cystals >>

① Ca^{2+} pyrophosphate dihydrate ⇒ - pseudogout
CPPD - chondrocalcinosis

② Basic Ca^{2+} phosphate Hydroxyapatite → - calcific periarthritis
BCP - soft tissue calcinosis
- Acute/chronic inf. arthritis

③ MonoNa urate (MSU) ⇒ - Acute/chronic gout
- Renal calculi
- Tophi

Gout

- Deposition of Monosodium urate monohydrate in CT & joints
- Age >50 - M>F
- Hyperuricemia : urate plasma > 6.8 mg/dL

** Urate is a metabolite of purines & ionized form of uric acid
** Hyperuricemia due to renal under excretion of urate in 90% of cases
over production in 10%

"not all hyperurecemia is gout, BUT increases risk"

▷ Inflammatory response to urate crystals

↳ Urate crystal in joints interact with undiffrentiated phagocytes → induced TNF-α & signaling pathways & endothelial cells → leads to neutrophil adhesion to endothelium → influx → amplification ⇒ Neutrophic synovitis

↳ Activate NALP3 inflammasome → IL-1β → inf. loop

↳ Resolution: clearance by differentiated phagocyte
(+)
coating the crystal with proteins
↓
neutrophilic apoptosis &
inactivation of inflammatory mediators
(self limiting within 2 weeks)

Long-standing hyperuricemia → induce chronic inflammation

- Recurrant attake of acute inflammatory anthritis (Big toe)
- Chronic anthropathy
- Accumulation of urate crystal in the form of tophaceous deposit.
- Uric acid nephrolithiasis

synovitis
cartilage loss (By inducing chondrocytes to produce metalloproteinase & NO)
Bone erosions

Renal disease

- Urate nephropathy
  - [MSU crystals in the renal interstitium
    renal (+) insufficiency]
- Uric acid nephropathy
  - Rapid accumulation of uric acid in the collecting Tubules
  - ① cause Acute obstrictive uropathy
  - ② Tumour lysis syndrom
- Uric acid nephrolithiasis
  - uric acid calculi in renal tract

Acute gout :-

- Acute inflammatory arthritis / associated with → tenosynovitis, → bursitis, → cellulitis
- M x 8 > F (uncommon before menopause)
- Age (30-60)
- Recurrant attacks of acute synovitis with (intercritical periods in between)
- Big toe / 10% polyarticular < elderly women, diuretics
- Rapid & sever symptoms.

*** labs { leucocytosis & ↑ESR ; ↑uric acid (normal in acute attack) }

*** Triggers ⇒ Disturbances in extracellular fluid urate conc.

① Drugs
- Low dose aspirin
- Allopurinol
- uricosuric
- Loop diuritics
- Thiazide

② fatty food
③ surgery / Trauma
④ dehydration
⑤ starvation

▶ Tophus : Draining or chalk-like subcutaneous nodule under transparent skin, overlying vascularity

sites: (Ears / elbow / finger / Tendon) => peripheral, cold parts

↓

over long time

↓

Chronic, erosive arthritis, associated with peri-articular & subcutaneous urate deposit (Tophi)

↳ May cause dactylitis

Diagnosis: Crystal identification / serum urate / radiology / synovial fluid + Histology

MSU crystals ↑

** Serum urate level
- M > F
- falsely low during attack
- Aim: reduce level to ≤ 6 mg/dl
- risk of goat with
  - degree
  - duration
  of hyperuricemia

** Radiographic
- normal → early in the disease
- punched out erosions with sharp margins and overhanging edges → few repetitive acute attacks

** Crystal identification (Anisotropy)
- even asymptomatic inter-critical period
  = → crystals are present in previous attack joints
    - in all untreated
    - ≠0% of treated

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* high dose aspirin (phenylbutazone) => protection that increase excretion
  low dose aspirin (phenyl aspirin) => decrease excretion

Thiazide ↓ excretion.

Treatment :-

* NSAIDs / colchicine (→ with NSAIDs 0.5 mg X2 / day) / steriod
  - Lindomethacin 50 mg / 8 hrs
  - naproxen 500 mg / 12 hrs
  - Diclofenac 50 mg / 8 hrs

* Intra-articular uses { NSAIDs is contraindicated (+) 1 or 2 joints are inflamed

* Systemic for { polyarticular disease; NSAIDs or colchicine contraindicated (chronic kidney D., peptic ulcer, Chronic heart failure)

* Allopurinol or urico-suric drugs ⊗ NOT used during attack.

Avoid: Diuretics, weight gain, alcohol, Aspirin low doses.