection

Hematogenous spread

Microbal

- < 2 years → H. influenza
- older children & adults → S. aureus
- Sickle cell disease → salmonella
- young adults → gonococcus

Clinically

- sudden acute pain
- swollen and warm inflamed joints
- systemic manifestation → 1) fever, 2)leukocytosis, 3) elevated ESR

Diagnosi

- X-ray maybe normal
- MIR is more sesetive that appear some collection inside the joint

Treatment

- aspiration of joint to take biopsy and culture it and take the proper antibiotic
- empiric therapy

Note : The most common joint that suppurative is: knee

LYME ARTHRITIS

infection with the spirochete Borrelia burgdorferi.

Responses to Borrelia may initiate late, autoimmune, arthritis.

It have different stage

- Systemic
  - Erythema Miagrans rash
- Early phase disease
  - ① Cranial nerve palasy
  - ② Meningitis
  - ③ Carditis
- Late musculoskeletal disease -

CRYSTAL-INDUCED ARTHRITIS

Crystals deposited in joints causing severe inflammatory disease

- acute
- chronic

Endogenous crystals:

- Monosodium urate, MSU (GOUT).
- Calcium pyrophosphate dehydrogenase, CPPD (PSEUDOGOUT).

GOUT:

Transient attacks of arthritis, it can affect any joint, but the major affected site is the big toe

deposition of MSU (MONO SODIUM URATE) crystals in the joints .

Uric acid

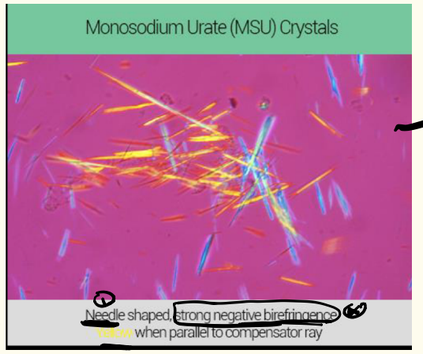
- increased production
- decreased excretion from kidney

risk increases :

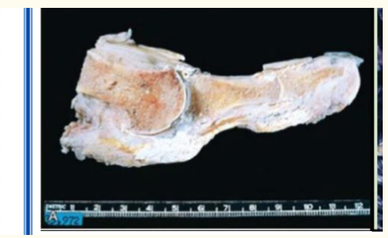
- 20-30 years of age
- genetic predisposition
- obesity
- alcohol
- drugs (thiazides: which increase the uric acid levels)

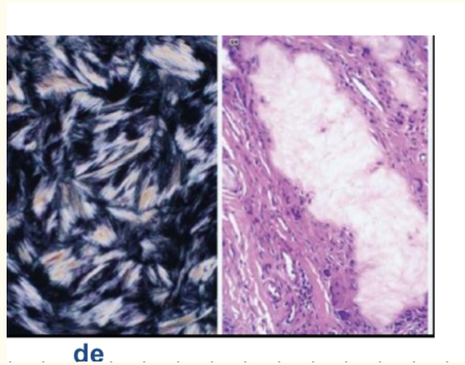
Treatment

- acute gout
  - NSAIDS
  - Colchicine
- chronic gout
  - Xanthine oxidase inhibitors (Allupurinol)



→ Microscope .





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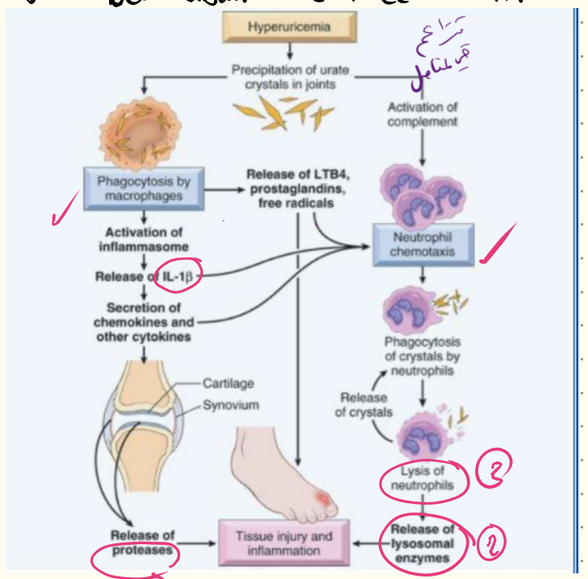
fakt idea about the mechanism of Hyperuricemia



