RHEUMATOLOGY

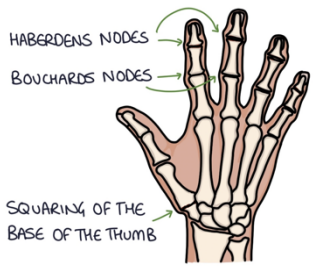
OSTEOARTHRITIS (OA)

Cause
- Chronic degeneration of the WHOLE synovial joint due to a combination of:
- Fibrillation and fissuring of cartilage surface with chondrocyte clumping and hyperplasia ((*MMP-1,13 and collagenases*))
- Typically affects large jts (hips, knees, DIP, CMC (saddle jt), wrist)

RF
- ***Modifiable*** = **Overweight**, **repetitive usage** or injury (meniscal, ACL tear), Vit D def., myalgia, repetitive work
- ***Non-modifiable*** = **older** (over 45yo) , **female**, **FHx**, Ethnicity (**Asian**), **RA**, **endo** (haemochromatosis, acromegaly)

S+S / Exam
- **Activity related jt Pain (improved w/ rest, worse on activities)**
- Early AM stiffness (< 30 mins)
- Large joints affected (mono, oligo, poly) **esp. DIP and 1st MCP**
- Impaired mobility and physical function --→ reduced ADL

Classical Signs
- **Bony hard Joint swelling** (osteophyte formation)
- **Bouchard's nodes** (PIP) and **Heberden's nodes** (DIP)
- **Squaring at base of thumb (CMC)**
- **Crepitus**,
- **Reduced ROM**
- **Muscle wasting** + weak grip



DDX
- ***Chondrocalcinosis*** → elderly → 20-40mg prednisone daily or colchicine 0.5mg twice daily
- ***Inflammatory arthritis*** (SpA, RA, crystal, vasculitis, septic) →
- ***Haemochromatosis*** → < 50 + no predisposing factors
- ***Fibromyalgia***
- ***Tendinopathy***
- Osteonecrosis

Comp.
- Psychosocial → lower SES, education
- Fracture
- Reduced QoL

Ix
AVOID UNNECESSARY IMAGING (e.g. weight bearing X-ray or MRI)
- Little correlation between OA symptoms w/ radiological findings
- XR (LOSS) = Loss of articular cartilage, osteophyte growth, subchondral cysts, subchondral sclerosis
  - Sunrise view of patella (Laurin skyline view)
  - PA in 45 deg of knee flexion (best to view JSN) (Rosenberg view)

Mx

Education
- Patient education ➔ knowledge, attitudes (brochures, websites e.g *MyJointPain.org.au*)
- **INTEGRATED APPROACH** towards prevention and modifiying risk factors to slow disease progression

Non-pharm (lifestyle)

MDT Approach = PT, OT, dietician, EP, psychologist
- Wt loss (dietician)
- land-based exercise (PT) = low impact aerobic fitness
  - at-home exercise (quad strengthen)
  - hydrotherapy
  - tai-chi and swimming
- assistive devices / orthotics (OT)
  - walking stick
  - 4WWW
  - Elastic or back support

Pharm [stepwise]
- Topical NSAIDs → knee and hand OA
- Topical capsaicin
- Oral NSAIDs (better than paracetamol) → add PPI
  - Monitor EUC (AKI), LFT (hepatotoxic)
  - Warn PUD/Bleed

*AVOID opioids (codeine, morphine)

Surgery
1. **Intra-articular steroid injections**
   a. temporary reduction in inflammation and symptom improvement
2. **Joint surgery if mod-severe symptoms**:, sig. QoL affect
   a. **Knee arthroscopy** + meniscus debridement
   b. **High tibial osteotomy** (HTO) – young active
   c. **Unicompartmental arthroscopy** - >60yo and thin
   d. **TKR** → last line (can be converted from HTO)

FU
- **Non-urgent rheumatology review** (if pharmacotherapy needs escalating or diagnostic uncertainty)
- **Orthopaedic surgical review** → severe Sx
- **GPMP of OA**
  - Goals, expectations, action items to review in 4-6/12
  - ≥3 health professionals (5x subsidised visits/year)
  - Print copy for pt and add document to medical records

RHEUMATOID ARTHRITIS (RA)

Cause
- Autoimmune mediated chronic joint inflammation
- Synovial membrane hyperplasia (TNF-a and IL-6)
- Leucocyte recruitment – angiogenesis
- Formation of pannus (hyperplastic and inflamed synovium)

RF
- FHx of RA or autoimmune disease
- Young females
- Genetics: HLA DR1 and DR4

S+S / Exam
- **Activity related jt Pain (improved w/ activity, worse on rest)**
- **Symmetrical distal polyarthropathy**
- PIP and MCP joints (**DIP sparing**)
- Early AM stiffness (> 30mins) → improved on activity (worse on rest)

Extra-articular manifestations
- **Dry eye syndrome +/-** Episcleritis, scleritis
- **Pulmonary fibrosis** (Caplan's syndrome) = **most common**
- Bronchiolitis obliterans (inflamed small airways)
- **Felty's syndrome** (RA, neutropenia, +SM)
- Secondary Sjogren (sicca syndrome)
- **Anaemia** of chronic disease
- LN, **amyloidosis, carpel tunnel syndrome**

Signs:
- **Soft tender tissue swelling**
- **Z-deformity of thumb**
- **Swan neck deformity** (*hyperextended PIP with flexed DIP*)
- **Boutonniere's deformity** (*hyperextended DIP with flexed PIP due to FDS tendons pulling on distal phalynx caused by tear in central slip in extensor components of fingers*)
- **Ulnar deviation of fingers at knuckles** (MCP)
- **Hand muscle wasting**
- **Neck pain and parasthesia** → Atlantoaxial subluxation (medical ED)

DDX
- *Septic arthritis* (bacterial, viral, fungal) – Hep B, parvovirus
- *Crystal arthropathy* (gout, pseudogout)
- *Spondyloarthropathies* → recent infections (STI, GI), asymmetrical, lower limb, axial
- *OA*
- *CT disease (Sjogren, SLE)*
- *Vasculitis*

Comp.
- Psychosocial – A+D
- Reduced QoL

Ix
- FBC, EUC, LFT, ESR/CRP, serum urate
- RF, anti-CCP, HLA-B27, ANA, anti-dsDNA, ANCA
- Joint aspirate – M/C/S + Polarised microscopy
- **USS or XR hands and feet (LESS)** → Loss of joint space, bony erosions, soft tissue swelling, periarticular osteopenia
- **MRI C-spine** → Atlantoaxial subluxation = in cervical spine when axis (C2) and odontoid peg shift within atlas (C1) causing spinal cord compression
- **If reactive arthritis suspected** ➔ *Chlamydia PCR and stool culture PCR (salmonella, shigella)*

Mx

Education
- knowledge, attitudes (brochures, websites e.g *MyJointPain.org.au*)

Non-pharm (lifestyle)

MDT Approach = PT, OT, dietician, EP, psychologist
- PT/EP → splints, walking aid, education and joint care and protection (land based exercise)
- OT → equipment housing modification

Pharm [Trial topical therapies]

Acute Mx:
- 1st line NSAID + PPI
- 2nd line 5-10mg prednisone oral od,

Long-term Mx:

1st line = MTX	(+ 5mg folic acid taken on different day), **or** sulfasalazine **or leflunomide**
2nd line	Use 2 of the above
3rd line	MTX + biologics (anti-TNF (infliximab, adalimumab, etanercept)
4th line	MTX + rituximab

*Nb: pregnant women have improved symptoms due to increased steroid production during pregnancy

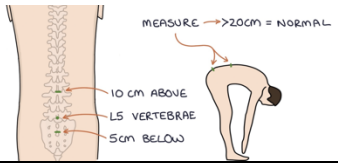
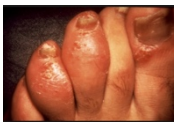
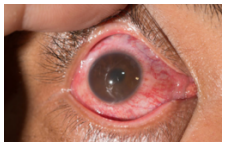
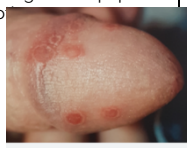
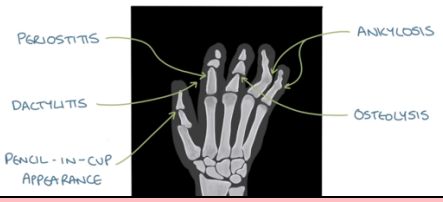
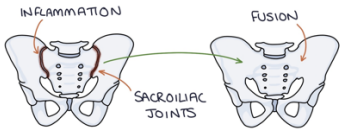
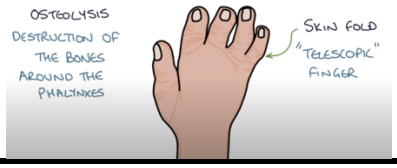
Surgery

