Dr Oseme Etomi and Dr Arabella Waller
SpRs in Rheumatology Barts and the London

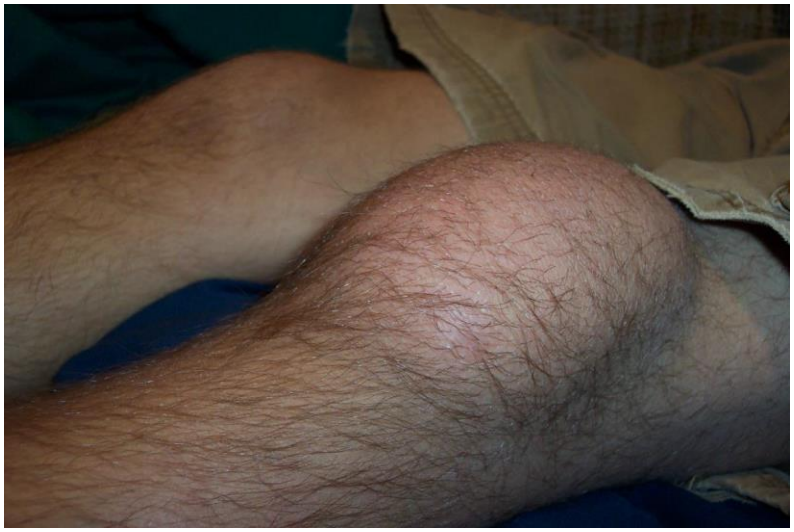
Contents

- Monoarthropathies
- Polyarthropathies
- Inflammatory back pain
- Connective tissue disease and myositis
- Vasculitis
- Some extra resources for you to take away

Monoarthropathy

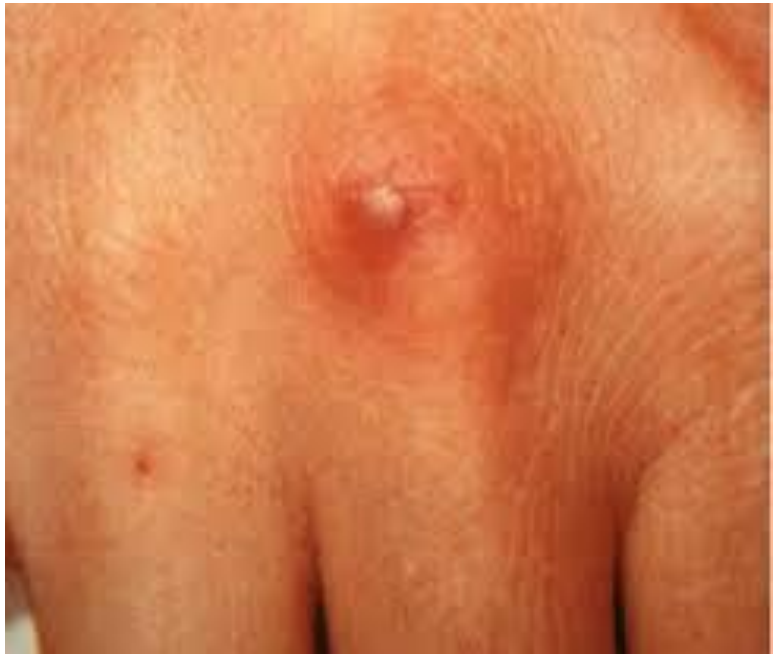
Acute monoarthritis case 1

- An 18 year old has been celebrating Fresher's Week and presents with a swollen right knee.



Other features to look for in the history or on examination?
Important investigations?
Differential Diagnosis?

On examination



- Pustular lesion seen on hand
- What do you think?

Differentials of hot swollen joint/s

- Septic Joint
- Crystal arthritis
- Inflammatory arthritis
- Haemarthrosis
- Trauma
- Bursitis
- Cellulitis

Septic Arthritis:
A medical emergency

2006 (revised 2012) British Society of Rheumatology guidelines on hot, swollen joint

- Differential diagnosis of hot swollen joint is wide
- Most serious is septic arthritis with case fatality of 11%. This increases to 50% in polyarticular disease with sepsis
- Guidelines pertain to single hot swollen native joint of <2 weeks duration

Predisposing features

- Age greater than 80 years
- Diabetes mellitus
- Rheumatoid arthritis
- Prosthetic joint
- Recent joint surgery
- Skin infection
- Cutaneous ulcers
- Intravenous drug abuse
- Alcoholism
- Previous intra-articular corticosteroid injection

Pathogenesis

- Haematogenous spread (>50% cases)
- Direct inoculation
- Spread from adjacent bony or soft tissue infections

Symptoms or signs

- Short history of hot, swollen joint with pain/restriction of movement – beware the weight bearing patient
- Usually mono-articular (80-90% of non gonococcal septic arthritis)
- Usually affecting large weight bearing joints
- Systemic signs of sepsis

Initial investigations

- Check ESR, CRP and WCC as these can be monitored to check response to therapy
- Measure lfts and u&es as baseline, may guide choice of antimicrobial and so on
- ASPIRATE
- Send for culture, gram stain and polarising light microscopy
- Send blood cultures
- Warfarin doesn’t preclude needle aspiration
- Refer a prosthetic joint to an orthopaedic surgeon promptly
- Baseline x-ray to potentially show other pathology

When not to aspirate

- If the needle would pass through cellulitis, psoriatic plaque or other infection

Pathogens

- *Staph aureus (60-70%)* (including MRSA)
- Streptococci (15-20%) *,*
- *H. Influenzae (in children),*
- *Neisseria gonorrhoeae*
- Coliforms (if iatrogenic/ IVDU/ malignancy/ immunosuppression)
- Less commonly: *Neisseria meningitidis, Salmonella, Brucella, Mycobacterium tuberculosis*.

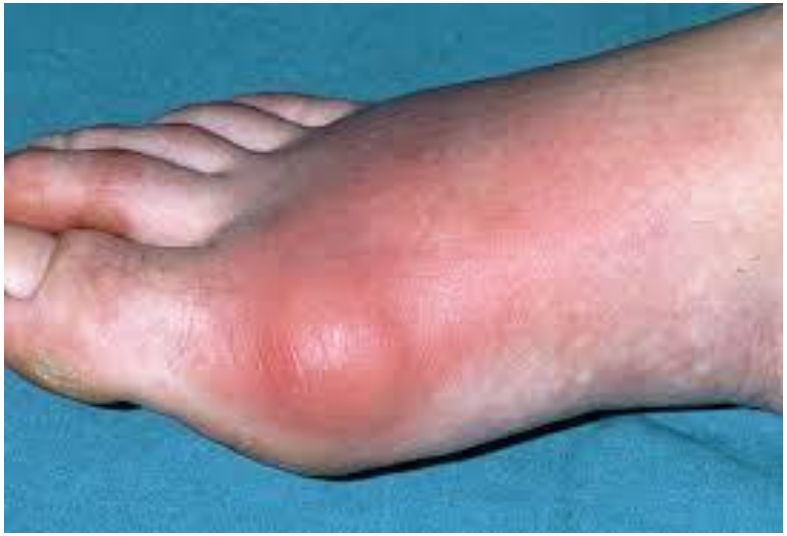
Management

- Ideally a washout
- Aspirate, aspirate, aspirate!
- Antibiotic choice determined by special risks and local policy

Acute monoarthritis case 2

- Dave, a 45 year old Publican presents with a painful, hot, red, swollen right big toe. It is excruciatingly painful and he is struggling to weight bear on it. He is otherwise fit and well.

On examination



- This is the clinical picture when you examine Dave
- Swollen red hallux, classical podagra
- Is there anything else you would look for on examination?
- Evidence of tophi, classically on the ear

Differentials of hot swollen joint/s

- Septic Joint
- Crystal arthritis
- Inflammatory arthritis
- Haemarthrosis
- Trauma
- Bursitis
- Cellulitis

Gout

- Most common inflammatory arthropathy Worldwide
- If serum urate levels consistently exceed the physiological saturation point (around 408 µmol/L), monosodium urate crystals form and deposit, particularly in cartilage, bone, and periarticular tissues of peripheral joints.
- Crystal deposition is often clinically silent, with only about 10% of people with hyperuricaemia developing clinical gout

A gout attack

- Gout occurs when crystals are shed from the articular cartilage into the joint space. It is usually monoarticular and typically affects the lower limb.
- Clinically, this presents with intense pain, heat, redness and swelling that occurs suddenly and reaches maximal severity at 12-24 hours after onset.
- Patients may well have a fever and high inflammatory markers.

Who gets gout?

- Gout usually affects men aged 40 years and over and women over 65 years.
- It increases with age, affecting 7% of men aged over 75 in the United Kingdom
- Epidemiological studies show that the metabolic syndrome and its components (insulin resistance, obesity, hyperlipidaemia, and hypertension) are strongly associated with gout

Risk factors for gout

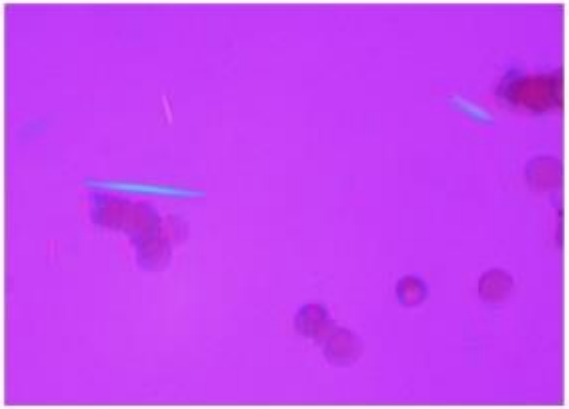
- Male sex
- Older age
- Genetic factors (mainly reduced excretion of urate)
- Metabolic syndrome
- Obesity (reduced excretion of urate)
- Hypertension (reduced excretion of urate)
- Hyperlipidaemia (reduced excretion of urate)
- Loop and thiazide diuretics (reduced excretion of urate)
- Chronic kidney disease (reduced excretion of urate)
- Osteoarthritis (enhanced crystal formation)
- Dietary factors (increased production of uric acid)

