

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%)

Acute treatment of gout and pseudogout (crystal arthropathy)

- NSAID
 - e.g. naproxen 500mg BD for 2-5 days, then reduce dose
- Colchicine
 - 0.5mg BD. Higher levels can cause GI upset - start slowly to avoid this.
- In patients who are intolerant of NSAIDs and colchicine (e.g. renal impairment), a short course of oral steroids may be used
 - 40mg od for three days, then taper over 2 weeks
- Intra-articular steroids may be used in mono-articular attacks

Chronic urate-lowering treatment in gout

- Lifestyle advice
 - Reduce alcohol, healthy diet, optimise weight, increase activity
- Treat modifiable risk factors
 - e.g. change diuretics, treat hyperlipidaemia
- Allopurinol (xanthine oxidase inhibitor)
 - Indicated in:
 - Recurrent attacks, gouty tophi, urate nephropathy, radiographic changes of gout
 - Do not start during an acute attack
 - Co-prescribe colchicine/NSAID
 - Titrate up to maximum tolerated dose (max 900mg/day)
 - Target urate is $<300\mu\text{mol/L}$
 - Small risk of severe allopurinol hypersensitivity reaction
 - Contraindicated in renal failure
- Febuxostat (xanthine oxidase inhibitor)
 - Can be used in patients with renal impairment and is Indicated in those intolerant to allopurinol/ineffective in maximum tolerated dose