Urgent orthopaedic referral if:
- Septic arthritis
- Sig. joint deformity

Worse prognostic factors:
- **Younger onset**
- **Male**
- **More joints and organs affected**
- **Presence of RF and anti-CCP**
- **Erosions on XR**

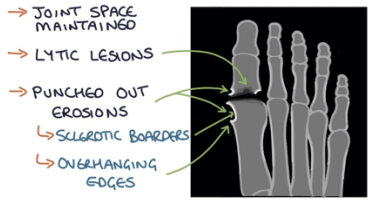
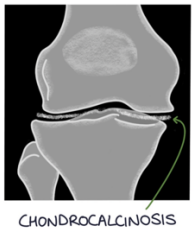
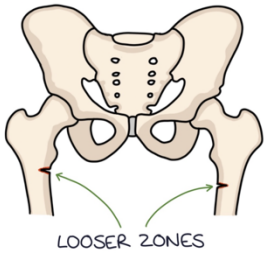
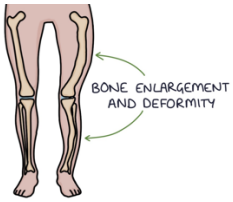
FU
- **Non-urgent rheumatology review** ➔ uncertainty diagnosis, or considering withdrawing DMARD
  - ++ ESR/CRP + RF, ANTI-CCP
  - Persistent jt inflammation at 6 wks
- **Das28 (Disease activity score)** – assess 28 joints and point given for (1) swollen, (2) tender joints and (3) ESR/CRP result ➔ monitor Rx response
- **Monthly EUC, LFT for first 6/12** (if started on DMARD)
- **Check CVD risk** (lipids and HbA1C) → *statin, BP, OP*

SERONEGATIVE SPONDYLOARTHOPATHIES

	Ankylosing Spondylitis	Reactive Arthritis "Reiter's syndrome"	Psoriatic Arthritis
Def	Inflammatory condition affecting spine mainly causing progressive stiffness and pain	Synovitis in response to recent infection trigger	Inflammatory arthritis associated with psoriasis (arthritis develops within 10 years after psoarisis)
RF	• Young adult males in 20s • HLA-B27	• STI (C+G) or gastroenteritis • HLA-B27	• Psoriasis • HLA-B27
Sx	➢ SIJ tenderness ➢ Lower back and buttock pain ➢ Worse PM – nocturnal waking ➢ AM stiffness > 30 mins (improved during day) ***Signs*** ➢ Schober's test = distance bending forward < 20cm = lumbar restriction 	➢ Acute monoarthritic (Affecting single swollen joint usually knee) ➢ Recent infection *"Can't see, can't pee or climb a tree"*	• Symmetrical polyarthritis = mainly females affecting hands, wrists, ankles and DIP • Asymmetrical pauciarthritis – mainly affecting digits • Spondylitic pattern (mainly men) → back stiffness, sacroiliitis, atlanto-axial jt ***Signs***: • onycholysis (separation from nail bed), • dactylitis • nail pitting • psoriasis plaques • enthesitis 
Assoc.	➢ Chest pain = costovertebral and costosternal joints ➢ Enthesitis ➢ Anaemia ➢ Anterior uveitis ➢ Achilles tendinitis ➢ Apical pulm fibrosis (1% of patients) ➢ AR and aortitis ➢ HB due to heart fibrosis ➢ IBD	➢ Bilateral non-infective conjunctivitis ➢ Anterior uveitis ➢ Circinate balanitis ➢ Keratoderma blennorrhagia – red papules that become hyperato  	➢ Bilateral non-infective conjunctivitis ➢ Anterior uveitis ➢ Aortitis ➢ Amyloidosis 
Comp.	Vertebral fractures		Arthritis mutilans (joint completely destroyed)
Ix	➢ **FBC, EUC, CRP/ESR** ➢ **HLA-B27 genetic test** ➢ ***XR spine and sacrum*** o **bamboo spine** (fusion of facet, spine and SIJ) + Squaring verterbral bodies o **syndesmophytes** = bony growths within ligaments o **subchondral sclerosis** and erosions ➢ ***MRI spine*** = bone marrow oedema	Investigations to exclude septic arthritis: ➢ FBC ➢ EUC ➢ CRP ➢ Joint aspirate → M/C/S ➢ Crystal exam – exclude gout, pseudogout	➢ **FBC, EUC, CRP/ESR** ➢ **HLA-B27 genetic test** ➢ ***XR changes*** o **Periostitis –** inflamed periosteum causing thickened irregular bone outline o **Ankylosis –** bones coming together causing jt stiffening o **Osteolysis –** bone destruction o **Dactylitis –** inflamed digit (soft tissue swelling) o **Pencil-in-cup appearance –** central erosion of bone beside joint causing one bone to appear hollow while other is narrow and sits in cup
Mx	***Conservative*** ➢ Stop smoking ➢ Exercise and mobilisation (PT) ➢ Bisphosphonates for OP ***Medical:*** ➢ NSAID (trial for 2-4 wks before switching) ➢ Steroids PO/IM (for acute flares) ➢ Anti-TNF ➢ Anti-IL17 (secukinumab) ***Surgery*** ➢ Severe spine/joint deformity 	***Once septic arthritis excluded:*** ➢ NSAID ➢ Intra-articular steroid injections ➢ Systemic steroids (if multiple joints) ***For recurrent cases (after 6/12)*** ➢ Non-urgent rheum referral ➢ DMARDs ➢ Anti-TNF	➢ Non-urgent rheum & dermatologist referral ➢ NSAID – for pain ➢ DMARD ➢ Anti-TNF ➢ **Ustekinumab**= last line (if anti-TNF fails) → MAB targets IL- 12 and 23 **Monitor for arthritis mutilans**: ➢ Occurs in phalanxes → osteolysis of bones around joint causing digit shortening and skin folds develop ➢ "telescopic finger" 

COMMON AUTOIMMUNE MEDS

	MTX	Sulfasalazine	Leflunomide	Hydroxychloroquine	Anti-TNF	Rituximab
MoA	➢ Inhibit folate metabolism ➢ Taken w/ folic acid 5mg per week on different day to MTX	➢ Immunosupp and anti-inflammatory ➢ Safe during pregnancy w/ folic acid suppl.	➢ Interfere with pyrmidine production for RNA/DNA	➢ Usu. anti-malarial ➢ Disrupts toll-like receptors to disrupt antigen presentation ➢ Safe during pregnancy	➢ Blocking TNF reduces inflammation ➢ ***MABs** = **antibody to** TNF* ➢ . Etanercept = binds TNF to ***Fc portion*** of ***IgG*** and to reduce activity.	➢ Anti-CD20 MAB on B cell surface
A/E	➢ **Bone marrow suppression + leukopenia** ➢ **Teratogenic** ➢ Pulmonary fibrosis ➢ Mouth ulcer ➢ Liver toxicity ➢	➢ **Reduced sperm count (male infertility)** ➢ Bone marrow suppression	➢ **PERIPHERAL NEUROPATHY** ➢ **HTN** ➢ Mouth ulcers ➢ Rashes ➢ Liver toxicity ➢ Bone marrow suppression + leukopenia ➢ Teratogenic	➢ **Nightmares** ➢ **Reduced visual acuity** ➢ Liver toxicity ➢ Skin pigmentation	➢ Infection risk ➢ **Reactivation of TB and Hep B**	➢ **NS** ➢ **Low plts** ➢ Infection risk ➢ Reactivation of TB and Hep B ➢ Peripheral neuropathy ➢ Liver and lung toxicity

