Gout

Gout

- peripheral arthritis resulting from the deposition of sodium urate crystals in one or more joints.

The prevalence of gout

- is ~ 1 %.
- Male:female 5:1
- Increase with age .
- obesity and metabolic syndrom .

Gout

group of disorders that occur **alone** or in **combination**

hyperuricemia.
inflammatory arthritis.
tophaceous deposition of urate crystals in and around joints.
interstitial deposition of urate crystals in renal parenchyma.
Urolithiasis =renal stones

Gout

- **Typical sequence involves progression through:**
  - **asymptomatic hyperuricemia**
  - **acute gouty arthritis**
  - **interval or intercritical gout**
  - **chronic or tophaceous gout**

- A 45-year-old man with a history of hypertension complains of left great toe pain of 24 hours' duration. He has had a low-grade fever and chills. He has no history of joint problems. The examination is notable for a red, warm, swollen, left great toe. No other joints are involved. There are no tophi.

Pathophysiology

- Urate saturates in plasma at 7 mg/dL

- MSU deposits in less vascular tissue
  - Cartilage
  - Tendons/ligaments
- There is a predilection for peripheral joint/tissue
- Urate uropathy and Renal stones.

Pathophysiology

Overproducers: 10%

Under-excretors: 90%

24.42 Causes of hyperuricaemia and gout

Diminished renal excretion

- Increased renal tubular reabsorption*
- Renal failure
- Lead toxicity
- Lactic acidosis
- Alcohol
- Drugs:
  - Thiazide and loop diuretics
  - Low-dose aspirin
  - Ciclosporin
  - Pyrazinamide

Increased intake

- Game
- Seafood
- Offal
- Red meat

Increased production

- Myeloproliferative and lymphoproliferative disease
- Psoriasis
- High fructose intake
- Glycogen storage disease (p. 370)
- Inherited disorders:
  - Lesch–Nyhan syndrome (HPRT mutations)
  - Phosphoribosyl pyrophosphate synthetase 1 mutations

*Usually genetically determined (see text).
(HPRT = hypoxanthine guanine phosphoribosyl transferase)

Signs and Symptoms

- Acute attack:
  - Over hours frequently nocturnal
  - Excruciating pain
  - Swelling, redness and tenderness
  - Podagra: 1st MTP classic presentation
  - May effect knees, wrist, elbow, and rarely SI and hips.
- Chronic:
  - Destructive tophacous
  - Much greater chance if untreated
  - Rarely presents as a chronic

Gout tophi

Panel 2: Factors known to trigger an acute attack of gout

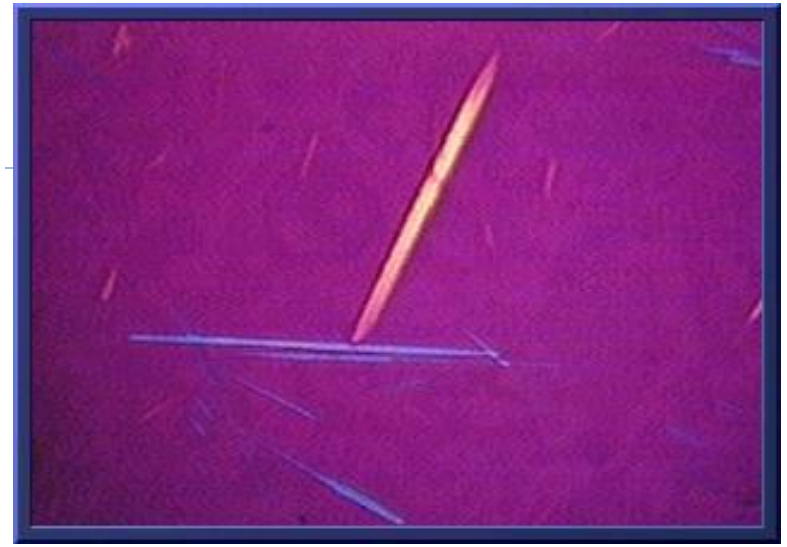
- Trauma
- Unusual physical exercise
- Surgery
- Severe systemic illness
- Severe dieting
- Initiation of B_{12} in pernicious anaemia
- Cytotoxic drug therapy
- Dietary excess
- Alcohol
- Drugs
- Diuretics
- Initiation of uricosuric or allopurinol therapy
- Drug allergy