MORPHOLOGIC CHANGES OF GOUT

Acute arthritis

1) Dense inflammation of synovium
(the patient will come to you with big toe worm and very painful

2) if you take a biopsy from synovial fluid you will see:
1) MSU crystals in neutrophils
2)-ve birefringent

Chronic tophaceous arthritis

1) Repetitive attacks (they may remove the big toe because of it) هجمات متكررة

2) crystals deposition in the joint;

3) thick synovium, formation of pannus → extra growth in joints

Tophi in various sites

crystals induce inflammatory reaction in :

1) Cartilage,
2) ligaments
3) bursae
4) Tendons

Gouty nephropathy

1) MSU crystals deposition in kidney

2) nephrolithiaisis

3) pyelonephritis

PSEUDOGOUT CPPD

> 50 years; increase with age.

Idiopathic (genetic) or (secondary)

1) DM (diabetes militias)
2) previous joint damage,
3) HPTH
4) hemochromatosis

CPPD (Calcium pyrophosphate deposition) crystal induced arthritis via triggering inflammatory reaction

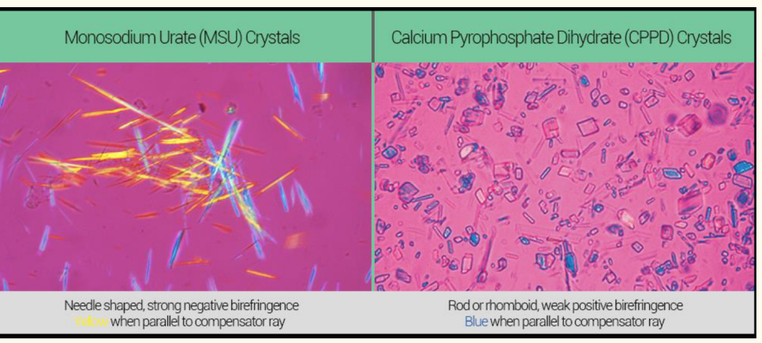
Treatment

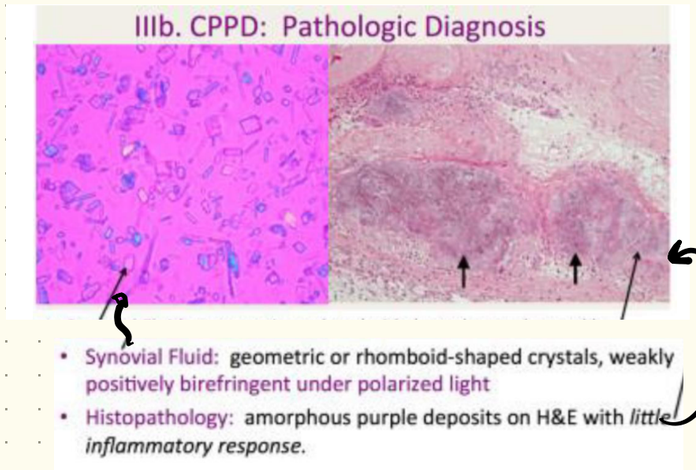
- supportive
- no preventive measures so far

the difference between

microscope

	Gout	pseudogut
	yellow	Blue
	Parallel	Parallel
	needle like	rhomboid (rod)
	-ve birefringent	+ve birefringent





JOINT TUMORS

Joint tumors are rare

Ganglion cyst

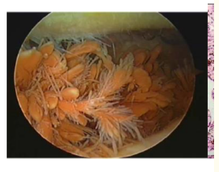
- common condition;
- close to a joint, no communication with synovial joint ,the most common in dorsum of wrist;
- not true cyst
- may cause pressure pain
- treated by surgical removal
- pathology of ganglion cell is unknown but there is some accepted theory say;s it is a herniation of the synovial membrane

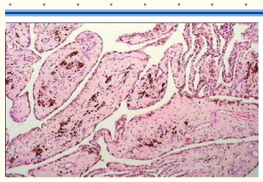
True synovial cyst

- Baker cyst around the knee posterior of the knee on the popliteal fossa
- with severe pain
- sometimes get bigger causing deep venous thrombosis of lower limb
- herniation process