	GOUT	PSEUDOGOUT	OSTEOMALACIA	PAGET'S DISEASE
Def	Crystal arthropathy due to chronically high uric acid levels ➢ Urate crystal deposition in joint causes hot swollen joint	Crystal arthropathy due to Ca pyrophosphate crystals deposited onto joint causing **chondrocalcinosis**	Defective bone mineralisation creating "soft" bones	Disorder of bone turnover. XS bone turnover due to XS activity of both osteoblast and osteoclast that **is NOT coordinated** → areas of high density (sclerosis) and low density (lytic) ➢ High risk of pathological fractures ➢ Mainly axial skeleton (bones of head and spine)
RF	• High purine-based diet (EtOH, seafood, red meat) • male • Obesity • diuretics • FHx • Existing CKD or CVD	• >65 • Oa • HPTH • Hypothyroid • Diabetes • Haemochromatosis • hypoPO4 (Asian)	• **Developing nation** (no fortified vit D staple foods) • **malabsorption** – iBD, gastric bypass, pancreatitis (cannot digest fat soluble vitamins) • **low vit D** = darker skin, colder climate, low sunlight exposure	
Sx	➢ Gouty tophi – SC deposits of uric acid ➢ Mostly DIP ➢ Painful swollen hot joint in: o MTP joint o Wrist o CMC joint (saddle-jt)	➢ *Hot swollen painful stiff knee (also shoulder, wrist and hip)* ➢ *May present asymptomatically – incidental finding on XR* *Milwaukee gout = Ca hydroxyapatite in shoulder*	• Fatigue • Bone pain • Muscle weakness and aches • Pathological fractures → looser zone (fragility # that partially go through bone)	• Bone pain • Bone deformity • Fractures • Hearing loss (if Paget's affects ossicles in ear)
Comp.	➢ Reduced QoL ➢ Uric acid renal stones			➢ Osteogenic sarcoma (osteosarcoma) ➢ Spinal stenosis (spinal cord compression)
Ix	***Joint aspiration + crystal assessment*** o Negatively birefringent needle o Elevated neutrophils o Exclude septic arthritis (no bacterial growth) **Plain radiograph** o Normal joint space o Lytic lesions o Punched out erosions o Erosions with sclerotic borders and overhanging edges 	***Joint aspiration + crystal assessment*** ➢ Positively birefringent rhomboid ➢ Calcium pyrophosphate crystals ➢ Exclude septic arthritis (no bacterial growth) ➢ **Plain radiograph** ➢ Calcified odontoid ➢ **Chondrocalcinosis - thin white line in middle of joint space (pathognomonic → diagnosis of pseudogout)** ➢ **Features of OA (LOSS)** 	**BLOODS:** ➢ **CMP – hypoCa, low PO4** ➢ **LFT – raised ALP** (high bone turnover) ➢ PTH - HIGH – secondary HPTH **X-ray** ➢ Osteopenia (radiolucent bones) ➢ DEXA scan – low BMD 	**BLOODS:** ➢ CMP – normal ➢ **LFT – raised ALP (ONLY)** **X-ray** • **Bone enlargement and deformity** • "**Osteoporosis circumscripta**" = well defined osteolytic lesions (appears lower density) • "**Cotton wool appearance**" of the skull = poorly defined patchy areas of increased density (sclerosis) and decreased density (lysis) • "**V-shaped defects in** long bones = V shaped osteolytic bone lesions within the healthy bone 
Mx	***Acute Gout:*** o **1st line = NSAIDs** (impaired GI) within 72 hrs o **2nd line (if CKD, HF)= Colchicine** 0.5mg tds (high dose = diarrhoea, neuromytoxicity) o **3rd line Steroid approaches** (20mg/day – intra-articular administration) ***Chronic Gout (prophylaxis)*** o Aim: lower uric acid levels to reduce supersatuation tophi attacks o **< 0.36 mM (no gout)** o **< 0.30 mM (with gout)** o ***Lifestyle*** = lose wt, hydrated, minimise purine rich foods and EtOH consumption o **Allopurinol (*xanthine oxidase inhibit*or) start at 100mg/day and up-titrate at 4 weekly intervals** → no upper limit of dose (*begin 50mg/day if CKD*) o *If CI:* ***Febuxostat*** *[Xanthine oxidase inhibitor], probenicid* o **Do NOT stop allopurinol (fluctuations in uric acid levels causes gout flares)** → advise patients that it will get worse then better	If chronic and asymptomatic ➔ no Rx If symptomatic, usu. self-resolves over several weeks but consider: ➢ **NSAID's** OR ➢ **Colchicine** OR ➢ **Joint aspiration** ➢ **Intra-articular injections** ➢ **Oral prednisone** OR ➢ **Joint washout (arthrocentesis) – for severe cases** *Check for patients with*: ➢ **Haemochromatosis** – Fe study ➢ **Low Mg, PO_4^{3-}** - CMP ➢ **TSH** ➢ **Dehydrated**	***Conservative***: ➢ Increase sunlight exposure (with sun protection guidance) ***Medications*** ➢ Vit D supplement (colacalciferol) ➢ 50, 000 IU once weekly for 6 weeks ➢ 20, 000 IU once weekly for 7 weeks ➢ 4, 000 IU daily for 10 weeks **maintenance* supplementary dose for of 800 IU or more per day should be continued for life after the initial treatment.	➢ **MAIN = Bisphosphonate PO once weekly** (e.g. 70mg alendronate) – restored normal bone metabolism ➢ **Check ALP levels –** should normalise if treatment effective *Additional:* ➢ **1000 IU Vit** D oral daily (aim Vit D > 50) ➢ **1000mg Ca** supp. oral daily ➢ NSAIDs w/ meals/PPI – for any bone pain *Monitor for complications:* **1)** **Osteogenic sarcoma (osteosarcoma)** *Poor prognosis →presents with increased focal bone pain and swelling (early diagnosis critical)* 2) **Spinal stenosis (spinal cord compression)** *deformity in spine causes spinal canal narrowing* (early MRI scan critical) → bisphosphonates (1st line) → surgery if fails

Osteoporosis

Epi	**Reduced bone density = brittle bones prone to fracture** ➢ 3/12 after hip # = 5-8x mortality risk ➢ 5 years after injury in 80yo = 26% F > 18% M	**RED FLAGS**	➢ MINIMAL TRAUMA # ➢ VERTEBRAL # ON PLAIN IMAGING ➢ GLUCOCORTICOIDS USAGE > 3/12
Hx	• advanced age • female (post-meno) • reduced mobility /PA • Low BMI < 18.5 (anorexia nervosa) • RA • EtOH + smoking • Long-term CS suage, SSRI, PPI, anti-epileptics, anti-E2 (tamoxifen)	**Exam**	• Unexplained back pain • Thoracic kyphosis • Short stature -Loss of vertebral height (≥3cm)
Ix	Baseline bloods: • FBC, EUC, • LFT (ALP), albumin, globulin • ESR/CRP • Vit D, PTH, CMP • *Endocrine* = TFT, Cortisol • *MM* = EPG light chain (urine and serum) • *Coeliac* = anti-gliadin, IgG TTA, HLA DQ2/8 Imaging • Spinal and proximal femur X-ray + DXA scan • MBS subsidised DXA scan for all pts ≥ 70 yo	**DDx**	*Primary pathological cause* • M**M, malignancy** (e.g. 1 vs 2 – leukemia) • Pott's disease, • **Paget's disease** • **McCune Albright syndrome** (café au lait, fibrous dysplasia, precocious puberty) • **Post-menopausal** *Secondary causes:* • **Endo** (cushing's, hyperthyroidism, hypogonadism, HPTH, DM) • **Systemic** (CT disease, malabsorption – coeliac, IBD-Crohn's or CKD, cirrhosis) • **Meds** (glucocorticoids, anticonvulsants, glitzaones, anti-androgen or anti-estrogen) • **Malnutrition** – anorexia nervosa (hypoCa)

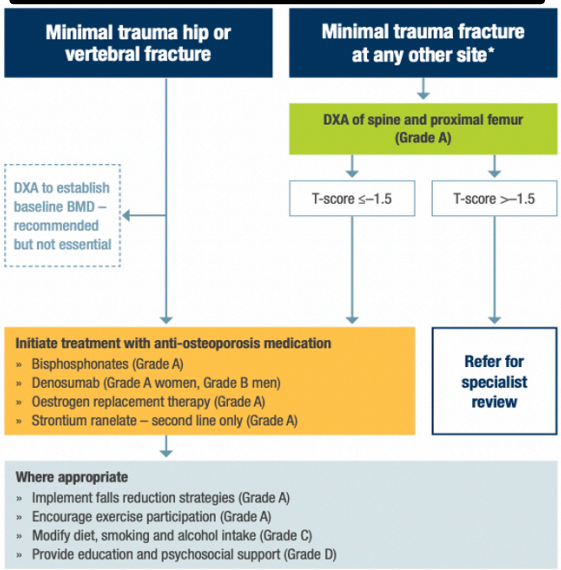
T score	BMD
> -1	Normal
-1 to -2.5	Osteopenia
< -2.5	Osteoporosis
<-2.5 + fracture	Severe osteoporosis