Diagnosis

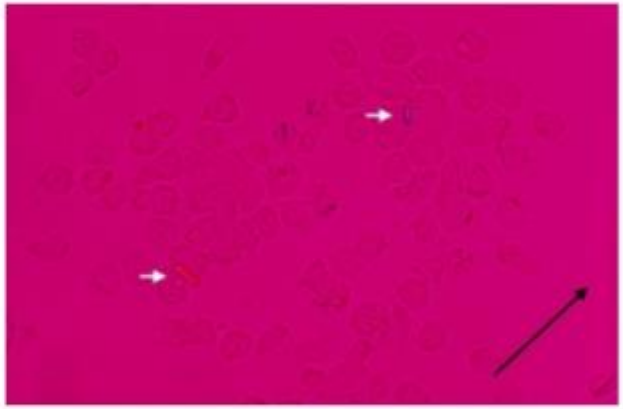
- Clinical
- Confirmed by aspiration of monosodium urate crystals
- These are negatively birefringent crystals

Crystals

Negatively birefringent crystals: urate



Positively birefringent crystals: pyrophosphate



Management

Acute

- NSAID
- Colchicine
- Steroids

Chronic

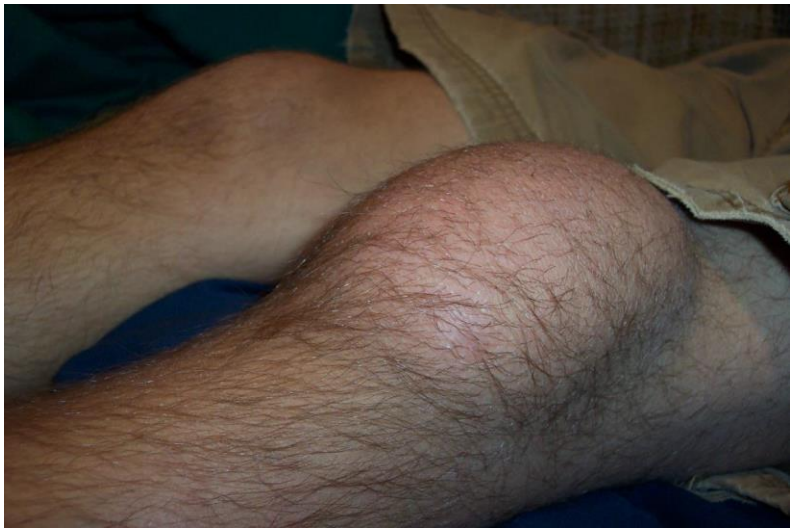
- Urate lowering with allopurinol

Gout vs. pseudogout

Gout	Pseudogout
Often affects 1st MTP. Other sites include olecranon, knees, ankles, mid foot. Can be polyarticular	Often affects wrists, ankles, shoulders and knees
Tophi	No tophi seen
Elevated serum urate	Serum urate may be normal
Punched out erosions away from joint line	Chondrocalcinosis on plain film
Uric acid crystals	Calcium pyrophosphate crystals
Negatively birefringent	Positively birefringent

Acute monoarthritis case 3

- An 18 year old has been to Thailand on holiday and develops a painful swollen knee.



Other features to look for in the history or on examination?
Important investigations?
Differential Diagnosis?

Other features of reactive arthritis

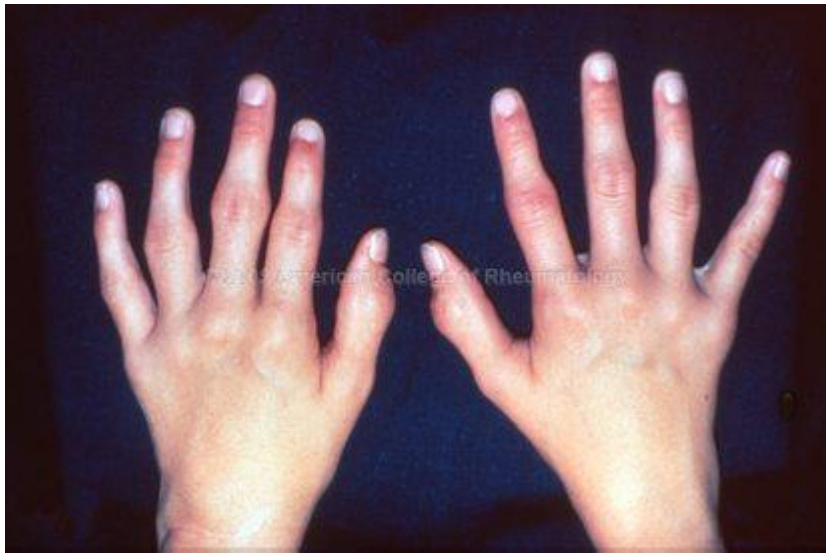
- Red eye
- Urethritis
- Can be precipitated by acute illness
  - Diarrhoeal
  - Post streptococcus
  - Sexually transmitted infections
- Associated with HLAB27 positivity

This used to be called Reiter's Syndrome

Polyarthritis

Polyarthritis Case 1

- Emily, a 32 year old woman delivered her first child 6 months ago. She presents with a 3 month history of pain and swelling across her hands and wrists. She has early morning stiffness lasting 1 hour



Other features to look for in the history or on examination?
Important investigations?
Differential Diagnosis?
Management plan?

Differentials of a polyarthritis

- Rheumatoid arthritis
- Seronegative arthritides
- Septic arthritis
- Polyarticular gout
- Osteoarthritis

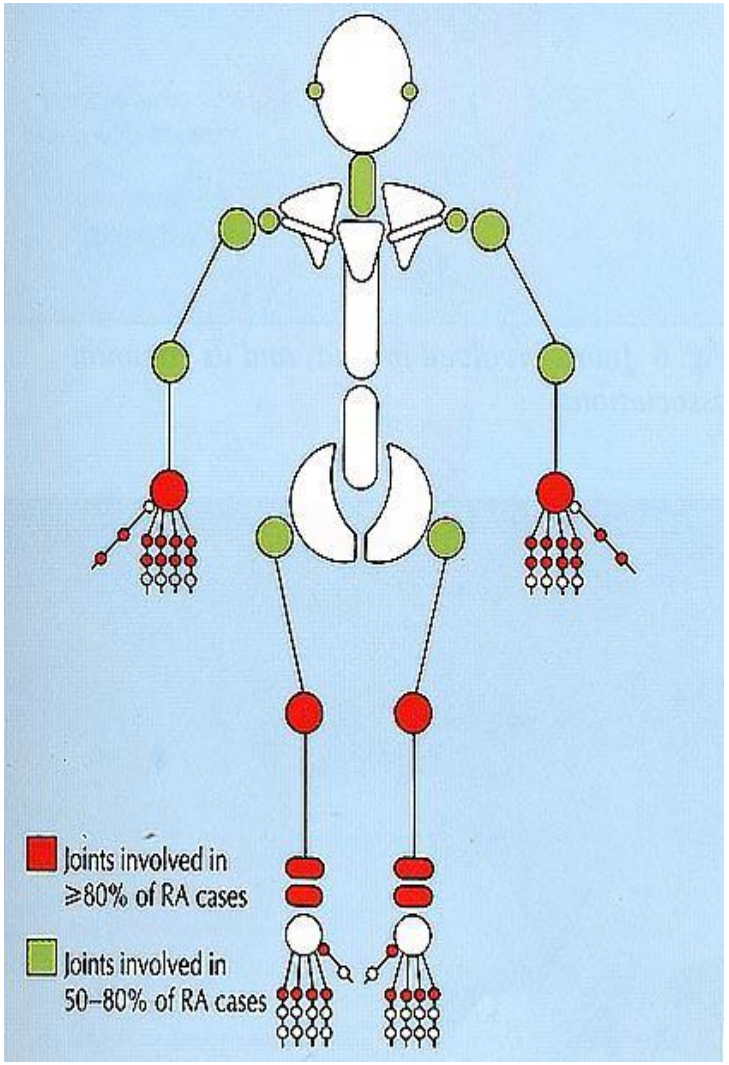
Rheumatoid arthritis

Epidemiology

- Affects around 1% of population
- Chronic, inflammatory, auto-immune mediated condition
- Strong HLA DR4 association
- Women > men
- Onset 30-50 years

Clinical Features

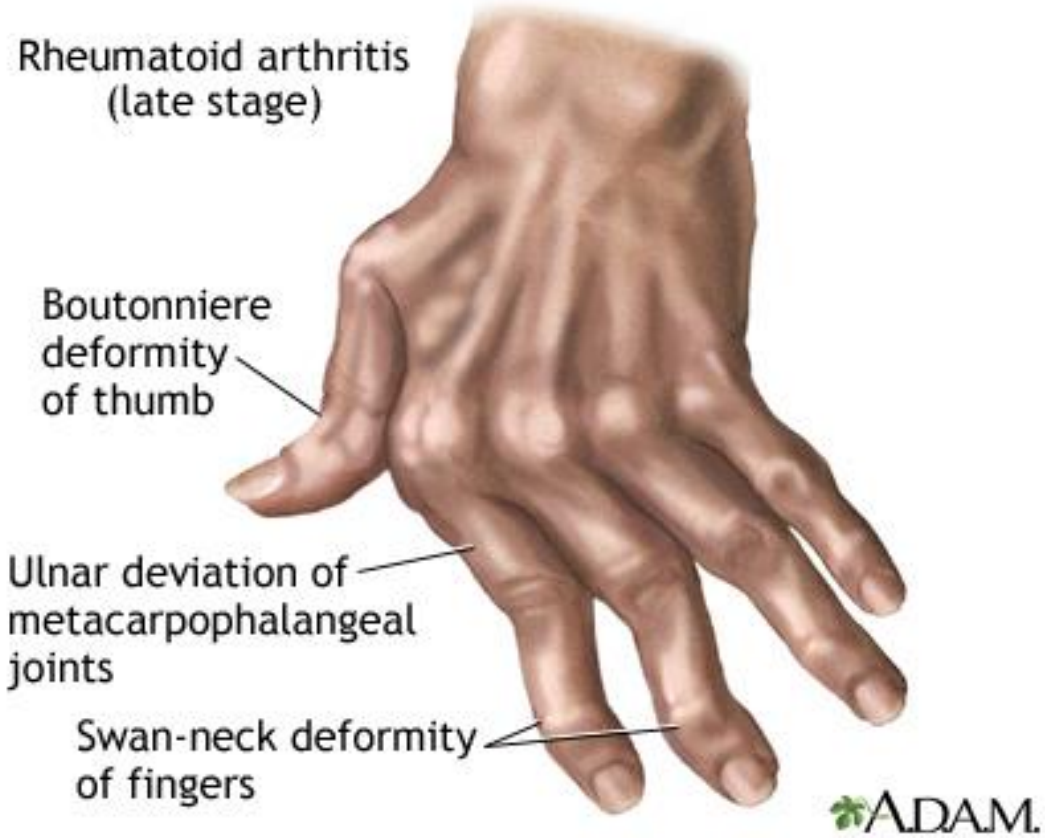
- Symmetrical polyarticular swelling of MCPs and PIPs.
- DIPs spared.