TENOSYNOVIAL GIANT CELL TUMOR

- Benign neoplasm of synovium
- Diffuse in (PVNS)pigmented villonodular (it's finger like) synovitis
- mainly large joints common in knee)
- cause severe pain and lock of joint
- brown pigment is previous bleeding the iron get into the microphages so we do iron stain to confirm if its an iron or not
- Affecting on - IV collagen





SOFT TISSUE TUMORS

- Like (skeletal muscle, fat tissue, mesenchymal cells)
- Benign is much more common than malignant
- Sarcomas are aggressive and metastasize by hematogenous spread mainly to lungs
- Most are in extremities (thigh is the most common site)
- Most are sporadic
  inher
- Few occur after exposure to radiation and burns & toxins
- No precursor lesions
- theory that they arise from pluripotent mesenchymal stem cell which acquire somatic mutation
  (A cell that can develop into many different types of cells or tissues in the body)
- 15-20% simple karyotype (single mutation or single translocation which make it easy to diagnose
- 80-85% complex karyotype (genomic instability), LMS (leiomyosarcoma) and pleomorphic Sarcoma

Wide range

benign:
well circumscribed, not infiltrative, small in size, close to skin not deep, no haemorrhage, no necrosis, no increased mitosis.

malignant:
infiltrative, large in size, necrosis, haemorrhage, anaplasia, increase in normal and abnormal mitosis.

Diagnosis

- grade
- stage

Common soft tissue tumour:

LIPOMA:

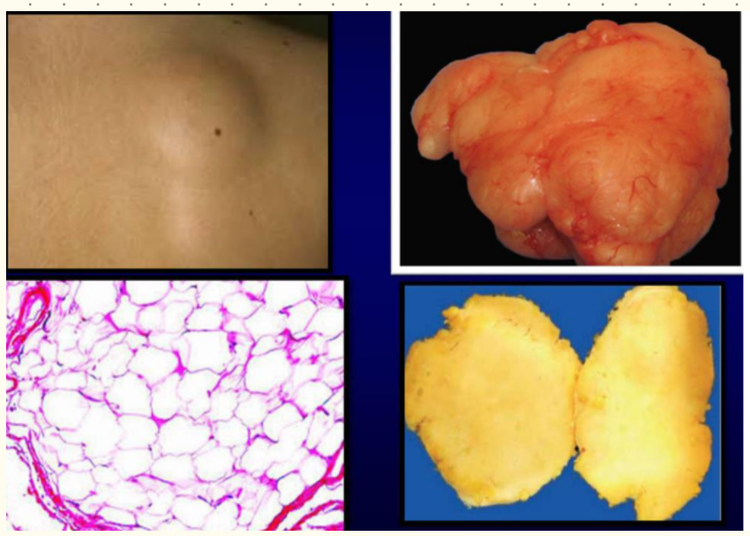
Most common soft T tumor

Usually Well-encapsulated, subcutis close to skin most common location subcutaneous tissue but it can occur at any site)

easily removable

Histologically: Mature fat cells

Treatment: excision
(one of the reasons for excision is to distinguish between malignant and benign especially if it big and deep).



LIPOSARCOMA

malignant counter part of lipoma.

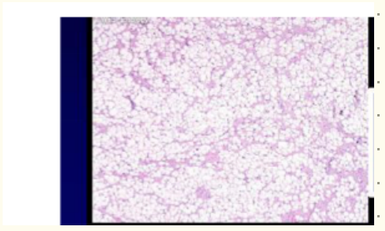
Most common sarcomas in adults. >50 years

- Extremities and retroperitoneum

3 types:

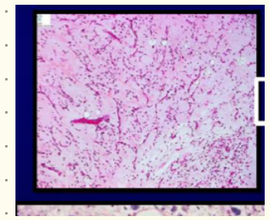
- WD (Well-Differentiated

FISH , positive WD negative lipoma) (not easy to diagnose) we can also use immunohistochemistry instead of FISH



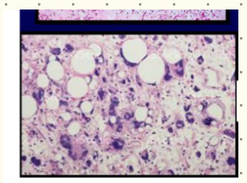
Myxoid,

easy to diagnose)



Pleomorphic (aggressive)

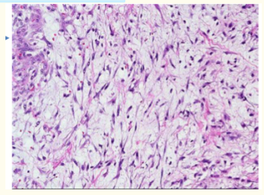
the difficulty is to find the cell of origin) very aggressive, lethal, large thigh mass