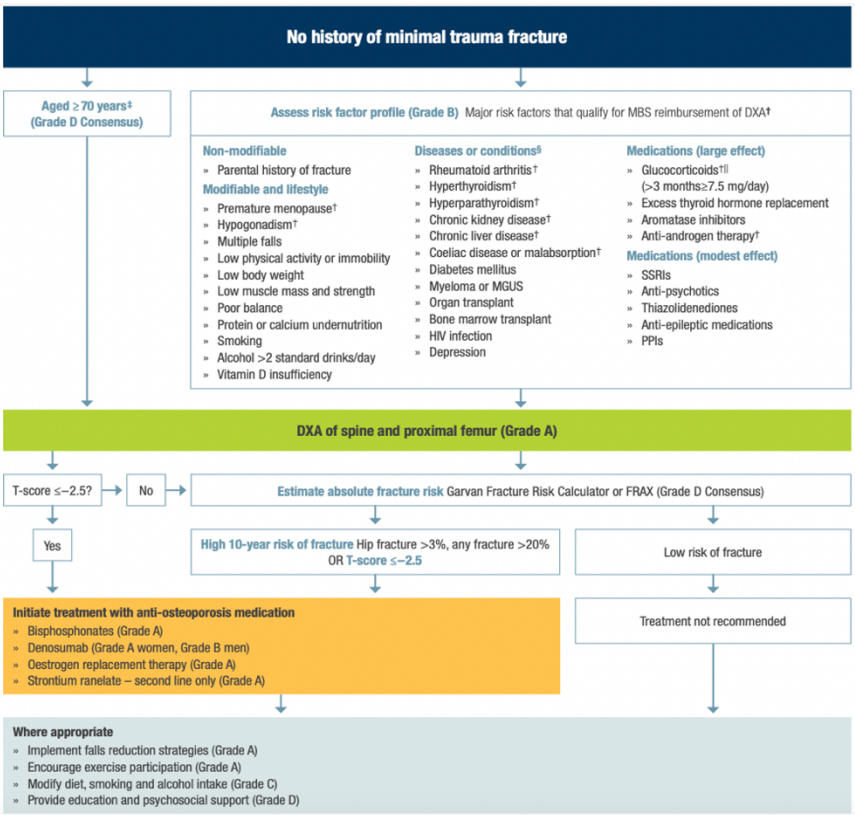
T score	Risk factors	DXA scan
> -1.5	No	Every 10-15 years
-1.5 to -2.0	No	Every 3-5 years
-2.0 to -2.5	Yes	Every 2 years

FRAX (5-10 year of hip # risk)

(women > 65, men >75 or any RF)

- Sex
- Age
- No. of 3 since 50
- T-score
- No falls in last 12 months





Education	• Attitudes and knowledge ➔ give brochures and pamphlets ➔ MDT (dietician, PT, OT, psychologist) • Impact on ADLs + FRAX calculator
Non-pharm (lifestyle)	• **Stop smoking, reduce alcohol** (< 3 std drinks/day) • Increase PA (weight bearing -walking w/ 5kg back pack, dancing, brisk walk), improve diet • Falls prevention strategy (e.g. auxiliary aids, community physical activity programs, home environment = reduce stairs)
Pharm [Trial topical therapies]	• **1000 IU Vit** D oral daily (aim Vit D > 50) • **1000mg Ca** supp. oral daily • **Bisphosphonate PO once weekly** (e.g. 70mg alendronate) → taken "upright" to prevent oesophagitis for 30 mins -→ A/E = atherosclerosis, stones, constipation ➔ osteonecrosis of jaw or external auditory canal & atypical fracture of femur (30% bilateral) • **Denosumab SC every 6/12** ➔ same A/E as bisphosphonates ○ Denosumab (don't stop abruptly) ➔ +++ risk of fractures as well as cystitis, HC, Myalgia

Referral + FU	• **Repeat DXA 2 years after** commencing or changing treatment (**NO IDEAL MONITORING METHOD → NO # = SUCCESS RX]**
	• **Refer to endocrinology or rheumatology** if:
	  ○ BMD T < -3.0 or minimal trauma # w/ normal T score
	  ○ Pre-menopausal OP or men < 60 with OP
	  ○ Intolerant of 1st line treatments OR secondary causes
	• **Falls prevention clinic** via Aged, Chronic Care and rehabilitation service

SYSTEMIC LUPUS ERYTHEMATOSUS

Epidemiology

Classical LUPUS =	Discoid lupus
Inflammatory autoimmune CT disease affecting multiple organs • Peak age 20-40 ' • 9x F > M	Non-cancerous chronic skin condition assoc. w/ increased risk of developing SLE (5%) as well as SCC ➢ F > M ➢ Dark skinned ➢ Smokers

RISK FACTORS

- ➢ **family hx**,
- ➢ **drug -induced** (e.g. COCP, phenytoin, anti-hypertensives, procainamide, hydralazine),
- ➢ **viral trigger** [*common cold*], **UV, smoking, infection**
- ➢ **Vit D deficiency**

Clinical Px [RASH ON MAIDS]

General = fatigue, UWL, fever

- **R**enal (GN, proteinuria, haematuria, casts)
- **A**rthritis (**non-erosive joint BUT swelling** *unlike OA/RA*)
- **S**erositis (pleuritis, pericarditis, peritonitis)
- **H**eam (↓ RBC, ↓ lymphocytes, ↓ platelets)
- **O**ral ulcers (painless) & **Alopecia**
- **N**euro (psychosis, seizures)
- **M**alar rash (*fixed flat/raised erythema sparing nasolabial folds*)
- **A**NA + ve, anti-dsDNA, anti-SM
- **I**mmune
- **D**iscoid lupus (dry inflamed patchy crusty and scaling rash *around face ears and scalp)*
  - **Photosensitive + scarring alopecia + hyper and hypo-pigmented scars**
- **S**unsensitive rash

Comp.

Chronic inflammation means patien have shortened LE

- ***Leading cause of mortality*** = *CVD (HTN, PVD) and infection (secondary to immunosuppressants)*
- **Anaemia of chronic disease +/-** leucopenia, neutropenia, thrombocytopenia
- **S**erositis (pleuritis, pericarditis, peritonitis)
- ***ILD*** – *pulmonary fibrosis*
- ***Lupus nephritis*** → *ESKD*
- ***VTE***
- ***O+G*** = *Recurrent miscarriage, IUGR, Pre-eclampsia, pre-term labour*
- ***Neuropsychiatric SLE*** – *inflamed CNS (presents w/ optic neuritis, transverse myelitis, or psychosis)*

Ix

Bloods:

- **FBC (**normocytic anaemia, leucopenia, neutropenia, thrombocytopenia)
- **↑↑↑ ESR > ↑ CRP [**due to elevated paraprotein present]
- **Urine dipstick & urinalysis:**
  - **Urine ACR –** proteinuria (lupus nephritis) → renal biopsy?