Radiological Features in RA

RA	OA
Soft tissue swelling + juxta-articular osteoporosis	Subchondral sclerosis
Joint space narrowing	Joint space narrowing
Joint erosion	Osteophytes
Cyst formation	Cyst formation
Joint destruction	Peri articular osteopaenia
Subluxation/dislocation	

Deformities in RA

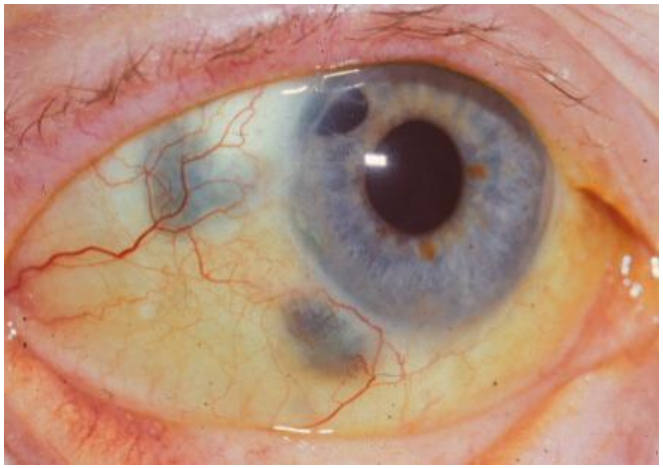


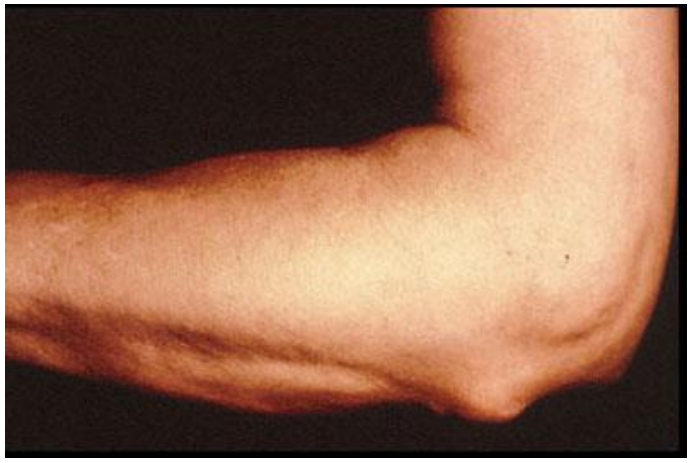
- Z thumb
- Muscle wasting from disuse

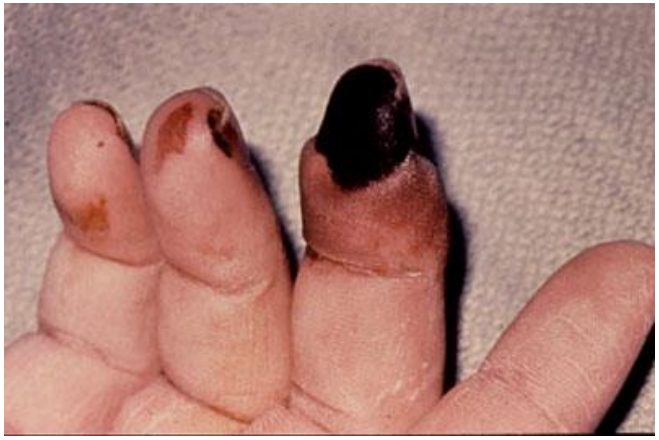
Investigations

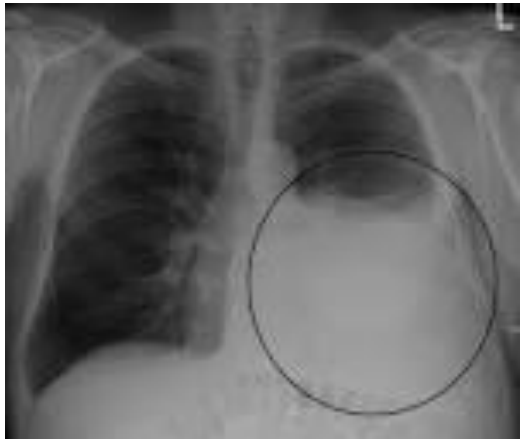
- FBC
- U&E
- LFT
- CRP
- ESR
- Rheumatoid factors
  - Antibodies against the Fc portion of immunoglobulin G
  - They are not specific to RA. RF positivity occurs in 70% of RA
- Anti-cyclic citrullinated peptide (CCP)
  - More specific than RF
  - Predicts erosive disease

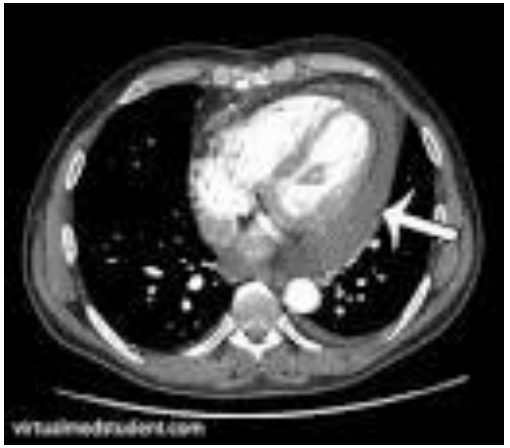
Extra articular manifestations









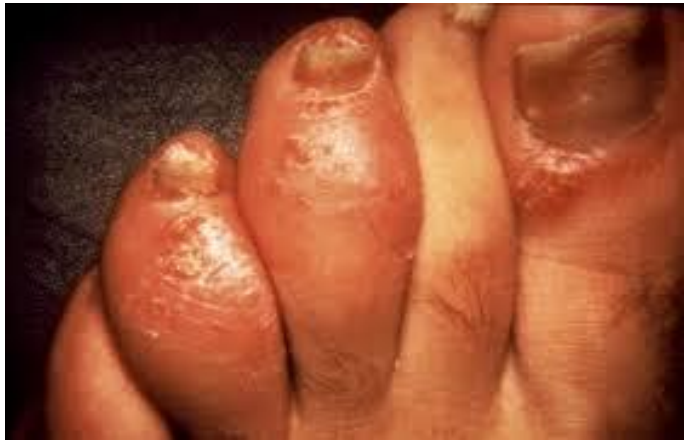


Treatment

- NSAIDS
- DMARDS
- Biologics after failure or intolerance of two DMARDS one of which should usually include MTX
- Monitoring is with DAS Scoring

Polyarthritis case 2

- A 45 year old gentleman presents with right knee and ankle pain. He also has noticed his left 3rd and 4th toes are swollen. He is stiff in the morning for >30mins.

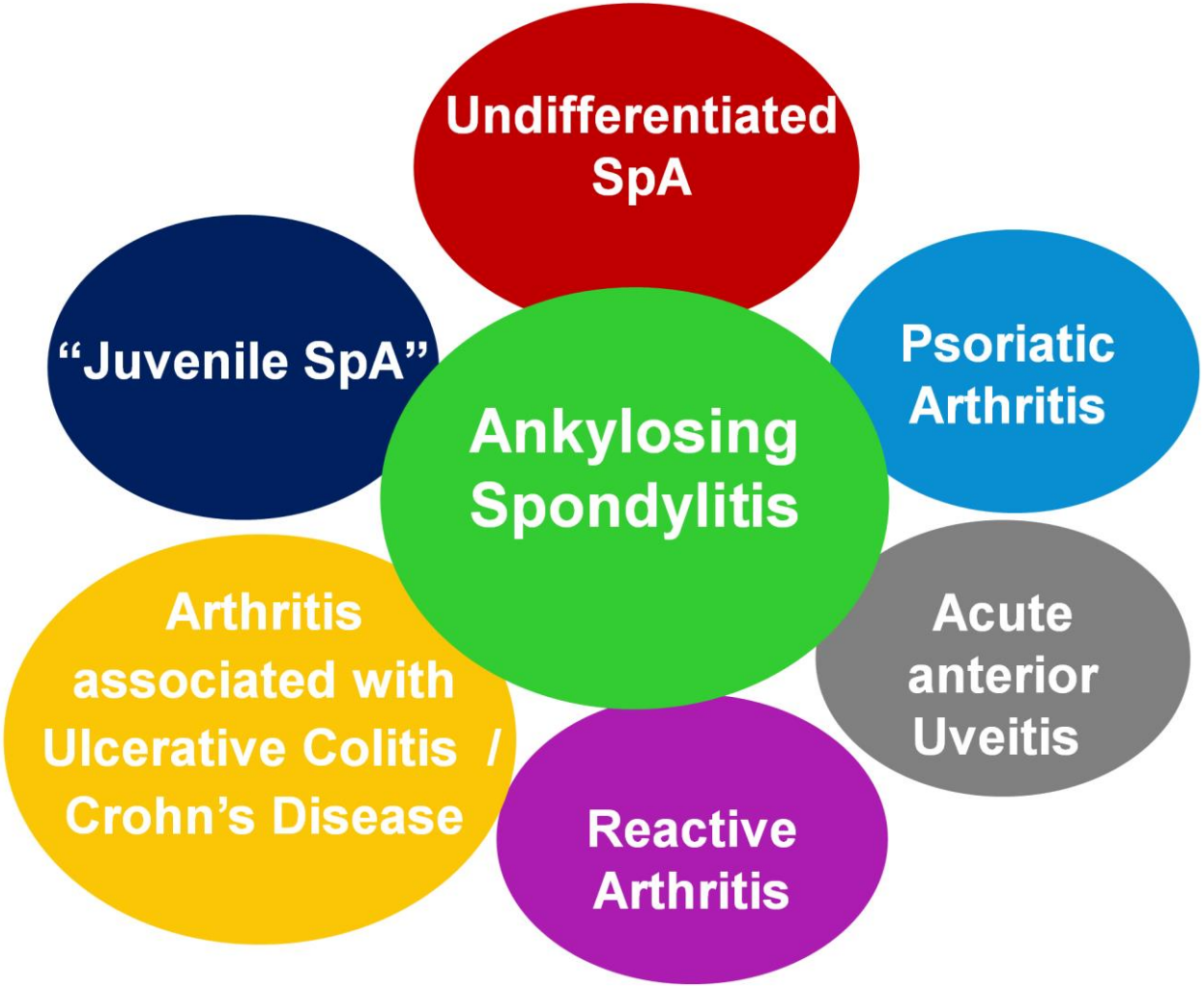


What else do you notice in this photo?
Other features to look for in the history or on examination?
Important investigations?
Differential Diagnosis?

