Inflammatory Joint Diseases

Dept Pathology
St. Vincent's Hospital

Main groups

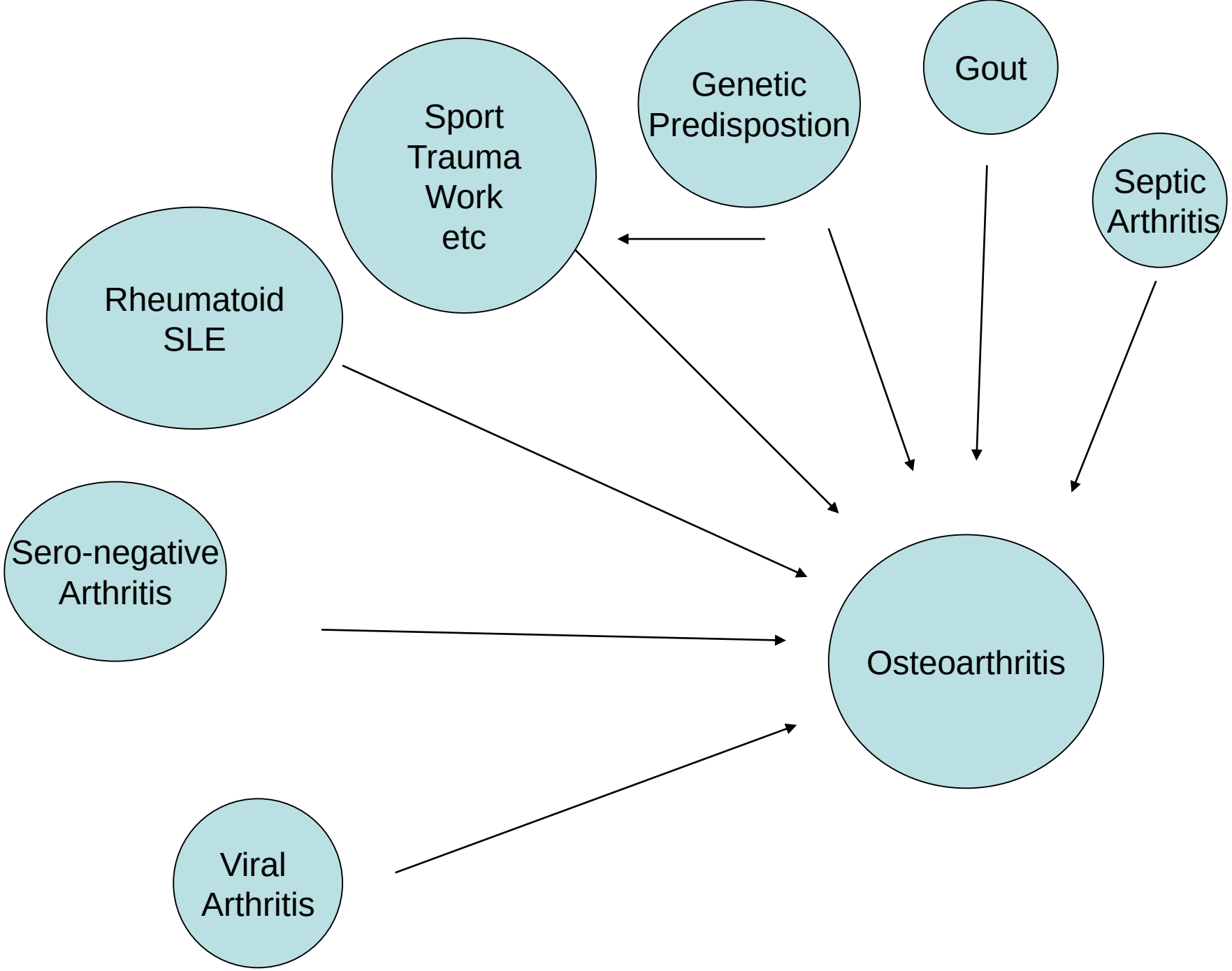
- Rheumatoid group
- Seronegative/Seronegativce
- Septic (bacterial) and Viral
- Crystals (eg gout)
- Prostheses

Discriminate by symptoms?