Special tests:

- **SENSITIVE: ANA + ve [homogeneous] → ENA**
  - ANA = anti-nuclear antibody may be positive for non-CT diseases e.g. thyroid, Addison's,, IBD
- **SPECIFIC: anti-dsDNA (70%), anti-SM, C3 and C4 complement low**
- ***Anti-histone antibodies*** = **drug-induced lupus**
- ***IgG (Raised due to activation of B cells with inflammation)***
- **+ve APS antibodies (40%)** (anti-cardiolipin, B2GP1 lupus anticoagulant)

Mx

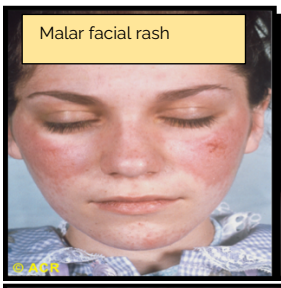
1st line for classical SLE

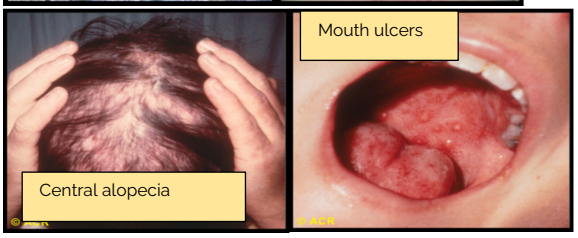
- **NSAID** w/ meals or PPI
- **Steroids** w/ meals or PPI
- **Hydroxychloroquine** (1st line for mild SLE)
- **Other DMARDs** (if more severe SLE) → MTX, mycophenolate, azathioprine, leflunomide
- **Biologics** – rituximab (anti-CD20) or belimumab (target B cell activating factor)

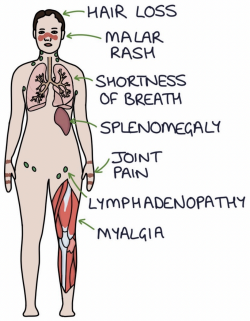
*sun avoidance for photosensitive malar rash

Management of discoid lupus

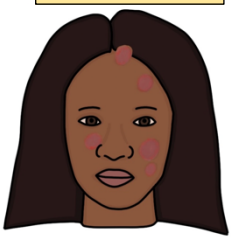
1. Skin biopsy to confirm Dx
2. Sun protection
3. Topical steroids
4. Intralesional steroids injections
5. **Hydroxychloroquine**

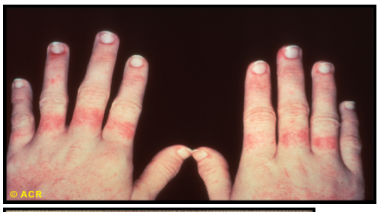






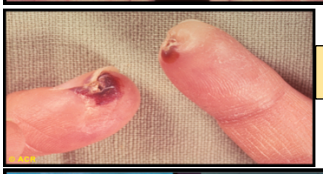
DISCOID LUPUS



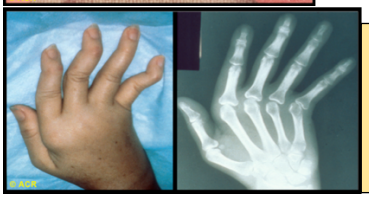


Cutaneous lesions

Interarticular dermatitis



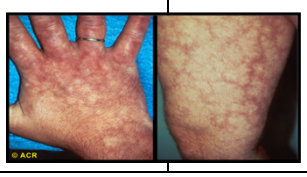
- Vasculitis fingers



Jaccoud's arthropathy
- JSN
- NO erosions
- Ulnar deviation of CMC
- Swan-neck deformity

ANTIPHOSPHOLIPID SYNDROME

Cause	Sx	Complications	Ix	Rx
➢ Hypercoagulable state due to presence of APS antibodies ➢ Assoc. w/ SLE	Livedo reticularis – mottled discolouration on skin	➢ **VTE** (PE.DVT) ➢ **O+G** (recurrent M/C, stillbirth, pre-eclampsia) ➢ **Arterial thrombosis** (MI, stroke, renal clot, mesenteric ischaemia)	➢ **Low plts** ➢ **ECHO** – libmann-sacks endocarditis (non-bacterial vegetations on heart valves esp. mitral valve) *Lab criteria for diagnosis* ➢ Lupus anti-coag ➢ Anti-cardiolipin Ig ➢ B2GP1 * high levels > 2 times at least 6 weeks apart	**MDT (rheum, haem, obstetrics)** 1. Long-term warfarin (maintain INR 2-3) – any greater = risk of recurrent thrombosis 2. For pregnant = LMWH + ASPIRIN 3. Plasmapheresis [60% success rate]



SYSTEMIC SCLEROSIS (SCLERODERMA)

Epi

- Systemic sclerosis = **autoimmune inflammatory and fibrotic CT disease**
  - Limited cutaneous
  - Diffuse cutaneous
- 4x F > M (20-40s)

Clinical Px

Localised Scleroderma types

- Morphea
- Linear scleroderma (en coup de sabre) ➔ *affects thigh and leg*
  - **DDX:** *against eosinophilic fasciitis*

Limited systemic sclerosis [CREST]

- **C**alcinosis – *calcium deposits under skin (usu. in fingertips)*
- **R**aynaud's phenomenon – *vasoconstriction of BV supplying fingers*
- **O**esophageal immotility
- **S**clerodactyly – *tightened skin reduced ROM and causes fat pad in fingers to be lost causing skin to break and ulcerate easily*
- **Te**langiectasia – *small dilated BV in skin*

Causes of 2º Raynaud's:

- **CT disease** (e.g. SLE, Scl, MCTD, Sjogren's, vasculitis, PAN)
- **Occlusive arteries** (e.g. APS, Berger's disease, atherosclerosis)
- **Frostbite**, vibrating machinery injury
- **Drugs & chem exposure** (e.g. BB, vinyl chloride, bleomycine, cocaine)
- **Hyper viscosity/cold-reacting proteins** (eg. Polycythemia, cryoglobulinemia)

Diffuse systemic sclerosis

CREST PLUS:

- **CV problems** = *HTN, CAD*
- **Resp issue** = *PHTN and pulm fibrosis (lower lobes)*
- **Renal issue** = **GN (***sclerodermal renal crisis – combination of severe HTN and renal failure*

Systemic sclerosis- **Sine scleroderma**

- Raynaud's, no skin thickening, organ damage
- Typical systemic sclerosis serology

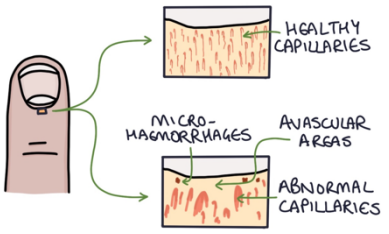
Overlap syndrome = 1 of 3 subsets

Scl-like syndromes:

- Drug-induced (vinyl chloride, epoxy resins)
- eosinophilic fascilitis
- scleromyxedema

End-organ involvement

1) Muscles → ***myalgia, atrophy, myositis***
2) *Joints* → ***arthralgia, arthritis***
3) Doppler echocardiography /ECG/ Troponin levels = **cardiac disease**
4) PFT with DLCO measurement = **lung fibrosis + pulmonary HTN**
5) Barium swallow = **GIT**
6) BP monitoring (3x/ week) = **renal disease**
7) **Nailfold capillaroscopy** → magnify and examine health of capillaries in nail fold



Ix

- **ANA +ve**
  - **Anti-centromere** = limited scleroderma
  - **Nucleolar pattern** = diffuse scleroderma
- **ENA + ve**
  - **Anti-SCL-70 (anti-topoisomerase 1)** = diffuse scleroderma
  - **Anti-RNA pol III** = diffuse scleroderma

Mx

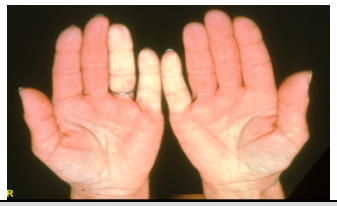
MDT management

Non-medical:

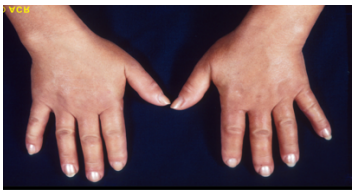
- Avoid smoking
- Gentle skin stretching to maintain ROM
- Regular emollients (calamine lotion)
- Avoid cold triggers
- Maintain healthy joint (PT) and ADLs (OT)
- **CONSIDER FOR AUTOLOGOUS STEM CELL TRANSPLANT**

Medical Mx:

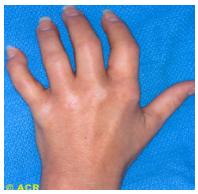
- **Raynaud's** = GTN patches, **vasodilators (CaB – nifedipine)**
- GI symptoms → PPI, antacids, H2 antag and metoclopramide
- Pain – analgesia
- Skin infection – ABx
- Renal protection & HTN → **ACEi** or **prednisone** (> 15mg/ day with caution)
- *Pulm HTN*: ***CaB, warfarin, PDE-5 inhibitors (iloprost)***
- **Digital infarcts/ulcers** = ***PDE-5 inhibitors***