Podagra. Acute gout causing swelling, erythema and extre pain and tenderness of the first metatarsophalange joint

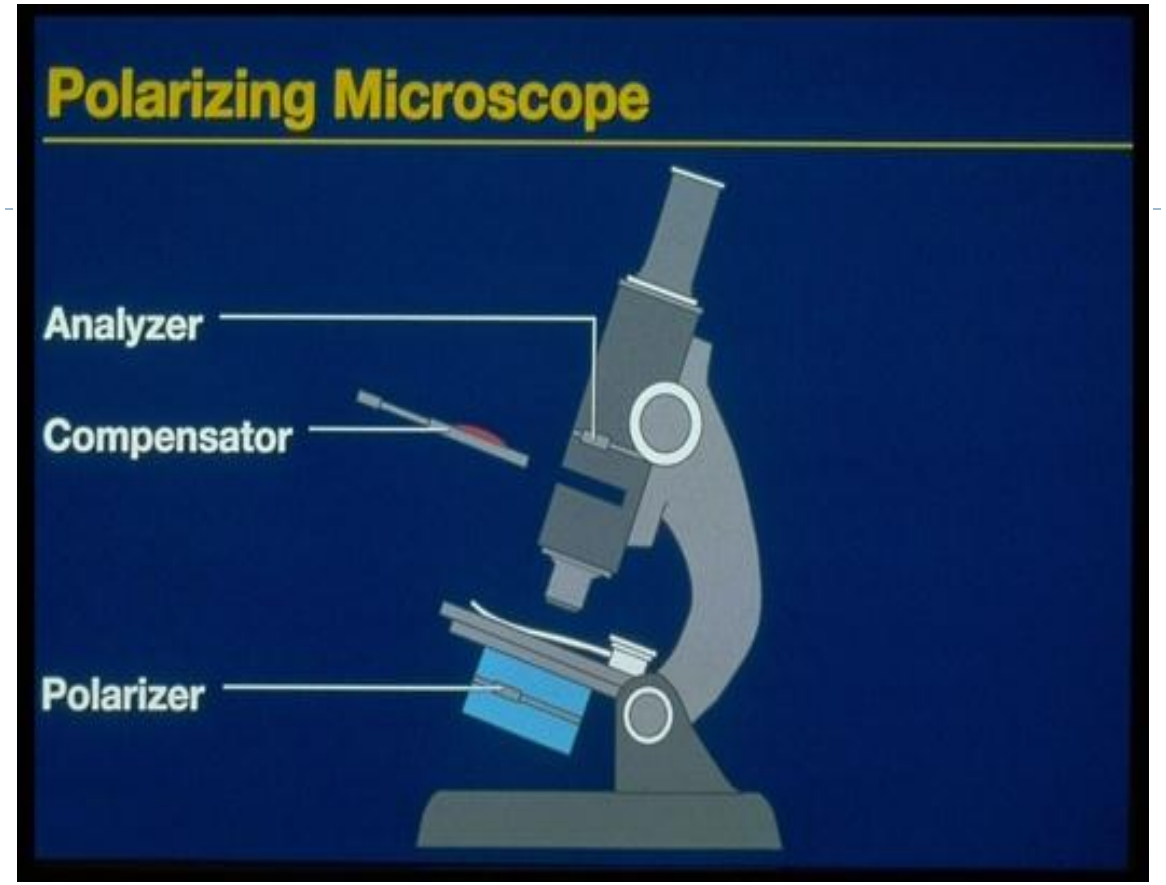
Signs and Symptoms

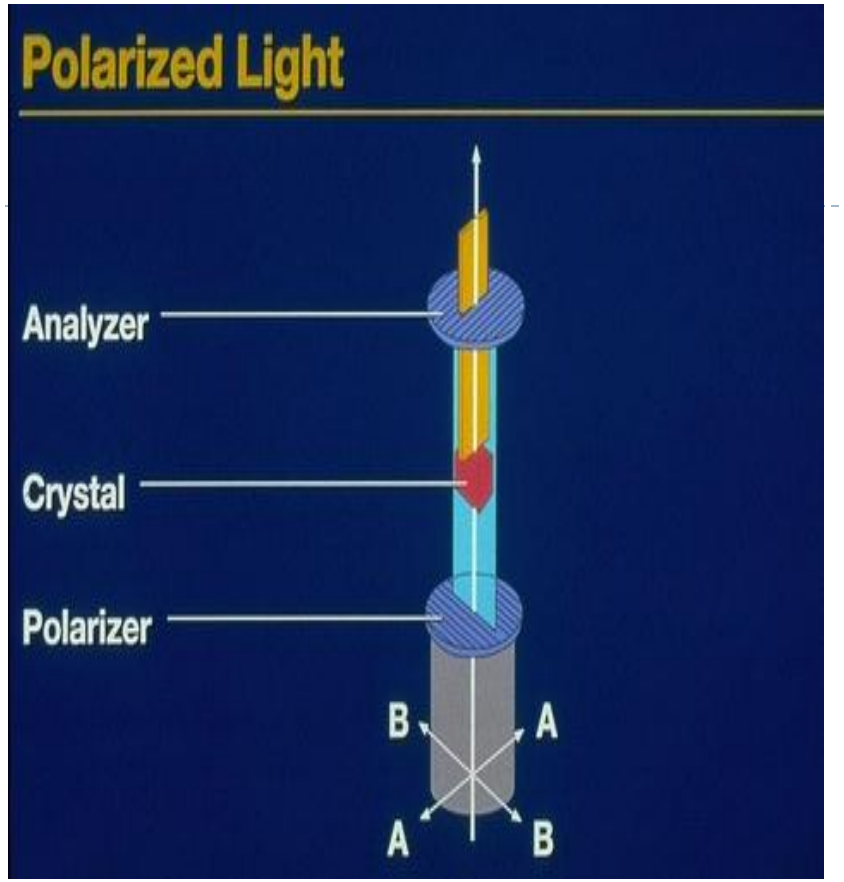
- Renal stones.
- Uric acid causes interstitial nephritis and if severe lead to renal impairment (Urate nephropathy).