- Age of patient
  - Young -> Septic, viral
  - Young adult -> Rheumatoid, seronegative, gonococcal
  - Old -> osteoarthritis, septic
- Severity
  - Mild -> viral, reactive
  - Moderate -> Rheumatoid SLE
  - Severe -> Septic, severe Rheumatoid, Charcot, OA
- Single or multiple joint
  - Multiple symmetrical ->Rheumatoid
  - Multiple oligoarthritis and back-> seronegative
  - Single or a couple of joints ->septic
- Chonicity
  - Acute -> septic
  - Several years -> seronegative / Rheumatoid
  - Long standing ->osteoarthritis

Tests

- Plain Xray (CT scan,MRI etc)
- Joint fluid
  - Culture for organism
  - Crystals (gout), inflammatory cells
- Blood
  - Urate
  - Infection/Inflammation (White cells ESR CRP)
  - Blood culture (haematogenous arthritis)
  - Rheumatoid factor/ ANF/ HLAB27


Sport
Trauma
Work
etc
Genetic
Predispostion
Gout
Septic
Arthritis
Rheumatoid
SLE
Sero-negative
Arthritis
Osteoarthritis
Viral
Arthritis

Rheumatoid Arthritis

Familial

HLA-DR4

Autoimmune aetiology

Synovial antigen presenting cells stimulate T cells that recruit B cells

Rheumatoid factor

? initiator