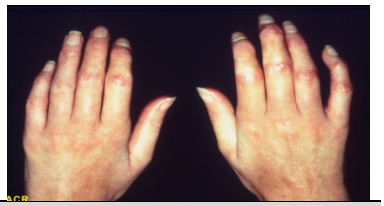
Raynaud's phenomenon



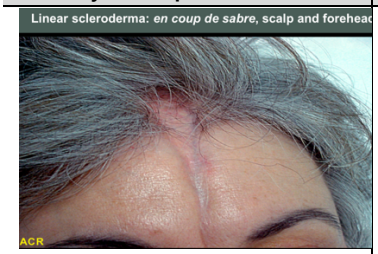
Edematous changes



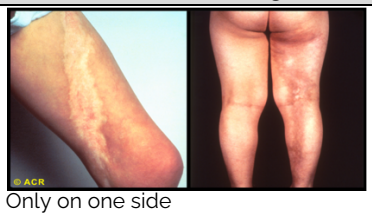
Puffy hand phase



Skin induration

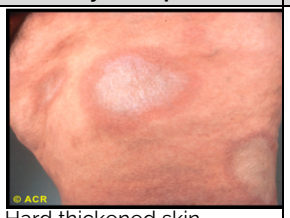


Linear Scl: en coup de sabre



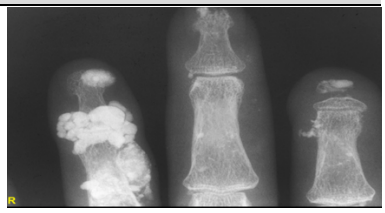
Only on one side

Linear Scl: thigh and leg

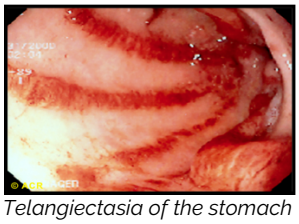


Hard thickened skin patches

Morphea: Leg



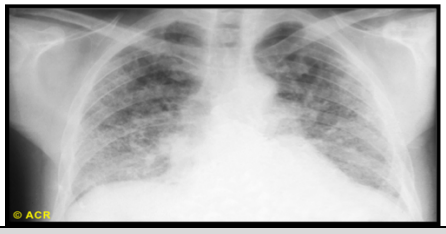
Calcinosis & acrolysis



Telangiectasia of the stomach

Watermelon stomach
GAVE = gastral antral vascular ectasia

Large mouth diverticula



Pulmonary Fibrosis (lower lobe)

SJOGREN'S, POLYMYOSITIS & DERMATOMYOSITIS

Sjogren's

Epi

- Autoimmune condition affect **exocrine glands →** causes dry mucous membranes → dry mouth, dry eyes and dry vagina
  - Primary Sjogren's = idiopathic
  - Secondary Sjogren's = related to SLE or RA
- **F > M (20-40s) [9:1]**

Clinical Px

- **Sicca syndrome**
  - *Keratoconjunctivitis* (i.e. ocular dryness, corneal injury)
  - *Xerostomia* (i.e. oral dryness, dysphagia, dental caries, thrush)
  - *Nasal dryness* & epistaxis
  - *Vaginal dryness*
- **Salivary gland enlargement** (parotidomegaly)
- **Joint symptoms = arthralgia**
- **HIGHER RISK** of child having complete heart block

Must exclude:
- lymphoma,
- sarcoid,
- GVH [graft vs host disease]
- AIDS

Assoc.:
- CT disease (SLE, RA, Scl)
- Hypothyroidism,
- Cryoglobulinemia,
- Autoimmune hepatitis

COMP.

- **EYE INFECTIONS** – Conjunctivitis, corneal ulcers
- **Oral issues** → dental cavities and candidia infections
- **Vaginal issues** → candidiasis and sexual dysfunction
- **Multi-organ involvement/ manifestations**
  - **Renal impairment** (distal RTA, interstitial nephritis)
  - **Nerves** (peripheral neuropathy)
  - **Lungs** (pneumonia, bronchiectasis)
  - **Non-Hodgkin's Lymphoma** (42% increased risk)

Ix

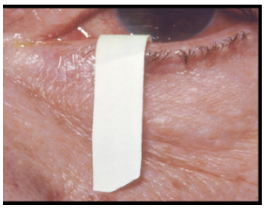
High sensitivity / specificity if ≥ 4 of the following:

- **Ocular signs (Shcirmer test <10 mm = highly suggestive of Sjogren's)**
- Salivary gland involvement
- Raised ESR
- Raised RF
- ANA +ve
- ENA +ve for SSA/Ro and SSB/La antibody
- ***Important DDX***: IgG4 disease = IgG4 deposits in organs causing sinus, parotid, pancreatic, diabetic and retro-peritoneal problems
- **Histopathology = 1 agglomeration of ≥ 50 mononuclear cells / 4mm**

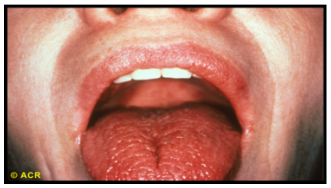
Mx

- **Eye drops for lubrication** OR (e.g. pilocarpine – cholinergic)
- **Vaginal lubricants**
- **Prednisone**
- Immunotherapies – ***hydroxychloroquine*** *to halt progression of disease*

Bilateral = Sjogren's (DDx: *alcohol, Mumps, CMV)*
Unilateral = B-cell lymphoma, parotid gland, MALT lymphoma



Schirmer's test



xerostomia (oral dryness)

Myositis (inflammatory myopathy)

Epi

- Autoimmune condition causing **muscle inflammation** (myositis)
  - Polymyositis = chronic inflammation of muscles
  - Dermatomyositis = chronic inflammation of muscles **PLUS** skin
- **F > M (20-40s) [9:1]**

Clinical Px

- Any **4 out of 5** = **polymyositis**
- Any **3 out of 4** PLUS **rash** = **dermatomyositis**
  1) **Symmetric Proximal** muscle weakness +/- skin rash
  2) **Elevated muscle enzymes** (CPK, aldolase, transaminases, LDH)
  3) Myopathic **EMG abnormalities**
  4) Typical changes on **muscle biopsy**
  5) Typical **purple face rash** of dermatomyositis

	Polymyositis	Dermatomyositis	*Inclusion body myositis*
Course	F > M (20-40s)= slow progressive	F > M (20-40s)= slow progressive	M > F (>50) = slow progressive
Where?	Symmetrical **proximal** myopathy of upper limb /shoulder girdle	Symmetrical **proximal** myopathy of upper limb /shoulder girdle **PLUS**: **Gottron's lesion + lilac rash over upper eyelids**	**Distal** and **asymmetric** muscle weakness
Histo?	Segmental necrosis, + lymphoid aggregates + MHC1 upregulated	Perifascicular fibre atrophy at edges w/ membrane attack complexes (C5Bg)	Amyloid deposits in rimmed vacuoles
Assoc.	*Paraneoplastic:* ➢ Lung, breast, ovarian or gastric		
Rx:	Steroid responsive	Steroid responsive	Responds poorly to corticosteroids

Ix

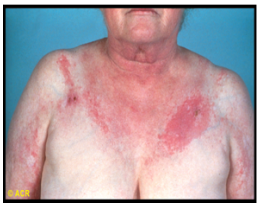
Clinical presentation

- **raised ESR**
- **raised CK (>1000 U/L) – KEY INVESTIGATION**
  - *DDx: rhabdomyolysis, AKI, MI, Statins, strenuous exercise*
- **ANA +ve** - dermatomyositis
- **ENA +ve** for:
  - **Anti-tRNA synthetases (Jo-1)** = polymyositis or dermatomyositis (20%)
  - **Anti-Mi-2 antibodies -** dermatomyositis
- **EMG** - Myopathic EMG abnormalities
- **MRI + Muscle biopsy** = for definitive diagnosis (NEED FRESH FROZEN – as formalin would stop staining ability
- **Additional Ix: ECHO** (heart), **barium swallow** (GIT)