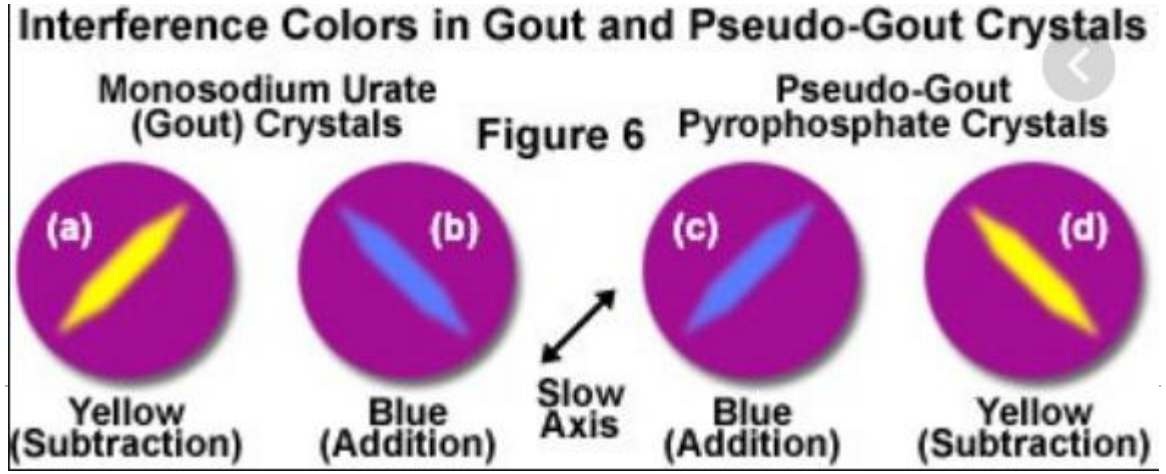
Diagnosis



- Based on history and physical
- Confirmed by joint fluid aspiration
  - Urate crystals: needle-shaped negatively birefringent either free floating or within neutrophils & macrophages.
- Uric acid level non specific.
  - 30% may show normal level
- Urine collection:
  - <800 mg underexcertor.