FIBROUS TUMORS

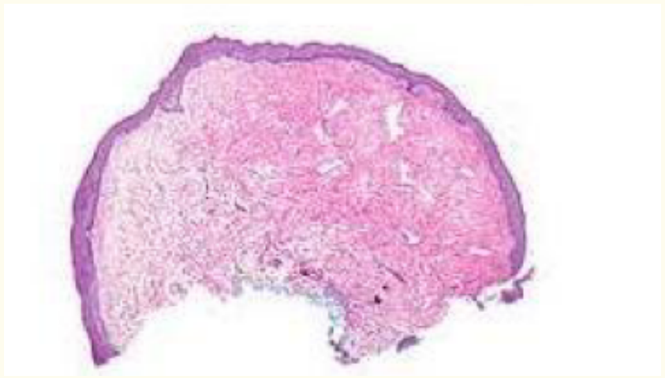
Nodular fasciitis

- benign disease. not an inflammatory proliferative reaction
- Maybe self-limiting
- Trauma history, recent rapid size increase
- IMPORTANT: not to diagnose it malignant
- confirming that this process is actually clonal
- frequent mitosis ,
- sometimes there are inflammatory , cell plasma cells and lymphocytes
  - this is why its name ends with itis, nodular fasciitis
- Culture-like histology
  white area and spindle cell look like cell culture in petri dish



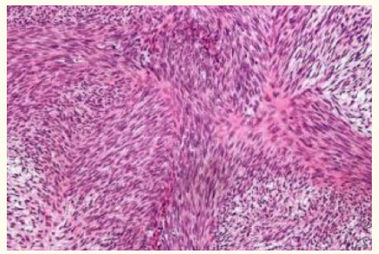
Fibromas

- benign proliferation of fibroblasts
- very common ✓
- skin and subcutaneous tissue. ✓
- Near to skin and mucosal surfaces (oral mucosal surface, vagina



Fibrosarcoma

- malignant
- superficial cutaneous tumors of fibroblasts
- cellular
- storiform pattern with increased mitosis
  - Cell that have fibers between it like = collagen.
- usually detected early because they are superficial (you can feel them, they pressure on the nerve causing pain).



(Fibromatoses) no Metas

Superficial fibromatoses

Infiltrative benign fibroblastic proliferation
infiltrative too, which is usually a characteristic feature of malignancy, so this an exception.

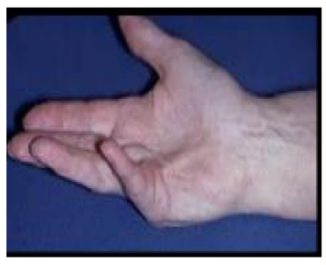
→ make diagnosis little bit difficult

It doesn't metastasize

May run in families; may impact function

Palmer (DUPUYTREN CONTRACTURE)

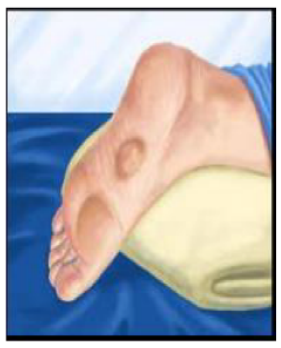
Palmar fascia



Palmer contraction, flexion of finger and you cant open it, so interfers with the function.

PLANTAR **FIBROMATOSES**

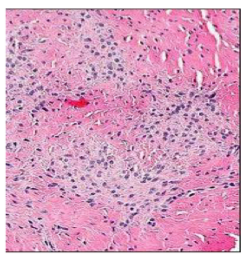
Sole of foot



they are painful.

PENILE **(PEYRONIE DISEASE)**

Dorsolateral aspect of the penis



Very painful especially in erections and very difficult to treat.

Deep fibromatoses (Desmoid tumor):

Deep infiltrative

doesn't metastasize but recur.

Abdominal wall, mesentery and limbs

Mutations in (β-catenin) or APC genes

Mostly are sporadic

Complete excision is needed to prevent recurrence which is very common.

Treatment is very difficult because the surgeon cannot tell where the tumor starts and ends so he has to remove extra, extra, extra 5-10 cm margins away from the lesion!