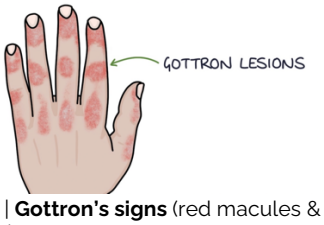
Mx

- **MDT Approach = Referral to rheumatologist**
  - PT and OT for muscle strength and function
- 1st line = Corticosteroids / Prednisone
- 2nd line = Azathioprine or MTX
- 3rd line = IVIg
- 4th line = biologics (infliximab or etanercept)

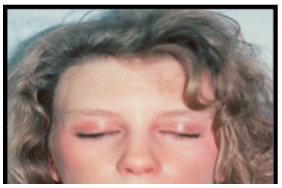
DERMATOMYOSITIS SKIN FEATURES



Shawl's sign (rash on chest) [Better prognosis]



Gottron's signs (red macules & patches) | may also see **SC calcinosis**



Heliotrope rash (lilac rash)
PLUS photosensitive rash + periorbital oedema

INHERITED METABOLIC DISORDERS

Glycogen storage disease (autosomal recessive) – energy storage issue

	Disorder	Deficient enzyme	Build up		Clinical Signs	
	Von Gierke's disease (type I)	G6P	**Liver** , kidney, small bowel glycogen accumulation		• Hypoglycaemia • lactic acidosis • short	• hepatomegaly • epistaxis • gout
Pomp = pump failure	**Pompe's disease (type II)**	Lysosomal alpha-1,4-glucosidase (**acid maltase**) def	**Liver, heart**, **muscle** glycogen build-up in membrane bound vesicles	**Death by 2yo**	• Cardiomegaly – HF • Hypotonia / **metabolic myopathy** • Macroglossia Rx: enzyme replacement therapy (ERT)	
C-D	**Cori disease (type III)**	Alpha-1,6-glucosidase (**debranching enzyme)**	**Liver, heart** glycogen build up		• Hypoglycaemia (mild) • Hypotonia + weakness • hepatomegaly	
A-B	**Andersen's disease (Type IV)**	Branching enzyme def.	**Liver, heart**	**Death by 2yo**	• Hepato-splenomegaly • Hypotonia +/- CNS involvement	
Muscle	**McArdle's disease (type V)**	**Glycogen phosphorylase** (myophosphorylase)	**SKM glycogen buildup** "negative on phosphorylase stain"	Athletes	• Severe Myalgia + **metabolic myopathy** • Myoglobinuria upon exercise	

DDx: myopathy:

1. **NMJ disease** – MND, SMA, T2DM
2. **Inherited Muscular dystrophies** (DMD, Becker's – replacement of muscle fibres with fat – absent or dyfunctional dystrophin gene)
3. **Inflammatory myopathy** (polymyositis, dermatomyositis, inclusion body myositis)
4. **Metabolic myopathy**
    a. Mitochondrial – *proximal and extraocular muscle weakness → parking lot inclusions, ragged red fibres, negative cytochrome C oxidase*
    b. Pompe's
    c. McArdle

Lysosomal/lipid storage disease (ALL autosomal recessive exc. Fabry) – storage issue of breakdown products

	Disorder	Defect	Build up	Clinical Signs
G-C	**Gaucher's disease (most common)**	Beta-glucocerebrosidase	Glucocerebrosidase in brain, liver and spleen	• Hepatosplenomegaly • aseptic necrosis of the femur
TSH	**Tay-Sachs disease (DDx: niemann-pick)**	Hexosaminidase A	GM2 ganglioside	• Developmental delay • Cherry red spot on macula
	Niemann-Pick disease	Sphingomyelinase		• Cherry red spot on macula • Hepatosplenomegaly
A-A	**Fabry disease (X-linked recessive)**	Alpha-gal-A ➢ Benign Sx in early childhood	ceramide trihexoside	• Intermittent **fevers** • **Angiokeratomas** • **PN** – burning sensation on fingers • **Renal** failure • **Young** + cardiac involvement
B-B	**Krabbe's disease**	Galactocerebrosidase		• PN • optic atrophy, globoid cells
MLA	**Metachromatic leukodystrophy**	Arylsulfatase A	Demyelination of CNS and PNS	• DDx: MND

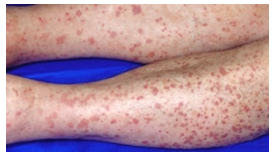
Mucopolysaccharidoses- lysosomes cannot breakdown glycosaminoglycans

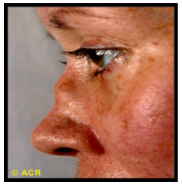
Disorder	Defect	Build up	Clinical Signs
Hurler syndrome (type I) Autosomal recessive	Alpha-1-iduronidase	Accumulation of glycosaminoglycans (heparan and dermatan sulfate)	• Gargoylism (ugly face) • hepatosplenomegaly, • Corneal clouding • Retarded
Hunter syndrome (type II) **(X-linked recessive)**	Iduronate sulfatase		• coarse facial features, • behavioural problems/learning difficulties • short stature, • NO corneal clouding

VASCULITIS (PURPLE-COLOURED SKIN ERUPTIONS)

DDX for vasculitis:
- **Atheroembolic disease**
- **Cardiac myxoma** = **rare** benign tumour in left atrium = *friable tissue that can detach*
- **Thrombotic disorders** - APS, TTP
- **Hypersensitivity/ Drug-induced vasculitis** = [**vasoconstriction = stroke risk and vasculitis**]
  - Ergot derivatives, Cocaine, Amphetamines
- **Infective endocarditis**
- **Post-orthopaedic surgery** = multiple fat embolisms

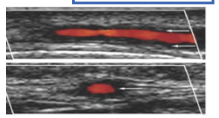
Vasculitis
(blanching palpable purpura)



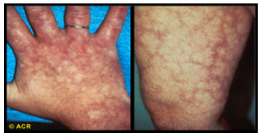


Large vessels
Aorta, carotid, superifical temporal artery

Giant cell arteritis
Most common
↑↑ ESR
Jaw Claud.
Scalp tender
Vision
Headache
Assoc. w/ PMR
Rx: steroids (high-dose)
IL-6 blockade (tocilizumab (Actemra)

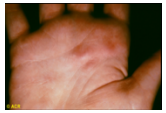


Takayasu Arteritis
Young Asian Women >40yo
Thick adventitia → dilate mainly aorta (aneurysm)
Ix:
BP assymetrical
CT Coronary angio or doppler USS for carotid disease
Rx: steroids



Medium vessels
GIT, nerve, coronary artery

Polyarteritis Nodosa
Fever, UWL
HBV main assoc, (but also hep C).
Nodules, ulcer (**livedo reticularis**)
Mononeuritis, arthritis, orchitis
Myalgia, Abd pain
Ix:
'Beads on wire (CTA) transmural inflammation
Comp
AKI, MI, stroke
Rx: steroids , azathioprine, MTX



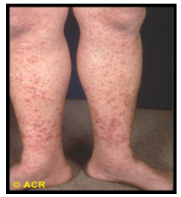
Kawasaki Disease
Children <5yo (Asian)
Skin desquamation (peeling)
Fever > 5 days
Coronary aneurysm (ECHO)
4/5 criteria (CREAM)
Conjunctival injection
Maculopapular red Rash
Oedema
Adenopathy
Mucosal uclers / strawberry tongue
Rx: IV Ig + aspirin
***Reye syndrome** – high dose aspirin → encephalopathy*

Small vessels
Eye, renal, lung

Immune complexes

Henoch Schonlein purpura (IgA vasculitis)
> Children <10yo
> IgA deposits attacking skin, kidney, GIT
> triggered by URTI. GITi
PAPAH
> Buttock purpura (100%)
> Abdominal pain (50%)
> Arthralgia (75%)
> Heamaturia (50%)
> No plts
Rx:
Supportive and 40mg oral prednisone

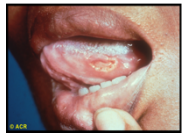
SLE / rheumatoid vasculitis
SLE signs
"Rash on maids"
Rx: steroids,



cryoglobulin vasculitis
ppt < 37 deg
Lower extremeties
Type 1 (mono) lymphoproliferative
Type 2: NCV,cancer, GIT disorder
Type 3: (polyclonal)
Polyathrlagia
Hep c

Anti-GBM (good pasture's)
Anti-GBM
Type 2 hypersens.
Pulm. Haemorrhage
Haematuria, haemoptysis
Rx: steroids