Acute changes

Inflammatory process within joint

Cytokines

Proteases/collagenases

Chronic changes

Chronic synovial inflammation

Pannus formation synovial proliferation

Bone and cartilage de struction

Joint damage/destruction

Ankylosis

Extra-articular Manifestations

Fatigue fever

Anaemia

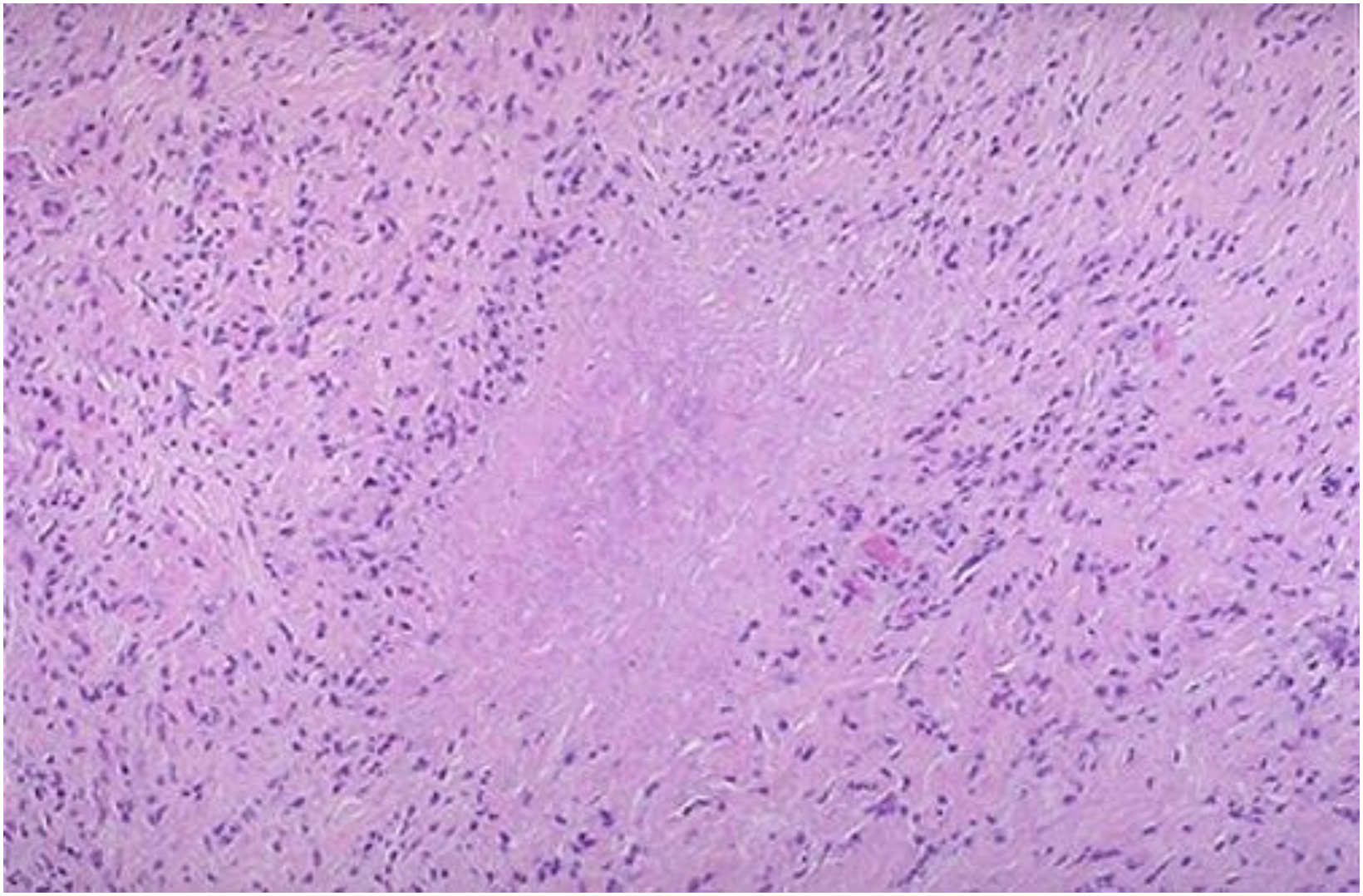
Cutaneous

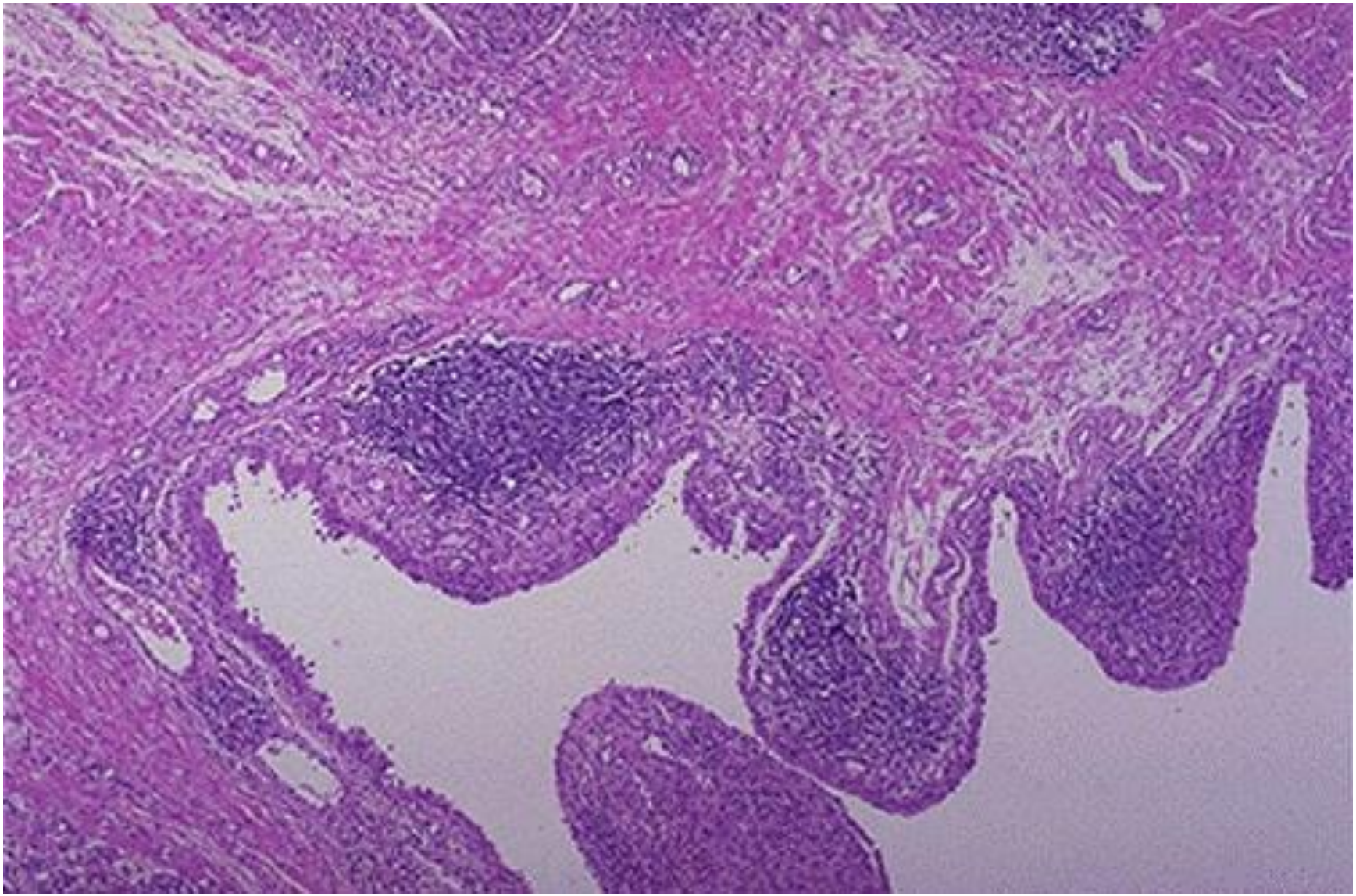
Lymph nodes

Cardiovascular

Pulmonary

osteoporosis





Rheumatoid arthritis

- Usually seropositive ie RF
  - Anti-CCP (anti-cyclic citrullinated peptide Ab)
  - Rheumatoid factor (RF) (Ab to IgM or IgG)
- Classic
  - Chronic relapsing
  - Females (approx 25 -40)
  - Symmetrical small joints
  - Systemic disease
- Juvenile Rheumatoid arthritis
  - < 16 years age

Seronegative and reactive arthropathies

Ankylosing spondylitis
Psoriatic Arthropathy
Reactive arthritis (Reiters syndrome)
Secondary to ulcerative colitis and Crohns disease

Common characteristics

- Spondylitis or sacro-ileitis
- Asymmetrical oligoarthritis
- “Enthesitis” or inflammation of attachment of tendons and ligaments
- HLA B27 usually positive
- RF negative
- May follow infection (especially urinary and gut)
- Other clinical associations
  - Psoriasis, conjuctivitis, balanitis, throat ulcers

Reactive (Reiter's syndrome)

- Follows infection
- Relapsing may be triggered by infection or urethritis
- Abnormal response to an infective agent?

- Urethritis
- Conjuctivitis
- Pharyngeal ulcers
- Back pain
- Oligoarthritis
- (Can't see, can't pee, can't climb a tree)

SLE

- System lupus erythematous
- Anti nuclear antibodies
- Multi function disease
  - Skin rash
  - Kidney disease
  - Arthritis
  - Vasculitis (therefore can effect many organs)

Ankylosing spondylitis

- Bones of spine fuse
  - “Bamboo spine” on Xray
- 95% HLA B27

Psoriasis

- Scaly skin condition (ranges from nuisance value to severe medical illness)
- Can effect hair and nails
- Joint problems more common in severe cases and those with nail problems
- Joints involved include small distal joints of fingers, sacro-iliac and spine

Crystals

Crystal-induced synovitis

- Gout (urate)
- Pseudogout chondrocalcinosis(calcium pyrophosphate)