Differentials of a polyarthritis

- Rheumatoid arthritis
- Seronegative arthritides (seronegative RA vs. spondylarthropathy)
- Septic arthritis
- Polyarticular gout
- Osteoarthritis

Spondyloarthritides (SpA)



Presentation of spondylarthropathies

- Inflammatory back pain is worse in the morning and associated with early morning stiffness, better with exercise
- Pain and swelling and stiffness of peripheral joints. Tend to follow a more asymmetrical pattern than RA
- Sausage digits – dactylitis
- Skin psoriasis
- Can present with uveitis (inflammation of the eye)
- Reactive arthritis can present following an obvious (or not obvious) infection

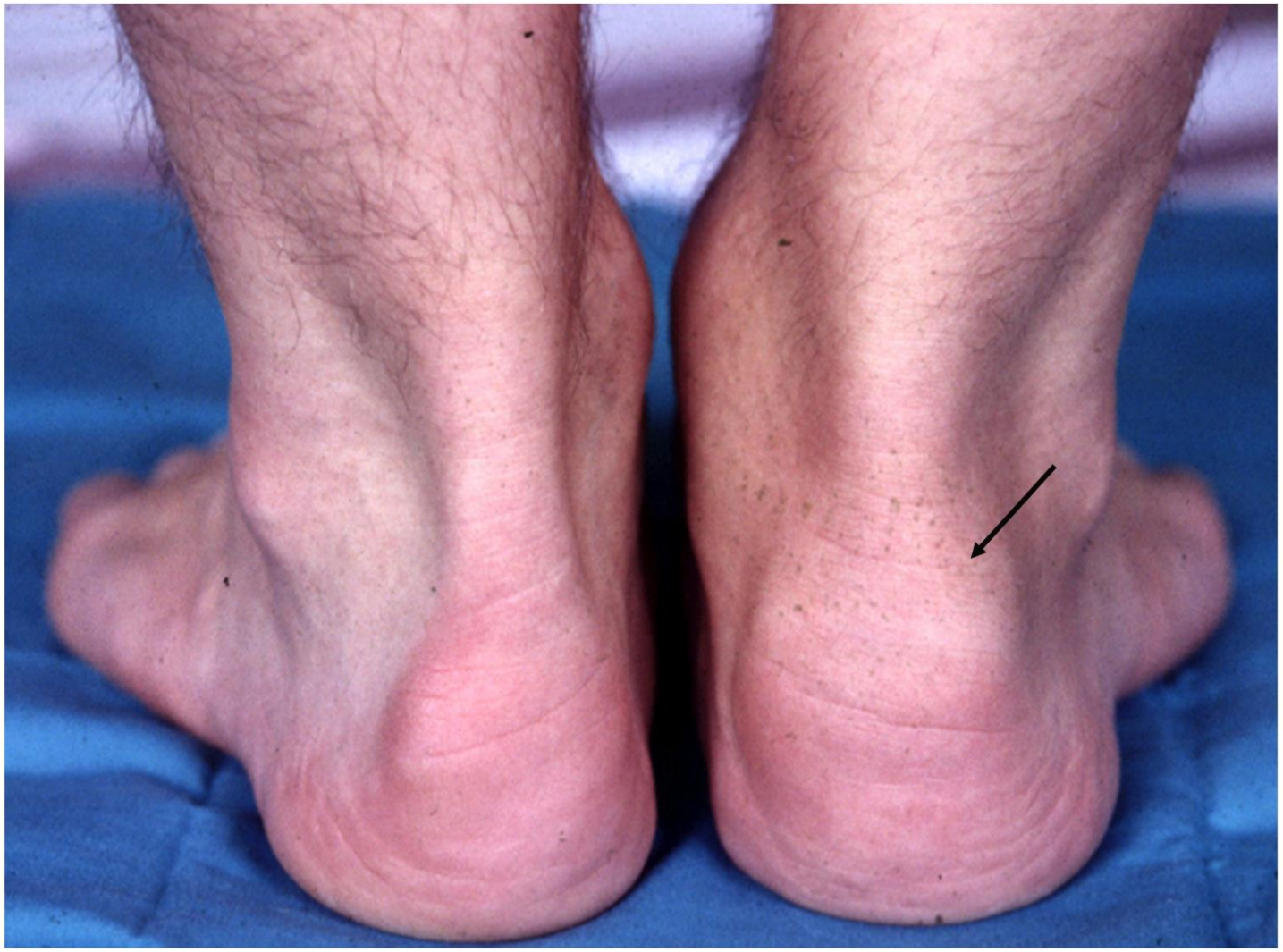
Other features of the history

- Patients may have a personal history of ulcerative colitis, crohns or psoriasis
- Often patients have a family history of one of the related conditions. Ulcerative colitis, crohns, psoriasis.

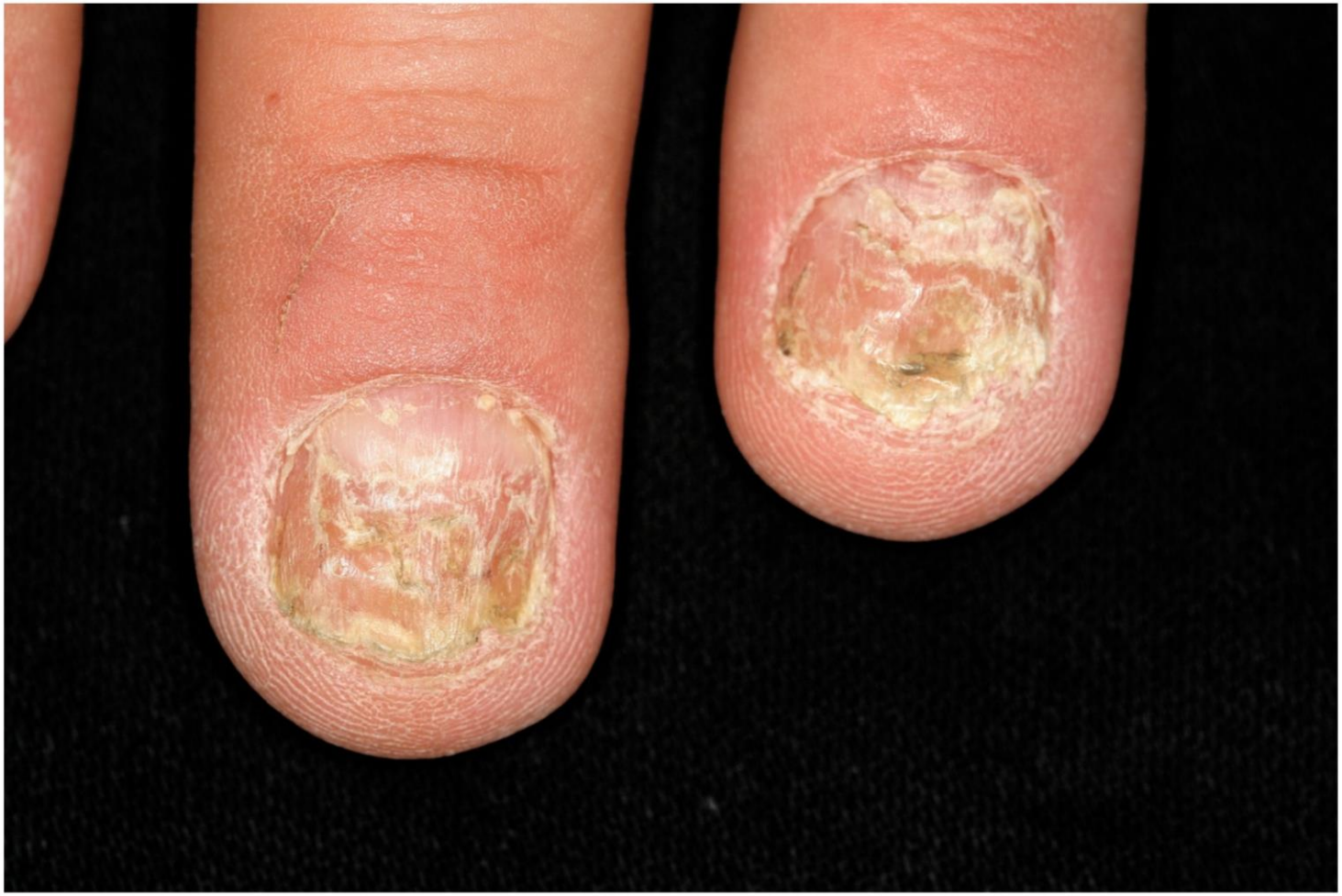
Examination findings - spondylarthropathy

- Pain in sacro-iliac joints
- Pain or limitation of movement hips
- Swelling of knees
- Swelling of ankles and/or feet
- Swelling of achilles
- Skin or nail changes of psoriasis

