Gout and pseudogout (crystal arthropathies)

Gout and pseudogout pathophysiology
- Gout and pseudogout are crystal arthropathies
- Crystals of urate (in gout) and calcium pyrophosphate (in pseudogout) are precipitated in joints
- Neutrophils phagocytose the crystals whilst releasing pro-inflammatory cytokines which trigger attacks
- Asymptomatic deposition of crystals between attacks is normal; what triggers an attack is unknown

Risk factors for gout (causes of hyperuricaemia)
- Alcohol
- Chronic renal disease
- Hypertension, hyperlipidaemia, diabetes i.e. cardiovascular risk factors (majority of cases)
- Medications
  - Diuretics, aspirin
- Malignancy (high cell turnover)
  - Lymphoproliferative and myeloproliferative disorders
- Certain genetic disorders e.g. G6PD

Risk factors for pseudogout
- Association with trauma and osteoarthritis
- Hyperparathyroidism
- Wilson’s disease
- Haemochromatosis
- Loop diuretics causing hypomagnasaemia

Presentation of gout (presents in four ways):
1. Acute urate synovitis (acute attack of gout – what is mainly covered here).
   - Classically, acute gout affects the first MTP (podagra): initial presentation in 50%.
   - Other joints include ankles, wrists, fingers & knees.
   - Clinical features are sudden onset exquisite tenderness, swelling, redness.
2. Polyarticular gout
   - Initial presentation in 10%, particularly elderly women
3. May become chronic where it can resemble rheumatoid
   - May have gouty tophi: smooth, white deposits of uric acid in the skin and around joints
4. Urate renal stone formation
   - Can precede gout in 15%

Presentation of pseudogout
- Often similar to gout with acute presentation, but can also be a chronic inflammatory arthritis
- Typically knees, wrists, ankles, elbows i.e. large joints
**Investigations in gout and pseudogout (crystal arthropathies)**

- Always exclude septic arthritis in acutely painful joint
  - Increased risk in, and may co-exist with, crystal arthropathy
- Joint fluid microscopy
  - Usually need to specifically request crystals (as well as MC&S)
  - **Gout: needle-shaped, negatively-birefringent crystals** (when viewed under plain polarised light)
    - Positive in about 85% cases
  - **Pseudogout: rhomboid, positively-birefringent crystals** (when viewed under plain polarised light)
- Bloods
  - Serum urate
    - May be elevated during an attack, but may also be suppressed (15%)]
    - Therefore a normal urate does not exclude gout.
  - U&Es: look for underlying renal impairment
  - Check lipids & glucose
- Plain XR
  - Gout: punched-out lesions, sclerosis and tophi in chronic gout (with preservation of joint space)
  - Pseudogout: chondrocalcinosis (calcification of cartilage)
- Ultrasound
  - ‘Double contour’ sign in gout: hyperechoic, irregular band over the superficial margin of the articular cartilage (in over 90%)