Gout

Painful peripheral joint acute

Deposition of crystal due to

Hyperuricaemia

Deposits in tissue Tophus

Urate nephropathy

Gout

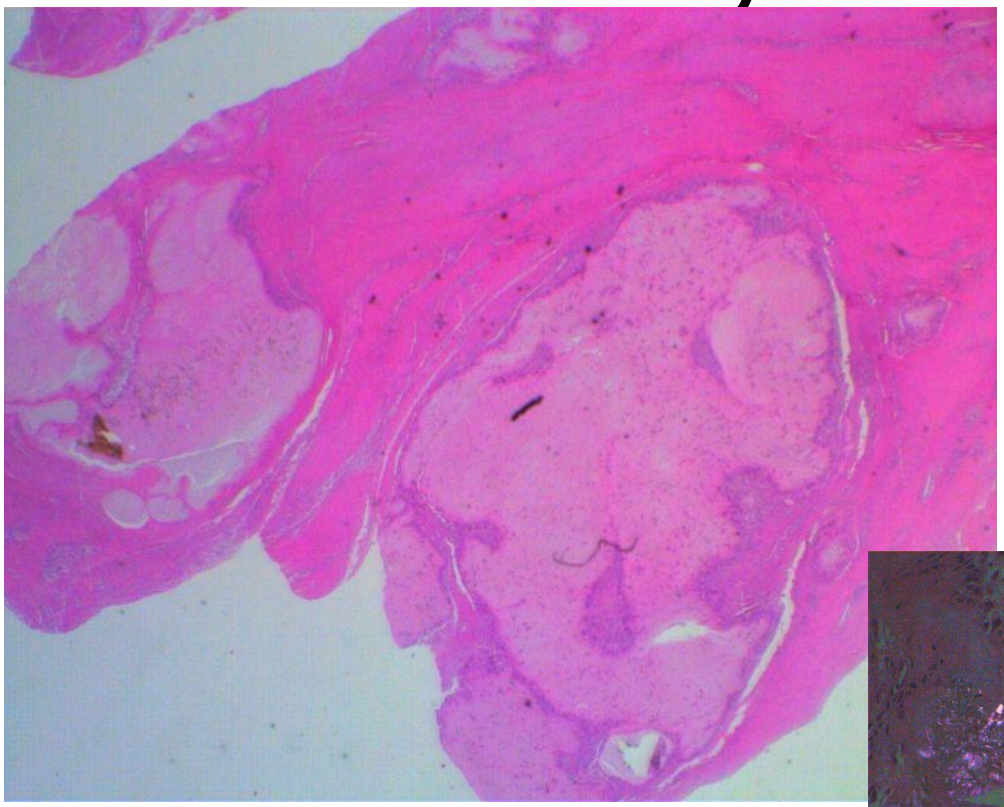
- Arthritis
  - Extremely painful
  - Classically big toe
- Soft tissue tophi
  - chalky subcutaneous mass
- Renal damage