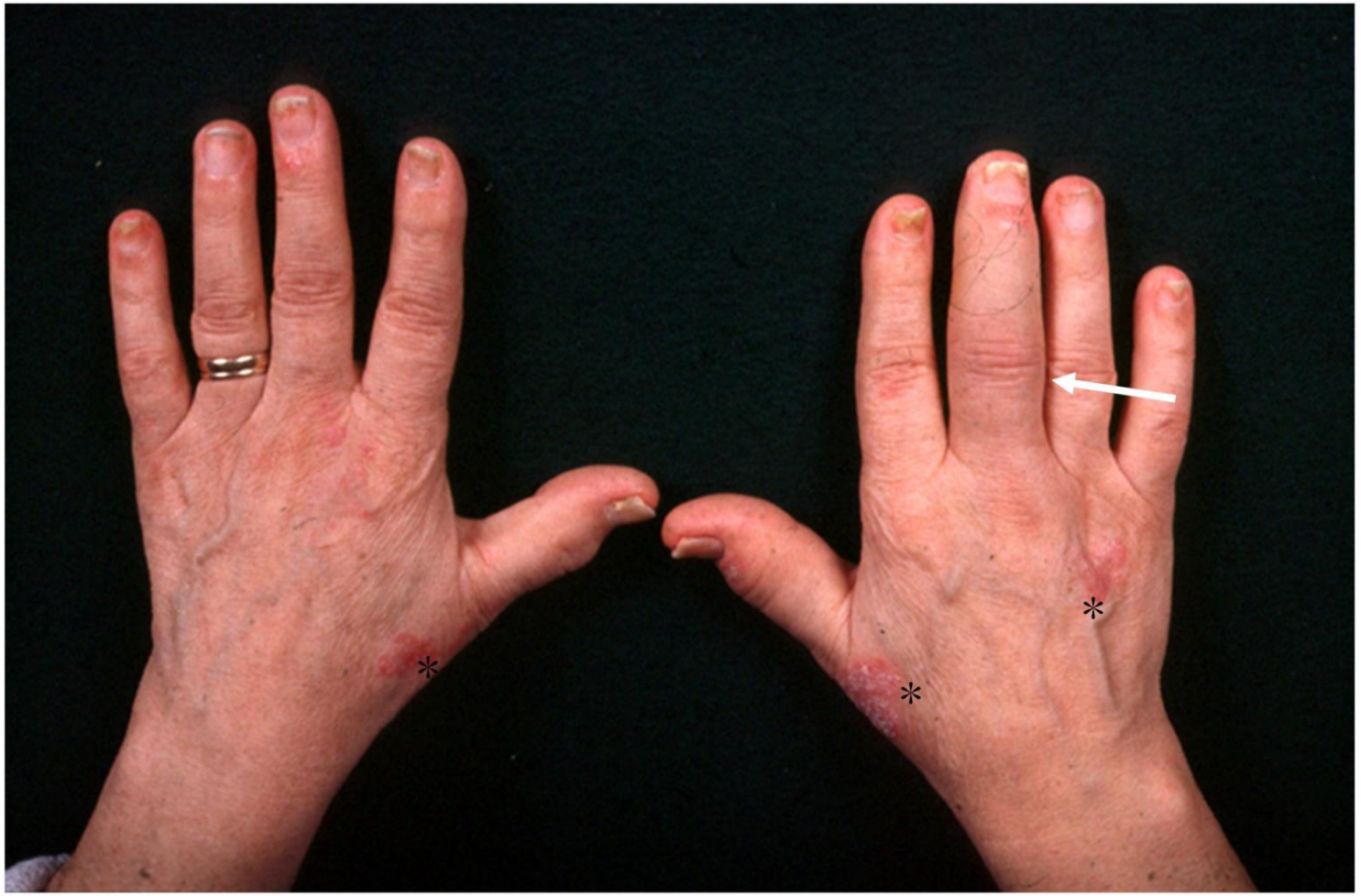
Enthesitis (Insertion of Achilles Tendon at Calcaneus) Right Heel



Moderate to Severe Nail Changes in Patient with Psoriasis

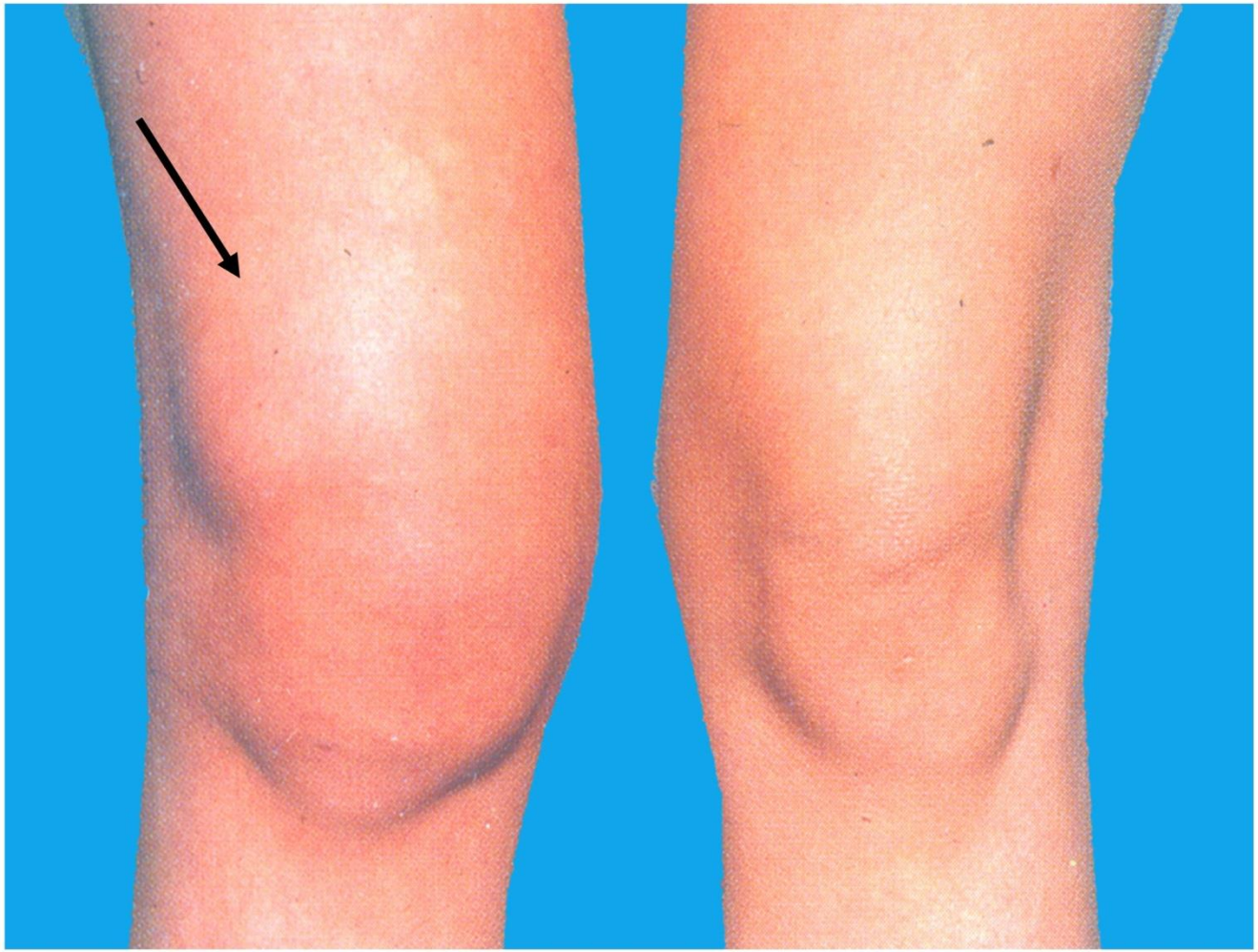


Dactylitis



* Psoriasis plaque lesions

Acute Arthritis of the Right Knee in a Patient with Peripheral Spondyloarthritis

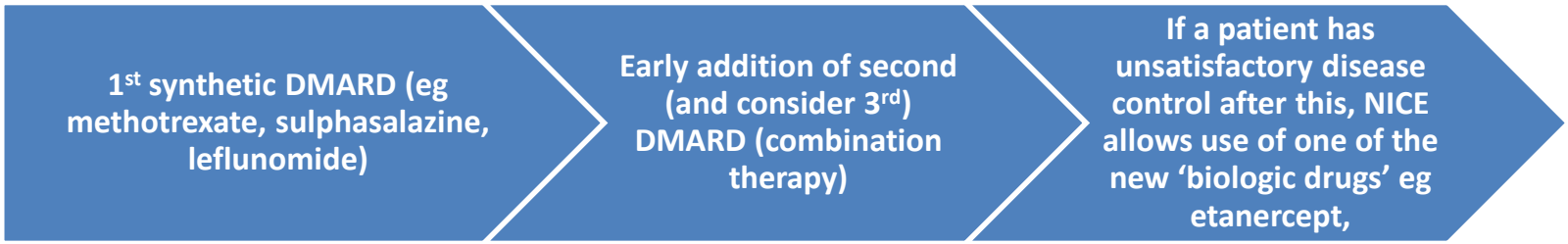


Investigations

- FBC
- U&E
- LFT
- CRP and ESR may be raised
- HLAB27
- X-rays
- MRI spine and sacroiliac joints

Management - spondylarthropathy

- Disease in peripheral joints is treated in a similar way to that of rheumatoid arthritis