Polarizing Microscope
Analyzer
Compensator
Polarizer


Polarized Light
Analyzer
Crystal
Polarizer
B
A
A
B


Interference Colors in Gout and Pseudo-Gout Crystals
Monosodium Urate (Gout) Crystals
Figure 6
Pseudo-Gout Pyrophosphate Crystals
(a)
(b)
(c)
(d)
Yellow (Subtraction)
Blue (Addition)
Slow Axis
Blue (Addition)
Yellow (Subtraction)

Chronic Gout-Radiographic Features

Treatment

- Acute:
  - NSAID's anti-inflammatory doses
  - Colchicine 0.5 mg po q2 hours, may require 6 mg.
    - Stop with response or side effect
    - Can be used for chronic disease, increased risk for BM suppression
  - Aspirate followed by administration of corticosteroids

Prednisone intra articular if one joint iv or tapering oral prednisolone if poly articular and nsaid is contraindicated


NOVARTIS
Voltaren
75 mg/3 ml
Diclofenac. natr.
Voltarène/Voltarén
i.m. (intraglut.)
i.v. (per infus.)
476630a
UN

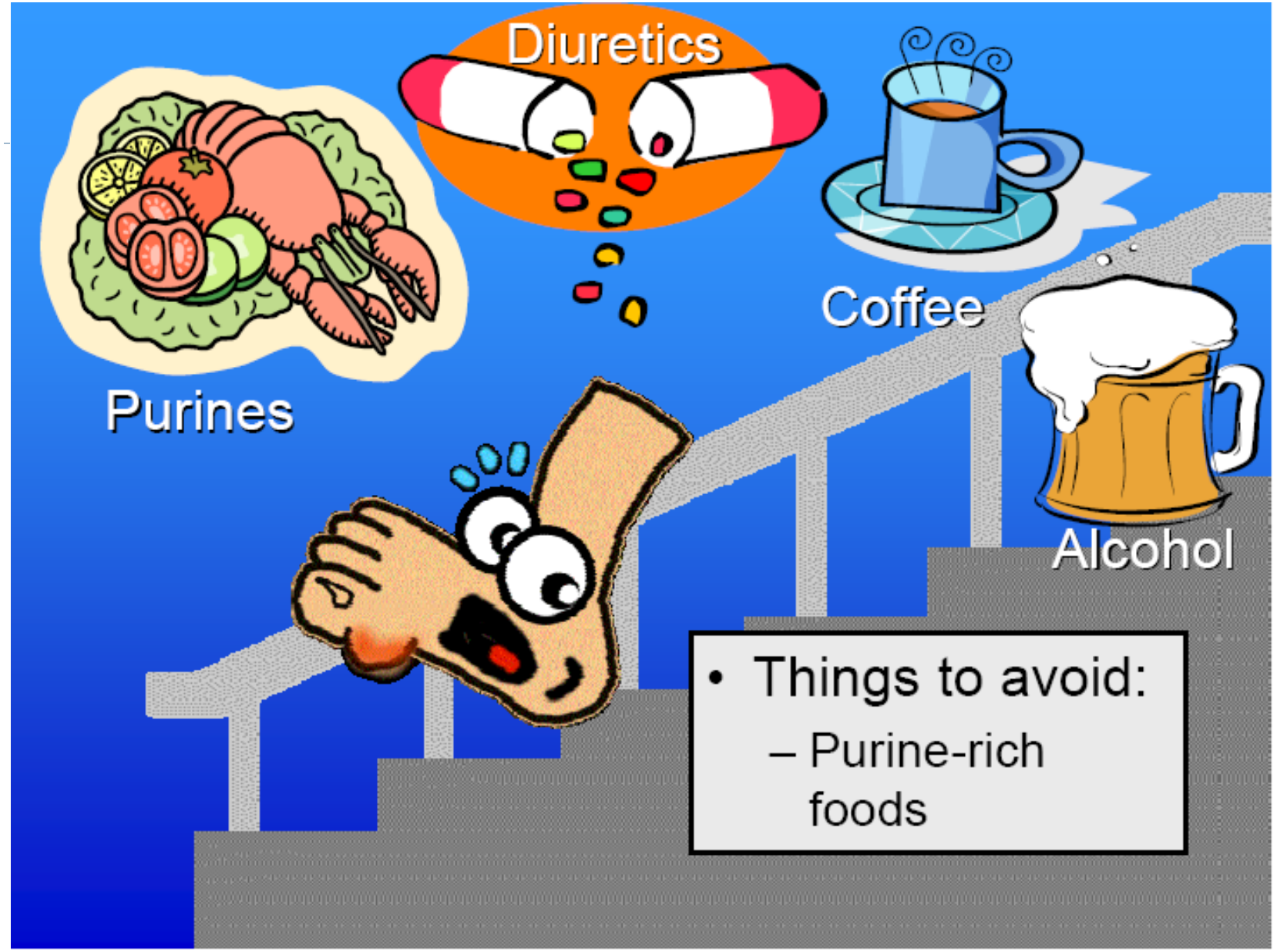

NDC 0009-3475-01
Depo-Medrol®
methylprednisolone
acetate injectable
suspension, USP
80 mg/mL
Single-Dose Vial
For intramuscular,
intrasynovial and soft tissue
injection only.
NOT for IV use.
Pharmacia
&Upjohn
One 1 mL Vial
Depo-Medrol
80 mg/mL


Voltaren® 50
diclofenac. natr.
Antirheumatic,
anti-inflammatory,
analgesic


Colchicine Houdé
Relieves acute
attacks of GOUT
6
EMERGENCY PACK
Cipla

Treatment

- Chronic:
  - Diet will decrease uric acid 1 mg/dL at best
  - Weight loss
  - Modification of medications
    - Avoid low dose ASA, diuretics, etc.


Diuretics
Purines
Coffee
Alcohol
• Things to avoid:
– Purine-rich foods

Treatment

- Chronic
  - Uricosuric: they increase uric acid secretion in urine used for under-excretors
    - Probenicid: Blocks renal tubular resorption of uric acid
    - Sulfinpyrazone: toxic side effects
    - Avoid with renal disease
    - Consider supply of NSAIDs use early on the attack by patient to avoid exacerbation of gout