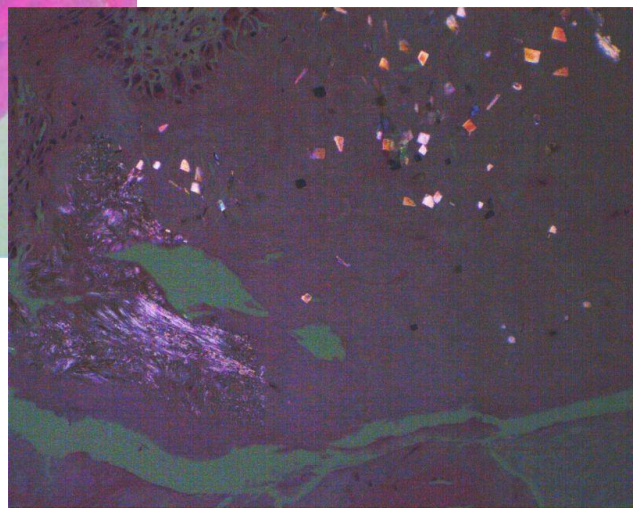
Hyperuricaemia and Gout

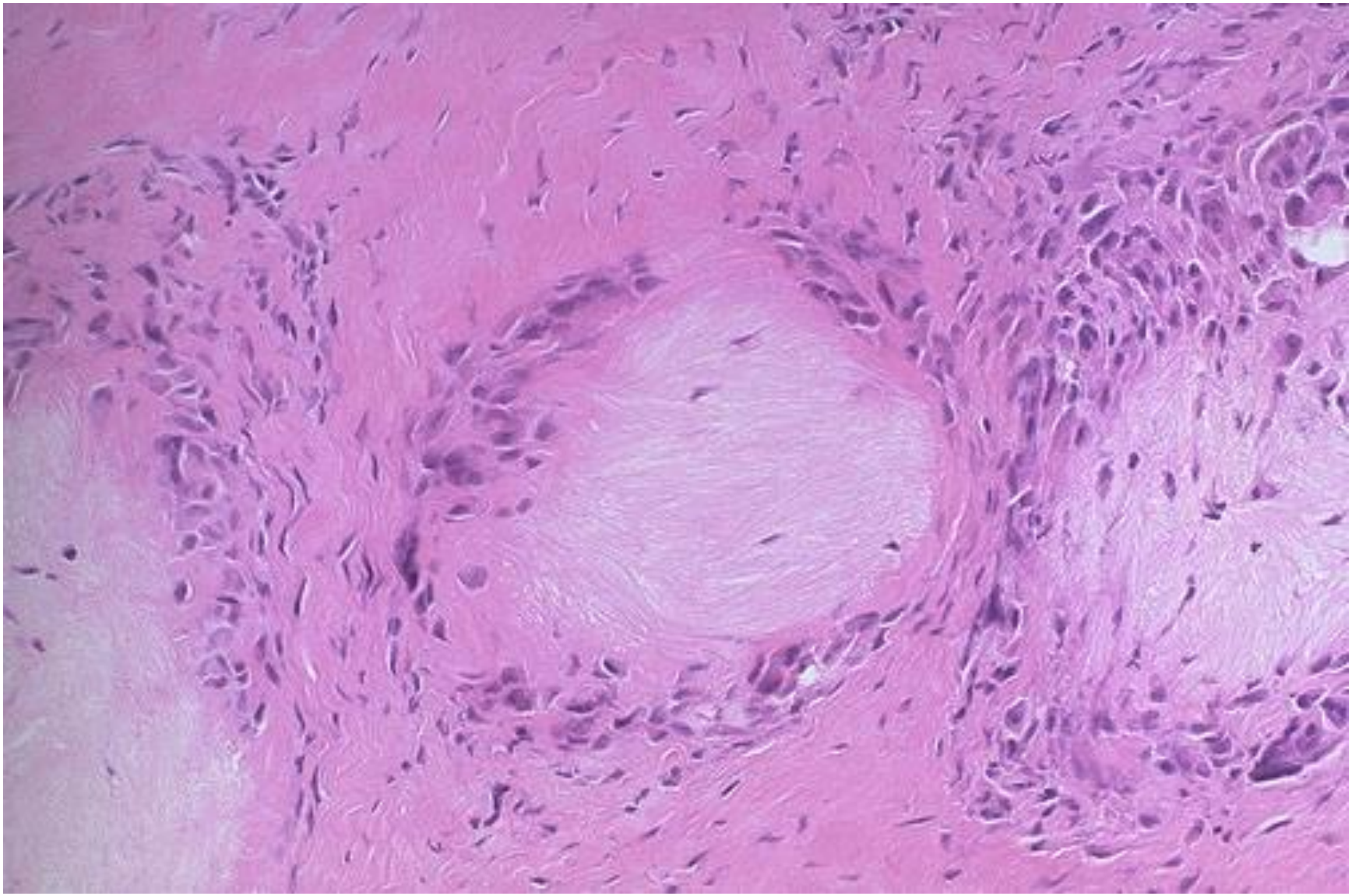
- Abnormal purine metabolism -> increased urate
  - Excess production
    - Consitutional
    - Gouty food
    - Chemotherapy
  - Inadequate disposal
    - Constitutional
    - Renal problems
- Tissue precipitation of urate crystals -> GOUT