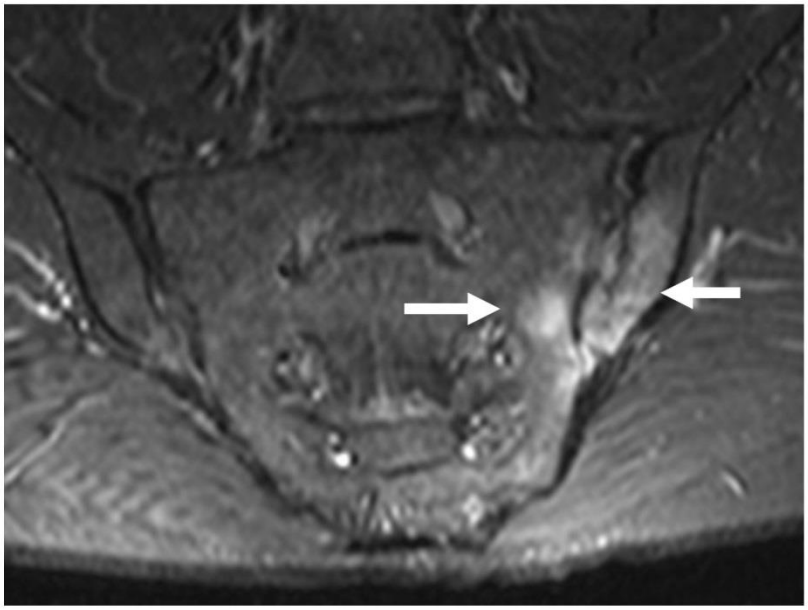
Back pain

Red flags of back pain

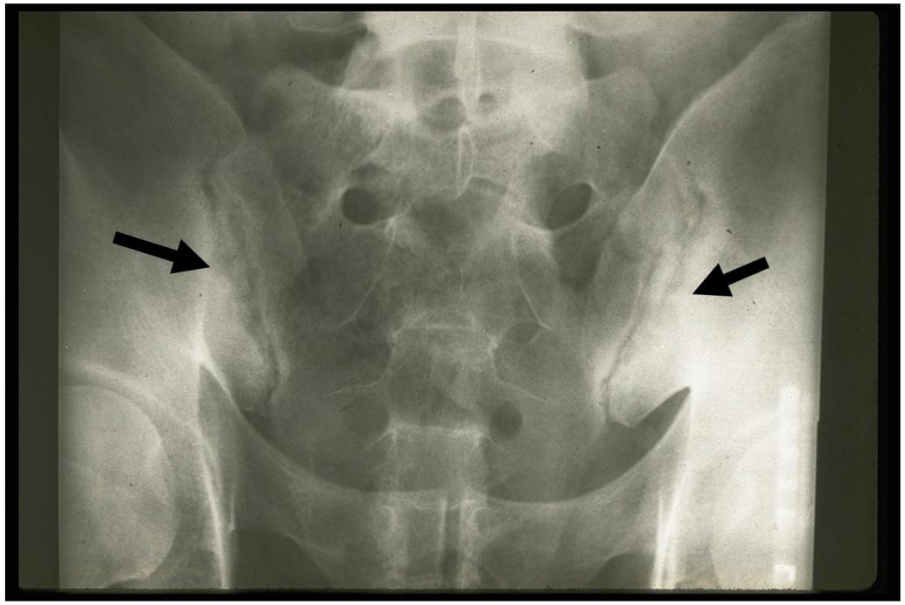
- Age of onset <20 or >55 years
- Recent history of violent trauma
- Nocturnal Pain
- Thoracic Pain
- History of Cancer
- Systemically unwell (history of weight loss, fever)
- IVDU, immunosuppression, HIV
- Prolonged use of corticosteroids
- Neurological deficit
- Bowel or bladder dysfunction

Consider urgent MRI spine

Sacroiliitis by MRI and X-ray in Patients with Axial Spondyloarthritis



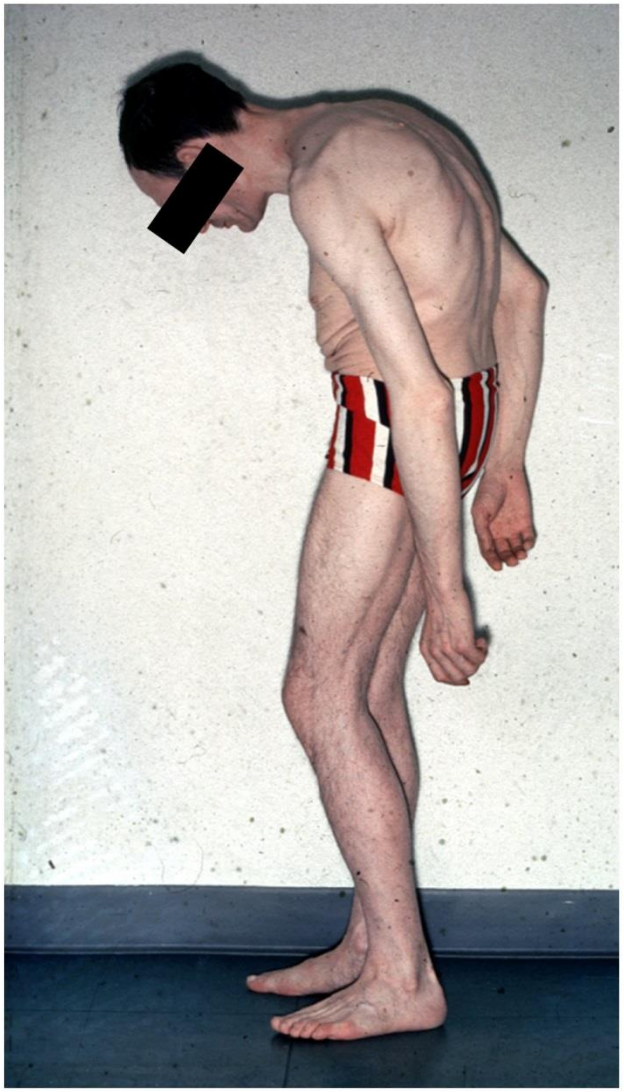
Active inflammatory sacroiliitis without bony changes



Sacroiliitis with bony changes (grade II)

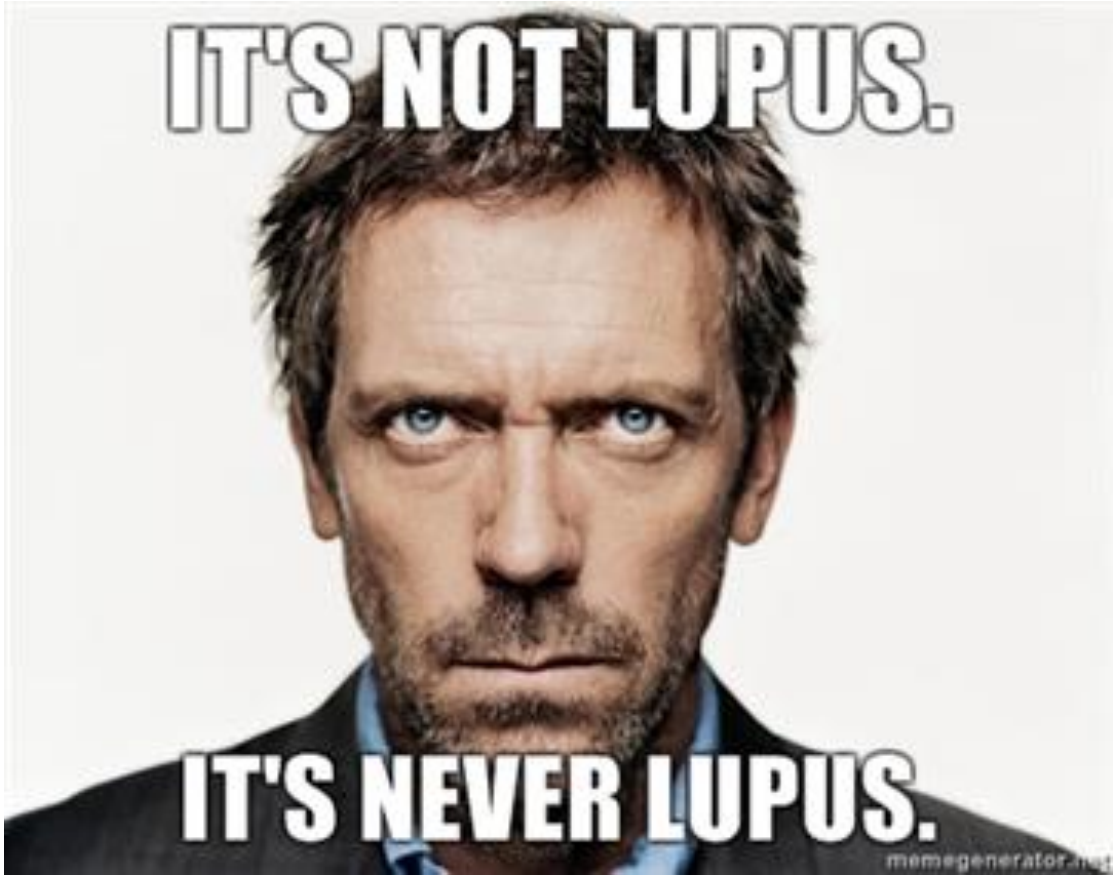
Final Stage of AS with Severe Kyphosis of Thoracic and Cervical Spine

Unable to look ahead while walking
(‚patient cannot see the sun‘)



What we are trying to avoid…

Connective Tissue Disease


IT'S NOT LUPUS.
IT'S NEVER LUPUS.
memegenerator.net

Connective tissue disease case 1

- Emma is a 25 year old Afro-Caribbean PE teacher. She attends clinic with pain and stiffness in her hands. She shows you a picture of a rash across her cheeks that occurred after a particularly hot day. She also has mouth ulcers and her hair has been coming out.
- This is not Emma…

Questions

- What other questions would you like to ask in the history?
- What investigations would you perform?
- What is the likely diagnosis?

Systemic lupus (SLE)

- An immune complex disease of unknown aetiology
- Multisystem disease
- It has a predilection for women of childbearing age, particularly those of Afro-Caribbean, Hispanic and South East Asian background

SLE – Clinical Features

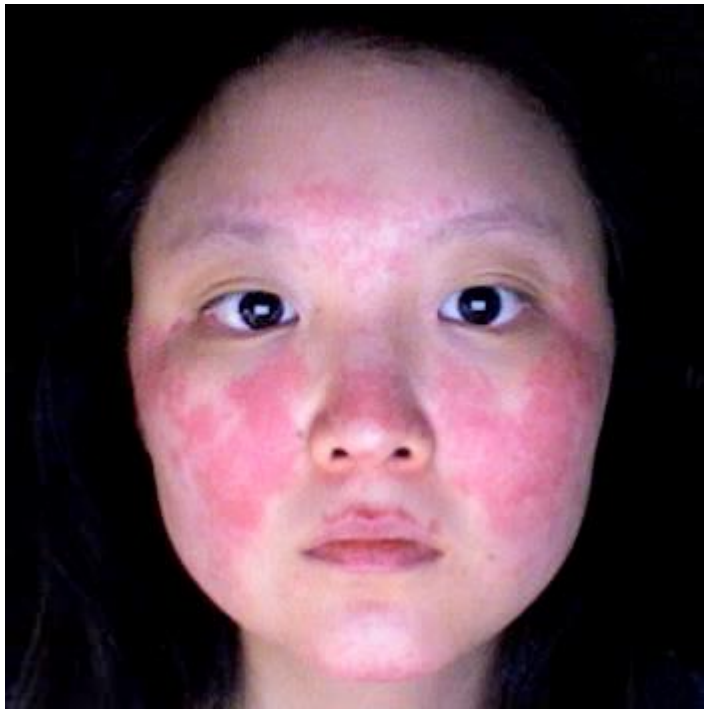
SLE manifestations	Cumulative frequencies 1990-2000 N=1000
Arthritis	48.1%
Malar rash	31.1%
Nephropathy	27.9%
Photosensitivity	22.9%
Neurologic involvement	19.4%
Fever	16.6%
Raynaud's phenomenon	16.3%
Serositis	16%
Thrombocytopenia	13.4%
Oral ulcers	12.5%
Thrombosis	9.2%
Discoid lesions	7.8%
Livedo reticularis	7%
Subacute cutaneous lesions	6.7%
Haemolytic anaemia	4.8%
Myositis	4.3%

- Table shows manifestations present in the Euro lupus cohort – 1000 patients followed prospectively from 1990
- Practically, people commonly present to clinic with joint pain, rashes, ulcers, raynauds and 'positive blood tests'.