Treatment

- Chronic
  - Indications for Allopurinol
    - Tophaceous deposites
    - Uric acid consistently >9
    - Persistent Sx with moderate UA levels
    - Impaired renal function
    - Prophylaxis for tumor-lysis syndrome
  - Consider NSAID's to avoid exacerbation

- Febuxostat — Febuxostat is a a thiazolecarboxylic acid derivative and not a purine base analogue like allopurinol decrease serum urate
- Uricase

Pseudo gout

Pseudogout

- Pseudogout accurately describes acute attacks of CPPD crystal-induced synovitis which clinically resemble urate gout.
- Alternative names pseudogout, chondrocalcinosis, and pyrophosphate arthropathy:

The clinical spectrum of CPPD crystal deposition disease

- Asymptomatic disease
- Pseudogout
- Pseudo-rheumatoid arthritis
- Pseudo-osteoarthritis, with or without superimposed acute attacks Pseudo-neuropathic joint disease

- Pseudogout is characterized attacks of arthritis involving only one or several joints.
- These attacks closely resemble those of urate gout .
- Trauma, surgery, or severe medical illness frequently provoke acute .

- The knee is affected in over 50 percent of all acute attacks of pseudogout, whereas the first metatarsophalangeal joint is more frequently involved in gout.

- Acute arthritis of large joints, especially the knees OR Chronic arthritis which resembles osteoarthritis, particularly if the involved joints are not typical for osteoarthritis (wrists, MCP joints, elbows, and shoulders)

- severe and progressive joint degeneration, especially with cartilage and tendon calcifications apparent on radiographs.

- Screening for associated diseases — Patients with a diagnosis of CPPD crystal deposition disease may also have one of a number of associated disorders, including
- hemochromatosis
- hyperparathyroidism
- hypomagnesemia
- hypophosphatasia
- hypothyroidism