VP1

Urate and pyrophosphate crystals







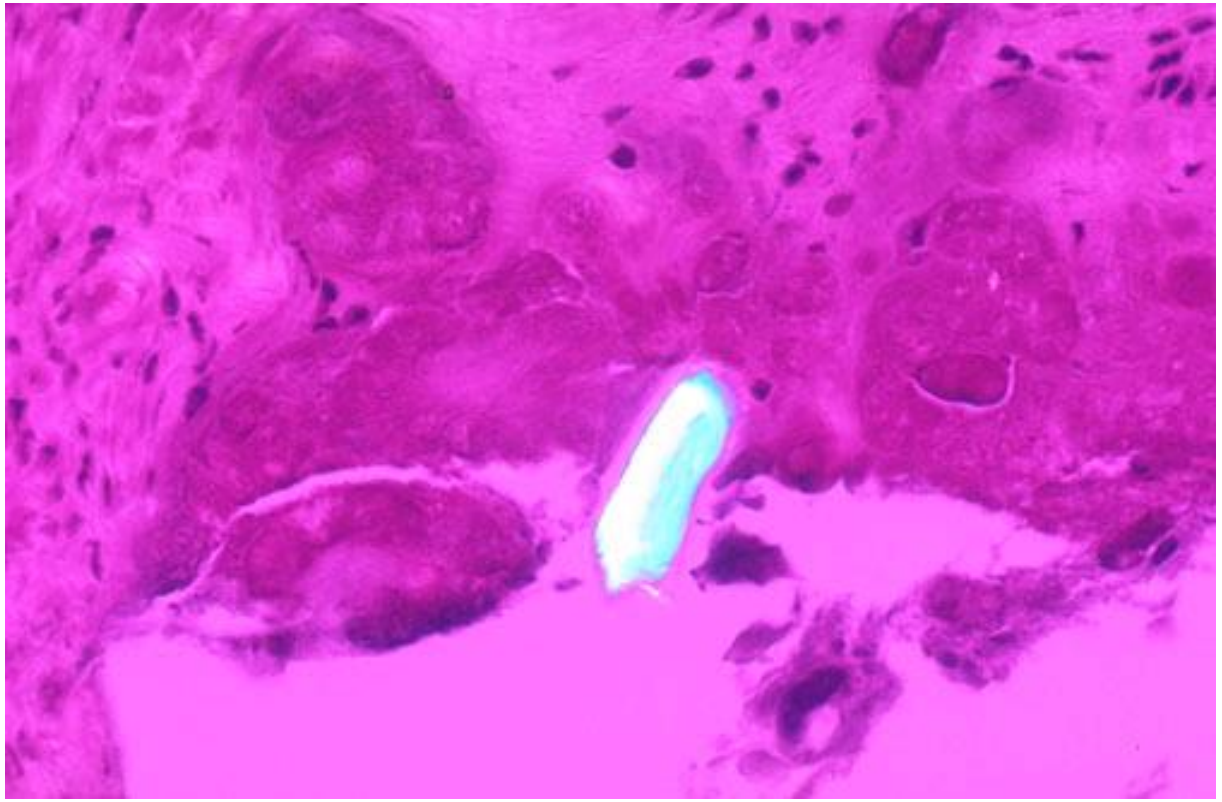
Chondrocalcinosis

Articular cartilage deposits

Aging

Metabolic hyperparathyroid

Haemochromatosis



Septic Arthritis

Septic arthritis

- Infants
  - Haematogenous septic arthritis (mainly Staph)
  - Used to be Haemphilus Influenae (now have routine vaccination)
- Sexually active adults
  - Gonococcal (75% in this group)
- Adults and older children
  - Rheumatoid arthritis (80% Staph)
  - **Trauma contamination (Staphy, polymicrobial)**
  - **Streptococcus (about 20%)**
- Elderly, immunocompromised, drug addicts
  - Gram negative septicaemia

Other septic arthritis

- TB
- Lyme disease (not in Australia)
- Brucella
  - Zoonosis or accidental contamination by cow vaccine
- Viral
- Anaerobes (usually part of polymicrobial)

How do we get septic arthritis?

- Haematogenous
  - Infants and small children
    - Mainly staff
  - Immunocompromised, drug users, elderly
    - Often gram negative (spine, sacro-iliac)
- Extension from osteomyelitis
- Penetrating injury
  - Trauma
  - Iatrogenic (diagnostic tap, steroid injection)
  - Surgery
- Prosthesis