Behcet's
Behcet
"cutaneous vasculitis" (Oral/genital ulcers)
Jap, Middle East, turkey
Skin (red nodosum)
Uveitis
Rx: steroids PO



ANCA Positive

P-ANCA (MPO)

Microscopic Polyangiitis
Renal failute = GN (MAIN ISSUE)
Pulm. Fibrosis - SOB
Heamoptysis
**NO HEENT*
Rx: steroids, DMARDS, Rituximab

Churg strauss (eosinophilic granulomatosis with polyangiitis)
Affects lungs and skin
Raised eosinophilia
severe Asthma (in late teens)
Allergic rhinitis
Rx: steroids, DMARDS, Rituximab

C-ANCA (PR3)

Wegener's granulomatosis
Affects lungs and kidneys
URT - epsitaxis
Granulomas
saddle shaped nose (due to perforated nasal septum)
CXR = consolidaiton
Renal - rapidly progressive GN
Rx: steroids, DMARDS, Rituximab

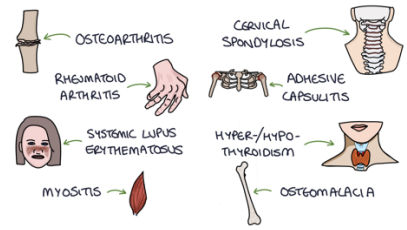
General presentation
> **purple coloured non-blanching pupura** (blood leaking from BV under skin)
> **Arthralgia**
> **peripheral neuropathy**
> **renal impaiment** (haematuria)
> **GI disturbance** - diarrhoea, abdo pain, beleding
> **anterior uveitiis and scleritis**
> **HTN**

General tests
> **FBC (anaemia, infection), EUC, LFT**
> CRP/ESR (raised)
> Serum IG
> ANA, anti-dsDNA, RF, anti-CCP
> cryoglobulins, viral Hep B/C serology
> ***p-ANCA*** (MPO antibodies): ***Microscopic polyangiitis*** and ***Churg-Strauss syndrome***
> ***c-ANCA*** (PR3 antibodies): ***Granulomatosis with polyangiitis***
> ***Tissue biopsy (to confirm diagnosis)***

General management --> rheumatologist-led
Steroids can be administered to target the affected area:
> ***Oral*** (i.e. prednisolone)
> ***Intravenous*** (i.e. hydrocortisone)
> ***Nasal*** sprays for nasal symptoms
> ***Inhaled*** for lung involves (e.g. Churg-Strauss syndrome)

Immunosuppressants that are used include:
> **DMARDS** = Cyclophosphamide, MTX, Azathioprine
> **BIOLOGICS** = **Rituximab --> ANCA positive vasculitis**

GCA, PMR, Behcet's

	GCA	PMR	Behcet's
Epi	Systemic vasculitis affecting medium and large arteries	Inflammation causing pain and stiffness in shoulder, pelvic girdle and neck	➢ Complex inflammatory condition presenting with recurrent oral and genital ulcers
RF	➢ Assoc. with PMR ➢ Females > 50yo	➢ Assoc. w/ GCA ➢ Female Caucasians > 50 yo	➢ HLA B51 gene
Clinical Px	➢ Severe unilateral headache around temple and forehead ➢ Scalp tenderness ➢ Jaw claudication ➢ Blurred or double vision ➢ Irreversible painless complete vision loss can occur rapidly ***Systemic signs:*** ➢ Fever ➢ UWL ➢ Fatigue ➢ Myalgia ➢ Peripheral oedema	Symptoms must be present > 2 weeks ➢ Bilateral shoulder pain that may radiate to the elbow ➢ Bilateral pelvic girdle pain ➢ Worse with movement ➢ Interferes with sleep ➢ AM Stiffness > 45 minutes ***Systemic signs:*** ➢ Fever, UWL, fatigue, low mood ➢ Upper arm tenderness ➢ Carpel tunnel syndrome ➢ Pitting oedema	➢ **MOUTH ULCER** (>3x episodes of oral ulcer / year) – painful sharply circumscribed erosion with red halo ➢ **Genital " kissing" ulcers** = on 2 opposing surfaces facing each other **Classical skin findings** ➢ Erythema nodosum ➢ Papules and pustule (like acne) ➢ Vasculitis type skin rashes **Classical eye findings – urgent opthal review** ➢ Anterior/posterior uveitis ➢ Retinal vasculitis ➢ Retinal haemorrhage
DDx	Any medium to large vessel vasculitis ➢ Takayasu arteritis ➢ Kawasaki disease ➢ Polyarteritis nodosa ➢ Trigeminal neuralgia	***DDx for PMR*** 	***DDx mouth ulcers:*** ➢ Simple aphthous ulcers are very common ➢ IBD (particularly Crohn's disease) ➢ Coeliac disease ➢ Vitamin deficiency (B12, folate or iron) ➢ HSV ulcers ➢ HFM disease (coxsackie A virus) ➢ SCC
COMP.	***Early neuro-ophthalmic complications*** ➢ Permanent vision loss ➢ Stroke ***Late complications:*** ➢ Relapses ➢ Steroids A/E ➢ Aortitis → aortic aneurysm, dissection		**MSK and GI effects** ➢ AM stiffness + oligoarthritic (no jt destroyed) ➢ Inflamed and ulcers in ileum, caecum, AC **CNS effects** ➢ Memory impairment ➢ ASEPTIC meningitis headaches, migraines **Vein inflammation** ➢ Budd chiari ➢ DVT ➢ Thrombus in pulmonary veins + pulmonary artery aneurysms that are fatal when ruptured ➢ Cerebral venous sinus thrombosis
Ix	**Based on clinical presentation** ➢ FBC (normocytic anaemia + thrombocytosis) ➢ LFT – raised ALP ➢ Raised CRP ➢ **Raised ESR > 50mm /hr** ➢ Temporal artery USS – hypoechoic halo sign ➢ **Temporal artery biopsy findings** (via vascular surgeon) (multinucleated giant cells)	**Based on clinical presentation** **(Ix aim to exclude DDx – see above)** • FBC, EUC, LFT • CMP - ?HPTH or osteomalacia • Myeloma screen (EPG, FLC) • TFT • CK • RF, anti-CCP • Urine dipstick • ANA (SLE) • CXR – for lung and mediastinal issues	**Based on clinical examination** ➢ Main test = **pathergy test** *Uses a sterile needle to create SC abrasion on forearm → reviewed 24-48 hrs later → if wheal > 5mm in size it may indicate:* o *Behcet's* o *Sweet's syndrome* o *Pyoderma gangrenosum*
Mx	***Acute Mx:*** ➢ High dose 40-60mg PO prednisolone daily (to prevent vision loss) ➢ Review dosage after and wean slowly ➢ **Refer = rheum, vascular surgeon, ophthal** ***Additional medications*** ➢ 75mg aspirin PO od – reduce risk of vision loss and stroke **DON'T STOP** ➢ **Don't** stop steroids suddenly (adrenal crisis) ➢ **S** – sick day rule (higher dosage needed) ➢ **T** – steroid treatment card (if they become unresponsive) ➢ **OP** protection – bisphosphonates, vit D, Ca ➢ **PPI** for gastritis protection	***Acute Mx:*** • Stat on 15mg PO prednisolone daily (• Assess 1 week (if poor response – likely not PMR) → stop steroids • Assess 3-4 wks (should expect 70% improvement in symptoms) • Begin weaning: o 15mg until symptoms controlled o 12.5mg for 3 weeks then o 10mg for 4-6 weeks o Reduced by 1mg every 4-8 weeks o "titrate accordingly" and "Advise it may take 1-2 years to come off steroids" ➢ **Refer to rheum, if difficulty weaning steroids or steroid usage > 2 years** **DON'T STOP** • **Don't** stop steroids suddenly (adrenal crisis) • **S** – sick day rule (higher dosage needed) • **T** –steroid treatment card (if they become unresponsive) • **OP** protection – bisphosphonates, vit D, Ca • **PPI** for gastritis protection	**MDT approach – led by rheumatologist** ***1st line*** • systemic PO prednisolone • Colchicine (anti-inflammatory effect) • Topical steroids for mouth ulcer (e.g. soluble betamethasone) • Topical anaesthetics for genital ulcer (e.g. lidocaine ointment) ***2nd line*** ➢ Immunosuppressants (Azathioprine - Imuran) ➢ Biologics (e.g. infliximab)