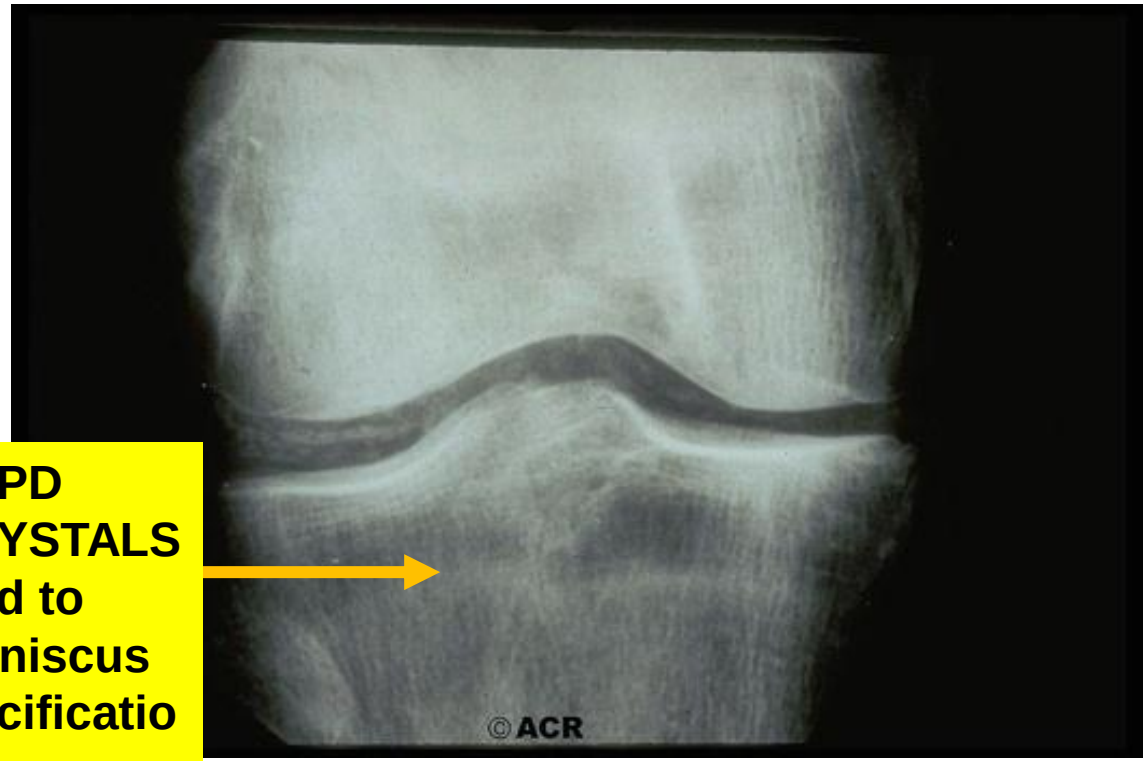
- patients diagnosed with CPPD crystal deposition undergo the following serum screening studies:
- Calcium
- Phosphorus
- Magnesium
- Alkaline phosphatase
- Ferritin Iron Transferrin
- Thyroid-stimulating hormone

diagnosis of CPPD crystal deposition disease

- requires either: The demonstration of CPPD crystals in synovial fluid of both positively (but weakly) birefringent crystals by compensated polarized light microscopy
- and
- typical cartilage calcification on x-ray examination