Investigations

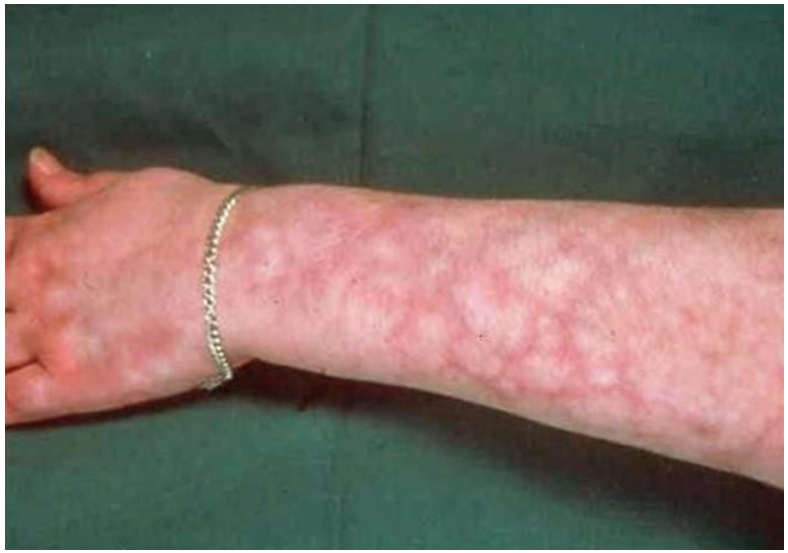
- FBC – anaemia, low lymphocytes, low platelets
- U&E
- LFT
- CRP may well be normal
- ESR usually raised in active disease
- Urinalysis – check for renal involvement (blood and protein)

Classic skin rash



- Malar rash – photosensitive and spares the nasolabial folds

Some other manifestations



Antibodies in SLE

- The ones to remember for you…
- ANA (antinuclear antibody)
- DSDNA (anti double stranded DNA)
- Can see antiphospholipid antibodies (cardiolipin, lupus anticoagulant, beta 2 glycoprotein but confusingly, lupus anticoagulant does not mean you have SLE)

SLE – Treatment

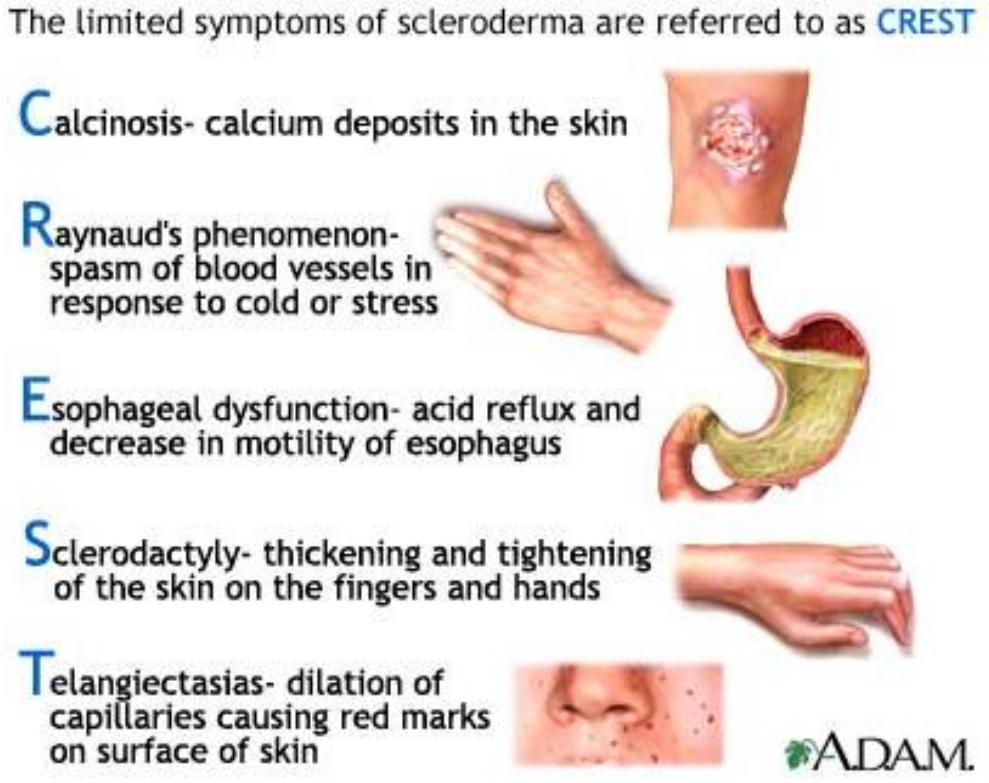
- Treatment is tailored to the organ/system involved
- General treatment – sun avoidance, protective clothing, high factor sunscreen
- Treatments include steroids, hydroxychloroquine and stronger immunosuppression such as azathioprine, mycophenolate, cyclophosphamide and rituximab for vital organ threatening disease

Sjogrens

- Autoimmune condition characterised by lymphocytic infiltration of exocrine glands
- Clinical features include dryness of eyes and mucus membranes, joint pain and fatigue
- F:M 9:1
- Tends to affect women in mid life and later
- ANA, Ro, La and rheumatoid factor

Limited cutaneous systemic sclerosis (CREST)

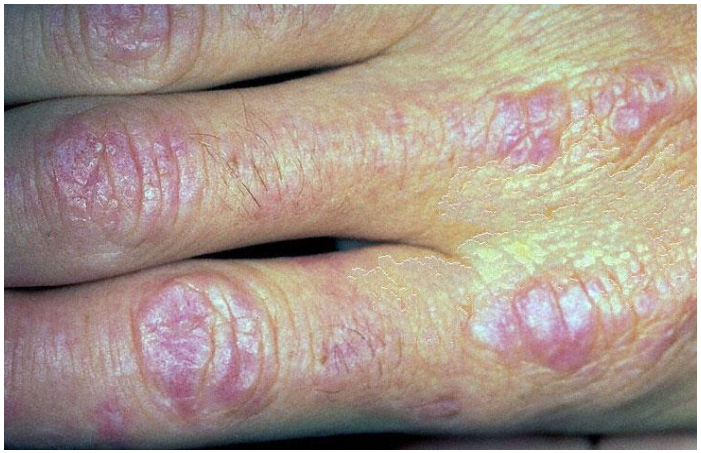
- Acronym to help you recall the clinical features of limited cutaneous systemic sclerosis
- Calcinosis
- Raynaud's phenomenon
- Lack of oesophageal peristalsis
- Sclerodactyly
- Telangiectasia
- ANA, anti centromere antibody

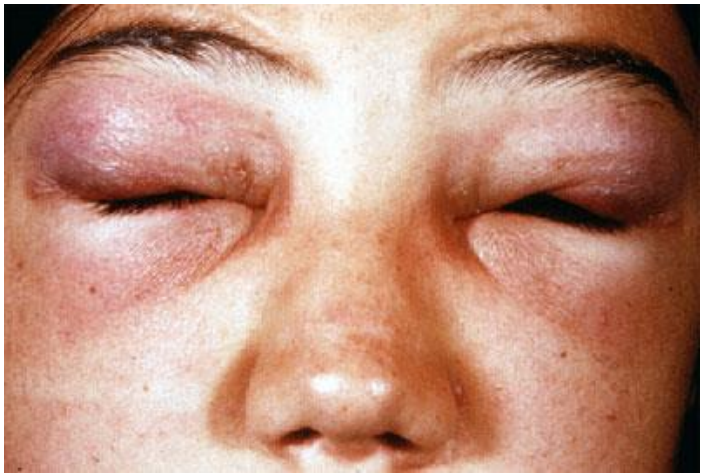


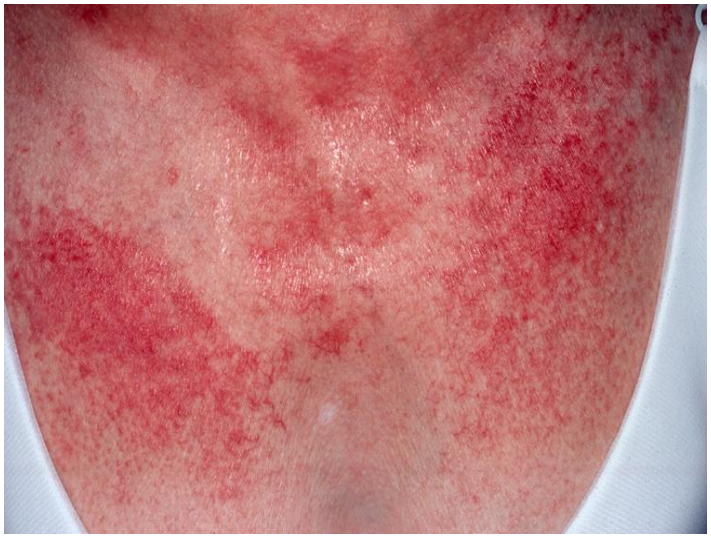
Inflammatory muscle diseases in rheumatology