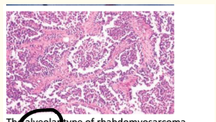
These tumors kill by local infiltration NOT metastasis
in the abdominal wall, will destroy the vital organs; liver, spleen and kidneys

SKELETAL MUSCLE TUMORS

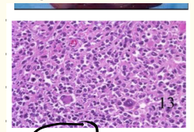
malignant

Rhabdomyosarcoma (RMS)

- most common child sarcoma <15 yr
- More common than rhabdomyoma (the benign form).
- Have 3 types and there is histological variations
- Aggressive tumors They are high grade sarcoma no low grade
- **treatment**
  - Surgery
  - chemotherapy followed by surgery
  - with or without radiation therapy
- **General features**
  - Bulky ضخمة
  - large with hemorrhag
  - necrosis
- **Histo**



The alveolar type of rhabdomyosarcoma, because it looks like the alveoli of the lung.



The pleomorphic rhabdomyosarcoma (Embryonal type).

benign

rhabdomyoma

- which is , rare, occurs with (tuberous sclerosis)

التصلب الحديي، المعروف أيضًا بالتصلب الحديي المعقد، هو اضطراب وراثي غير شائع يسبب نمو أورام في أجزاء كثيرة من الجسم. ولا تكون هذه الأورام سرطانية. الأورام غير السرطانية -أو الحميدة- عبارة عن نمو غير متوقع لزوائد من الخلايا والأنسجة، وتختلف أعراضها اختلافًا كبيرًا حسب مكان نمو الزوائد وحجمها.

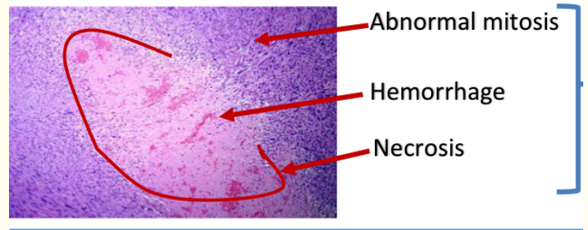
SMOOTH MUSCLE TUMORS

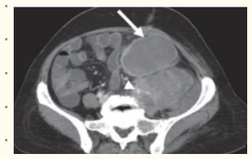
Leiomyoma

- very common;
- any site but mostly uterus (fibroid)
  - Can Cause this ↓
    1) menorrhagia (heavy menstrual bleeding)
    2) infertility
- vary in size and location
- Coronal section of the uterus and histologically
  - 1) ball-like masses are leiomyoma, (benign) ⇝ white in color
  - 2) well-circumscribed, محددة
  - 3) no hemorrhage,
  - 4) without tissue necrosis and smooth muscle neoplasm

leiomyosarcoma

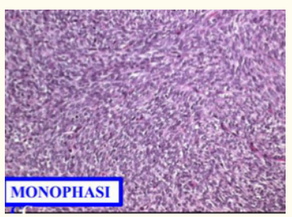
- 10-20% of soft tissue sarcomas
- Adults; more in females
- Place : (Deep soft tissue)
  - 1)extremities
  - 2) retroperitoneum
  - 3) from great vessels
- General features of any sarcoma :
  1. Hemorrhage,
  2. necrosis,
  3. increased mitosis
  4. infiltration of surrounding tissue
- Treatment: depends on location, size and grade.

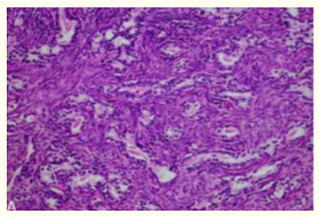




TUMORS OF UNCERTAIN ORIGIN:

Synovial sarcoma

- Name is mishomer .
  1. It doesn't arise from the synoviocytes, we don't know the cell of origin.
  2. It was named that because it was around the knee joint (beside the synovium).
  3. Although they occur most commonly around joints, they can occur anywhere
- 20-40s age
- T(X;18) Translocation
- Metastasis: lung and lymph nodes.
  - this one of the exceptions
- Treatment : aggressive with limb sparing excision + ChemoTher
- Histo:
  - Monophasic
    only spindle cells
    

  - biphasic
    (spindle cells and glands).
    

Undifferentiated pleomorphic sarcoma

- means it's with unknown origin يعني ما بين من وين جاي
- Deep soft tissue and extremities
- Old terminology :
  - malignant fibrous histiocytoma
- very complex karyotype
- General features
  - anaplastic
    cancer cells that divide rapidly and have little or no resemblance to normal cells.
  - Large tumors;
  - necrosis
  - abnormal mitoses,
  - hemorrhage
- Treatment :
  - aggressive
  - with
  - surgery
  - Ct
  - Rt