Septic arthritis

- Haematogenous
  - Young children (immunity takes a few years)
    - Staphylococcus
    - Encapsulated organisms (“meningococcal)
    - Haemophilus influenzae, meningococcus, pneumococcus,
  - Gonococcus (adults)
  - Septicaemia (including Gram neg in elderly)
- Direct infection
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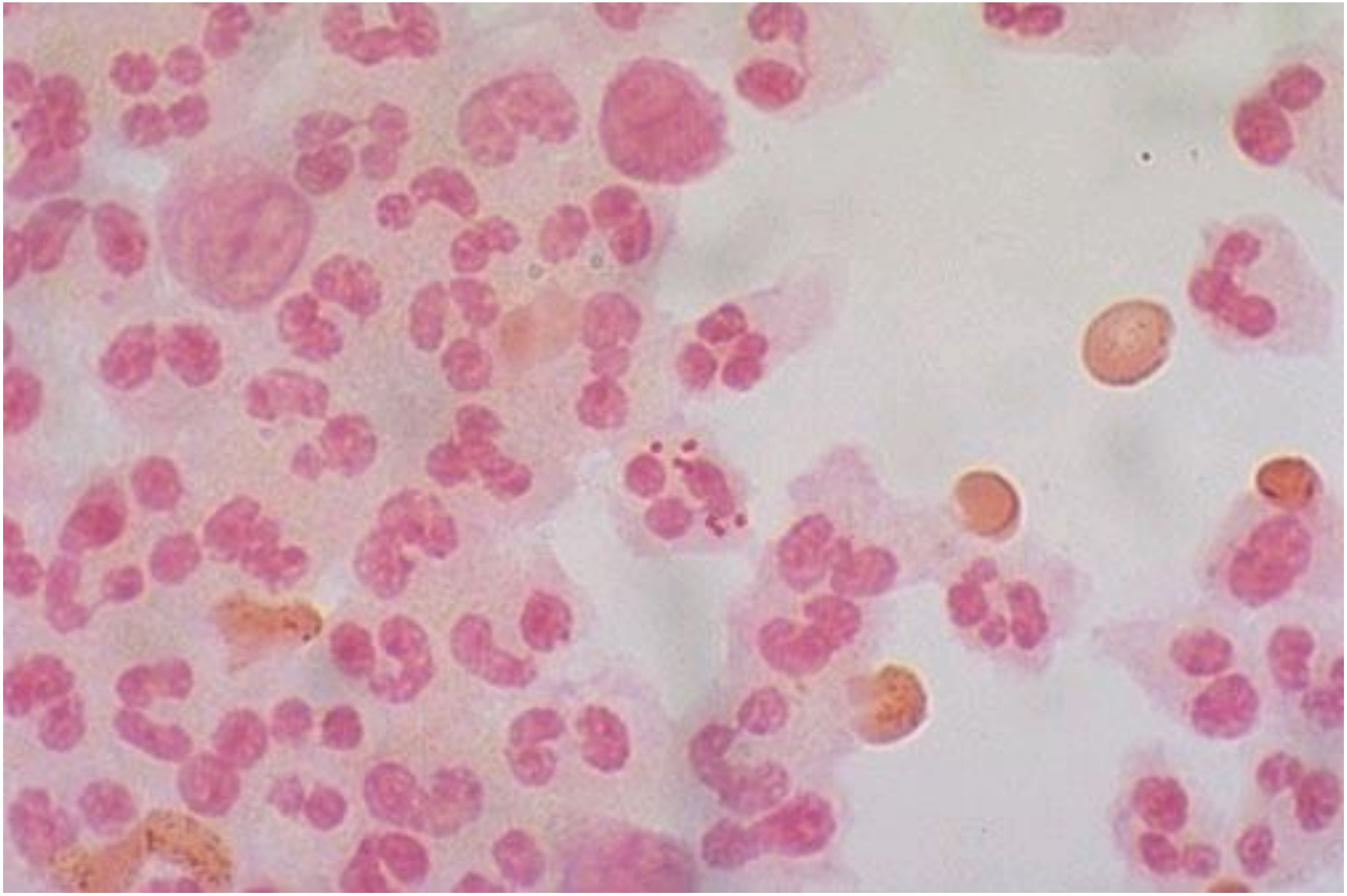
Complications of septic arthritis

Degenerative joint disease

Osteomyelitis

Ankylosis

Sepsis



Infection in prosthesis

- Common cause of joint loosening
  - NOT only cause of joint loosening
- Early joint failure
  - Acute infection usually staph aureus
- Late failure (months)
  - Often low grade / chronic (eg Staph albus)
- Treatment with antibiotics
  - Trial of antibiotics
  - Not uncommonly fails and have to take joint out