- Dermatomyositis (DM) and polymyositis (PM)
- Dermatomyositis – inflammation of skin and muscle. **Antibody to remember for this is anti-Jo1**
- Polymyositis – inflammation of many muscles
- Patients can also have involvement of lungs and can be associated with malignancy

Dermatomyositis



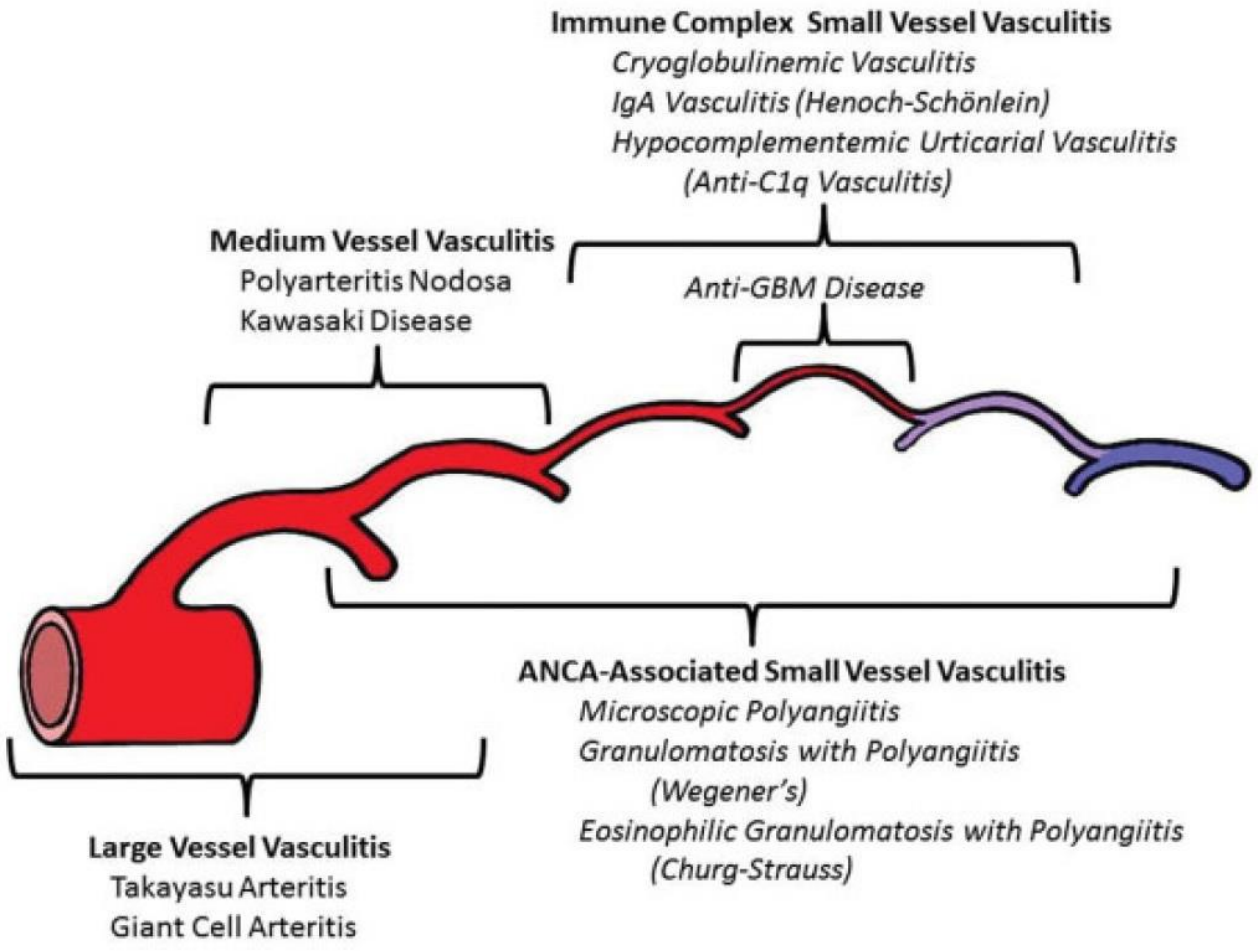




Clockwise from top left: Gottrons papules, heliotrope rash, photosensitive rash, mechanics hands

Vasculitis

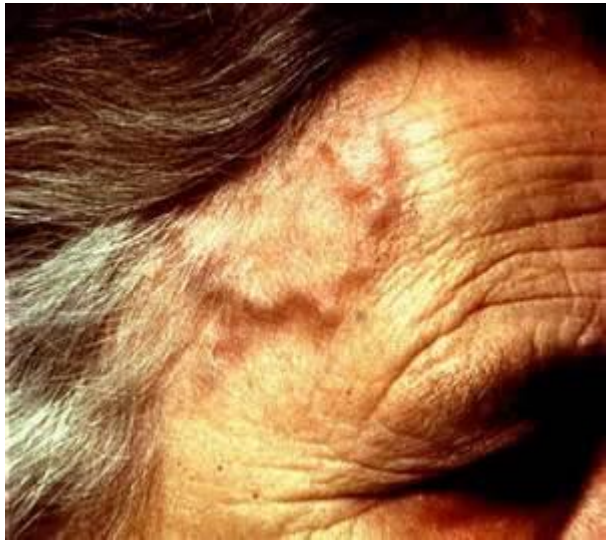
Vasculitis – An introduction



Vasculitis – inflammation of blood vessels

Vasculitis case 1

- Mrs F, 80
- Attends the emergency department with visual loss and headache



What else would you like to know?
What investigations would you like to request?
Differential diagnosis?
Management?

GCA

- Chronic vasculitis of large vessels
- Essentially NEVER occurs <50
- In younger patients, may be a condition called Takayasu arteritis

Clinical Features GCA

- Unilateral headache
- Scalp tenderness
- Jaw claudication
- Transient visual loss
- Tongue claudication
- Background of PMR
- Unexplained fever or anaemia
- High inflammatory markers

Investigations and management

- FBC – anaemia, raised white cell count, raised platelets
- U&E
- LFT
- CRP – should be raised
- ESR – should be raised
- Temporal artery biopsy
- Commence steroids if suspicious

delay may = irreversible visual loss

A few words about polymyalgia rheumatica

- Stiffness across the shoulder and pelvic girdle
- Usually see modestly raised inflammatory markers
- Often women >70
- NEVER in young people
- Not an emergency
- BSR guidance is to start at 15mg prednisolone
- Response to steroid should be rapid and significant. If not, reconsider diagnosis.

Vasculitis – Examples – ANCA associated vasculitis

- **Granulomatosis with polyangiitis (Wegener's)** – ENT involvement, lung, kidney
- **Eosinophilia with granulomatous and polyangiitis (Churgh Strauss)** – Asthma, lung, nerve and eosinophilia are most common
- **Microscopic polyangiitis** – Renal, pulmonary haemorrhage, nerve and skin are most common manifestations

Investigations and management

- FBC – anaemia, raised white cell count, raised platelets
- U&E
- LFT
- CRP – should be raised
- ESR – should be raised
- Virology to exclude hepatitis and HIV as causes
- Urinalysis – for blood and protein
- ANCA – not always positive in ANCA associated vasculitis
- Biopsy a relevant tissue eg kidney
- Management is with immunosuppression

Vasculitis – top tips

- Insidious symptom onset
- Constitutional features are common including weight loss, fatigue, night sweats
- Think vasculitis if patients have multisystem features and are failing to respond to conventional therapies eg antibiotics for fevers, raised inflammatory markers and involvement of one or more vital organ system such as nerve, skin, kidney, lung

Thanks for listening

Any questions?

We are happy to be emailed with any further queries

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Other useful resources

Summary of autoantibodies

Condition	Autoantibody
Rheumatoid arthritis	Rheumatoid factor and CCP
SLE	ANA, DsDNA
Dermatomyositis	Jo-1
Systemic sclerosis	Anti centromere antibody, SCL-70
Sjogrens	ANA, Ro, La, rheumatoid factor
Granulomatosis with polyangiitis (Wegener's Granulomatosis)	C-ANCA PR3
Microscopic polyangiitis	P-ANCA MPO
Eosinophilia with granulomatosis and polyangiitis	P-ANCA MPO

Some examples of DMARDS

DMARD	Some uses	Typical doses	Mode of action	Monitoring required
Hydroxy-chloroquine	Inflammatory arthritis, SLE, Sjogrens	200-400 mg daily	inhibits locomotion of neutrophils and chemotaxis of eosinophils; impairs complement-dependent antigen-antibody reactions	Annual optometry review
Sulphasalazine	Inflammatory arthritis	Up to 3g/day in divided doses	Unclear. May inhibit central transcription factors such as nfkappa b.	FBC, LFT monthly for 3/12 then reduced
Methotrexate	Inflammatory arthritis / vasculitis	5-25mg po or SC **weekly**	Multiple mechanisms including inhibits growth of rapidly dividing cells by inhibiting dihydrofolate reductase	FBC, U&E, LFT 2/52 until dose and monitoring stable for 6/52 then reduced
Leflunomide	Inflammatory arthritis	10-20mg per day	Stops lymphocyte proliferation by inhibiting pyrimidine synthesis	FBC, LFT monthly for 6/12 + BP and weight. Frequency then reduced.

DMARD	Potential toxicities	What to look out for	When to call for help
Sulphasalazine	Myelosuppression Hepatotoxicity	Infection. Cytopaenias. Specific syndrome characterized by fever, rash, and markedly abnormal LFTs.	Neutropaenia, sepsis, other cytopaenias Fever, rash and deranged LFTS Fulminant hepatic failure
Methotrexate	Myelosuppression Hepatotoxicity Pneumonitis	Infection. Cytopaenias. Deranged transaminases. Deranged clotting. Shortness of breath (pneumonitis is a complication largely seen in first 6/12 of therapy).	Neutropaenia, sepsis, other cytopaenias Deranged LFTs Fulminant hepatic failure Clinical suspicion of pneumonitis
Leflunomide	Myelosuppression Liver toxicity	Infection. Cytopaenias. Deranged transaminases. Deranged clotting.	Neutropaenia, sepsis, other cytopaenias Deranged LFTs Fulminant hepatic failure