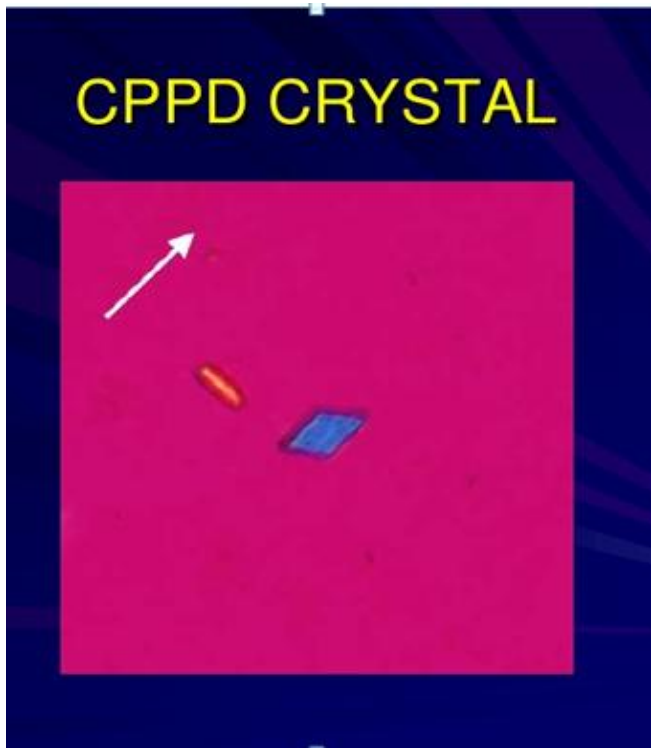
Pseudo gout dx

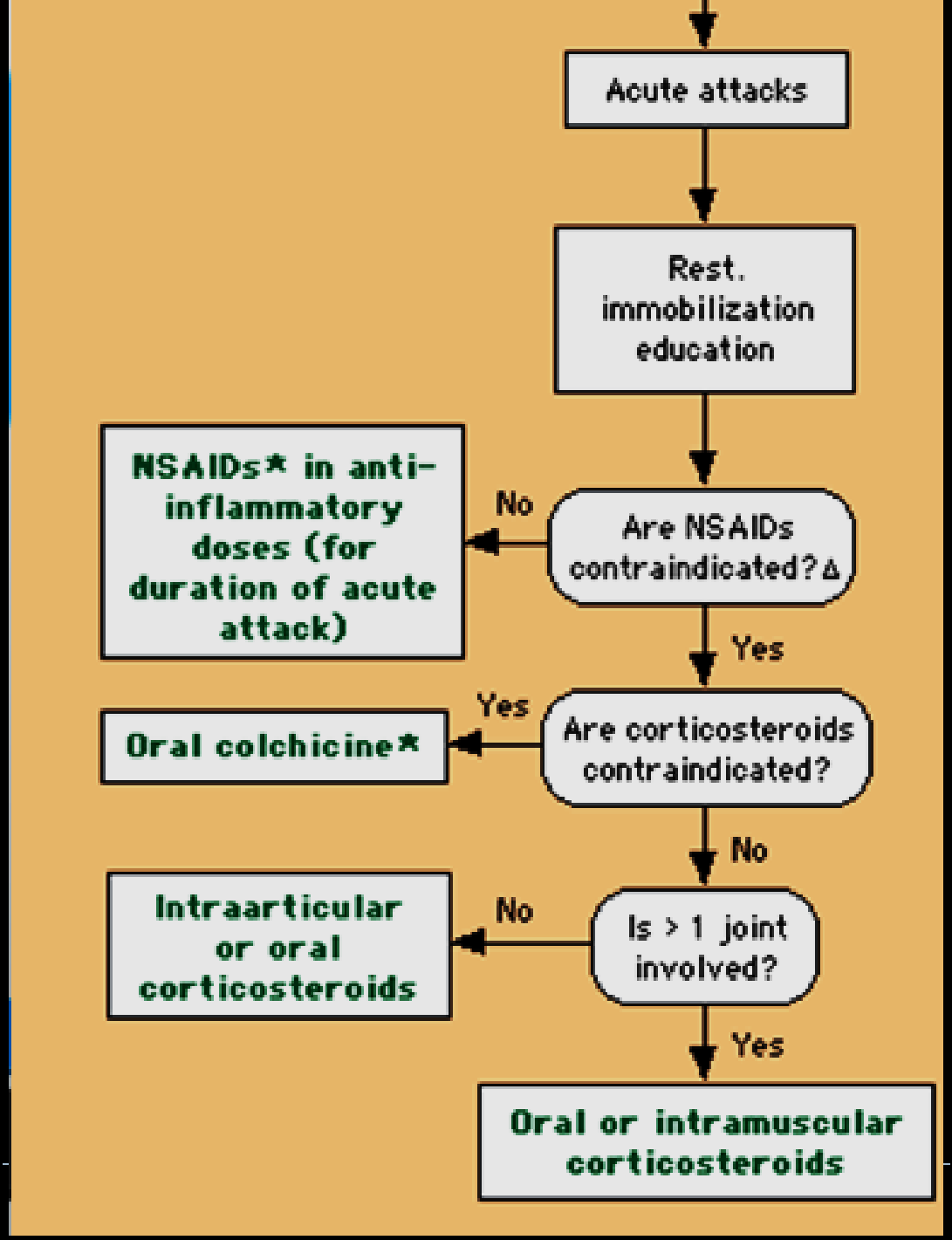
Xray -chondrocalcinosis

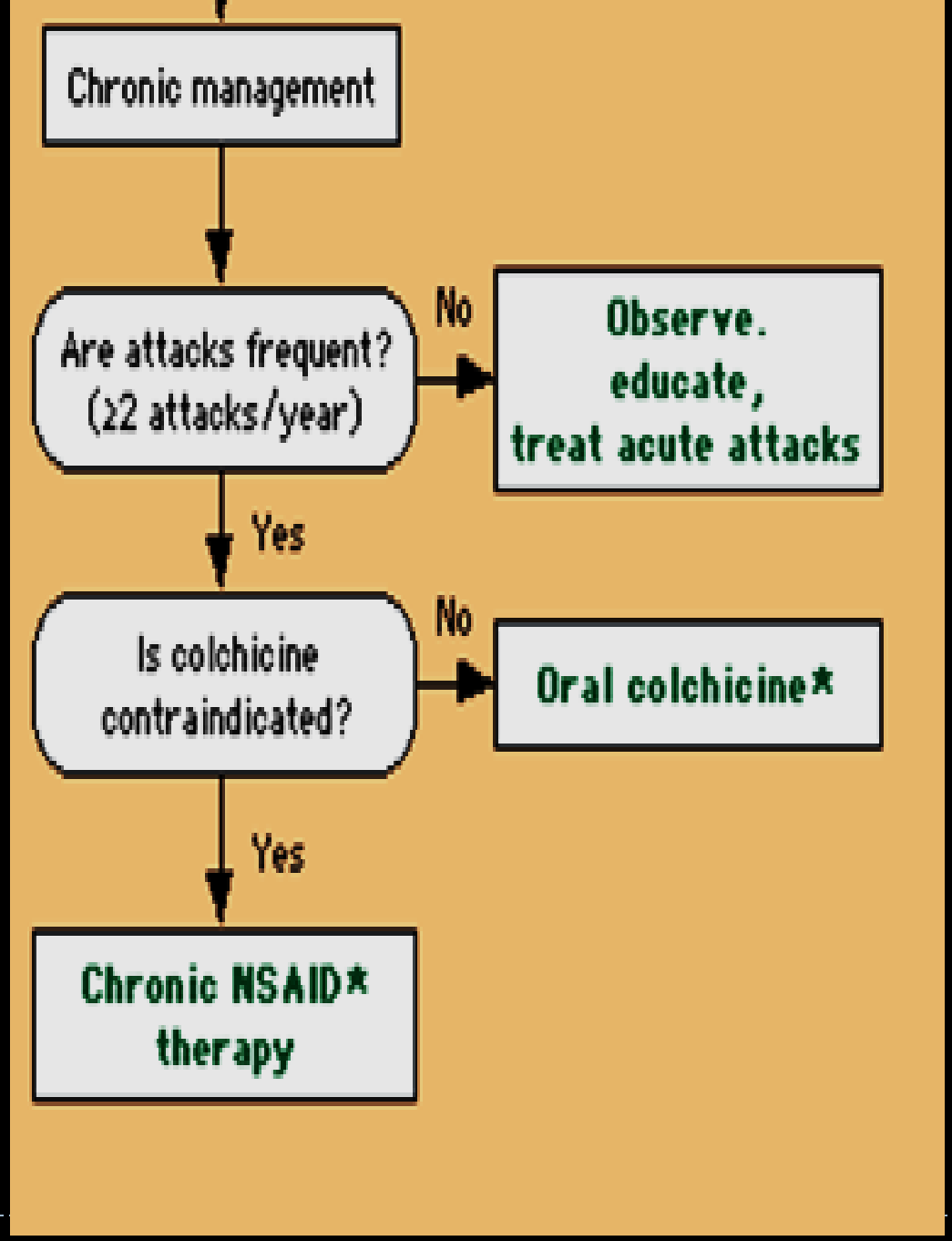


CPPD CRYSTALS lead to meniscus calcificatio n

Rhomboid crystals




Acute attacks
Rest, immobilization education
Are NSAIDs contraindicated?Δ
No
NSAIDs* in anti-inflammatory doses (for duration of acute attack)
Yes
Are corticosteroids contraindicated?
Yes
Oral colchicine*
No
Is > 1 joint involved?
No
Intraarticular or oral corticosteroids
Yes
Oral or intramuscular corticosteroids


Chronic management
Are attacks frequent?
(≥2 attacks/year)
No
Observe.
educate,
treat acute attacks
Yes
Is colchicine
contraindicated?
No
Oral colchicine*
Yes
Chronic NSAID*
therapy

Thank you