Musculoskeletal system

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Osteoarthritis/ osteo-arthropathy

Introduction:

It is the commonest arthropathy which is non-inflammatory in nature and occurs due to ***degeneration of articular cartilage*** and secondary hypertrophy of the bone of articular margin.

Risk factors:

1. Age related
2. Obesity
3. Secondary osteoarthritis in the affected joint (Ex: RA, Gout etc.).

Clinical features:

Joint pain

Description:

- Typically occurs after prolonged activity of the joint, rest relieves the pain; however, in severe cases, pain may persist even at rest
- Nature: Continuous pain, without any significant stiffness of the joint
- Affected joint may show reduced range of movement (both active and passive) due to deformity.

Commonly involved joints:

- ✓ Big joints: Hip, knee, vertebrae
- ✓ Small joints: PIP, DIP, sometimes MTP.

On examination:

- No signs of active inflammation
- Passive movements are restricted
- Sometimes bony overgrowth may be identified:
  - While involving DIP: Heberdon's nodule
  - While involving PIP: Bouchard's nodule.
- Examination of knee: Crepitus (due to presence of loose body).

Investigation:

X-Ray of the affected joint: It shows ↓intra-articular space.

Treatment:

1. Weight reduction
2. Analgesics
3. Exercise
4. Rehabilitation
5. Joint replacement.

Note: Although frequently prescribed, role of [Glucosamine + Chondroitin sulfate] is not established.

Peer into basics: Seronegative spondylo-arthropathy

A group of disorders characterized by axial, skeletal and joint involvement and negative autoimmune marker. This group involves:

1. Ankylosing spondylitis
2. Psoriatic arthropathy
3. Arthropathy associated with inflammatory bowel disease
4. Reiter's disease/ Reactive arthritis.

Ankylosing spondylitis

It is a seronegative spondylo-arthropathy with extra-articular involvement.

Clinical features:

- ✓ **A**nterior uveitis
- ✓ **A**rthropathy:
  - ➢ Back pain: Inflammatory in nature
  - ➢ Limited movement
  - ➢ Ankylosis: Severely reduced spine movement
  - ➢ Peripheral arthritis
  - ➢ ↓ Chest wall expansion causing shortness of breath.

- ✓ **A**pical fibrosis
- ✓ **A**ortic root dilation (causing AR)
- ✓ Ig**A** nephropathy
- ✓ **A**chilles tendonitis ± Plantar fasciitis (Together called: Enthesopathy).

Investigation:

There is no single investigation to confirm the diagnosis. However, the following investigations may be done:

1. X-Ray ± MRI spine
2. Spirometry
3. Echocardiogram
4. HLA-B27: +Ve.

Treatment:

- Physiotherapy + Exercise
- Analgesics
- DMARDs: Hydroxy-chloroquine/ Infliximab (should be tried by an expert).

Reiter's disease

It is a seronegative spondylo-arthropathy.

Clinical features:

- Often there is a preceding history of gastro-enteritis (diarrhea, vomiting) which probably triggers an immunological reaction leading to the disease
- There are **3** components of Reiter's disease:
  1. ***Arthritis***: Asymmetrical small joint arthropathy
  2. ***Urethritis***: Dysuria, per-urethral discharge (resembling gonococcal urethritis)
  3. ***Conjunctivitis***.
- Sometimes, cutaneous manifestations are seen (pustular lesion: Keratoderma blennorrhagicum).

Investigation:

No specific investigation to confirm the disease

However, gram stain with culture-sensitivity of the urethral discharge should be done to rule out any STD.

Treatment:

Symptomatic: NSAIDs.

Rheumatoid arthritis (RA)

It is an autoimmune disease characterized by severe deformity predominantly involving *small joints*; causing polyarthritis and extra-articular manifestations.

Clinical features:

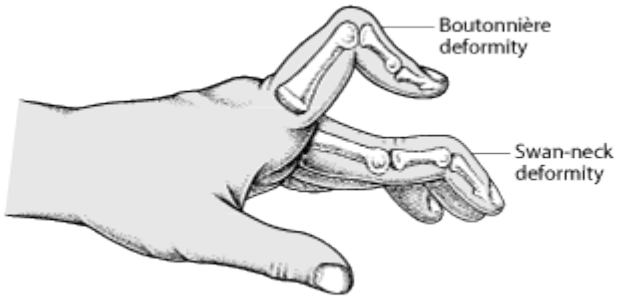
1. Skeletal:
   - ***a. Polyarthritis***
     - Typically involved joints:
       - ✓ Small joints: PIP, MCP, MTP
       - ✓ Large joints: Wrist, elbow
     - Pattern: Bilateral symmetrical.
   - ***b. Pain and stiffness***
     - Most prominent in the morning
     - Stiffness may last even upto 20 mins or more
     - As the day progresses, joint symptoms gradually ease off.
   - ***c. Associated symptoms***

     Swelling + Tenderness + Deformity + Functional impairment.

     On examination:

     a. If active: tenderness, swelling, ↑ temperature (due to tenosynovitis)

b. Permanent deformity:
   - ✓ *Swan neck deformity*: Hyperextension of PIP + Hyperflexion of DIP
   - ✓ *Button hole deformity*: Hyperextension of DIP + Hyperflexion of PIP



   - ✓ *Z deformity of hand*: Radial deviation of wrist + Ulnar deviation of fingers.

2. Extra-articular manifestations:

System	***Manifestations***
CVS	Pericarditis ± Effusion
CNS	✓ Entrapment neuropathy: Features of Carpal-tunnel syndrome ✓ Atlanto-occipital subluxation: May lead to high cervical myelopathy
Eye	Scleritis/ uveitis/ red eye/ gritty eye
Lungs	✓ Pleurisy ± Effusion ✓ Interstitial lung disease/ hypersensitivity pneumonitis ✓ Rheumatoid nodule (Caplan's syndrome/ Rheumatoid pneumoconiosis).
Blood	Hypersplenism (Splenomegaly ± Variable cytopenia)

Investigations:

1. Full blood count: Hb, TC, DC, ESR

   Hb: Normal/ may be ↓
   Probable causes of ↓Hb in RA:

Probable cause	***Type of anemia***
Anemia of chronic inflammation	Normocytic normochromic anemia
GI bleed due to NSAID use	Iron deficiency anemia
Use of methotrexate	Folate deficiency anemia

TC: ↑

DC: Variable cytopenia due to hypersplenism

CRP/ ESR: ↑ (having prognostic value: gradually falling level with treatment indicates inflammatory state is subsiding)

2. ***Autoimmune marker***:
   - ✓ Anti-cyclic citrullinated peptide (***anti-CCP***): Sensitive as well as specific marker
   - ✓ Anti- rheumatoid factor: Sensitive but not specific.
3. X-Ray joint:
   Radiological changes appear almost 6 months after the onset of disease.

   Changes are:
   - ✓ Juxta-articular osteopenia (bony decalcification)
   - ✓ Subluxation
   - ✓ Deformity.

4. Other relevant investigations depending upon other extra-articular manifestations.

Treatment:

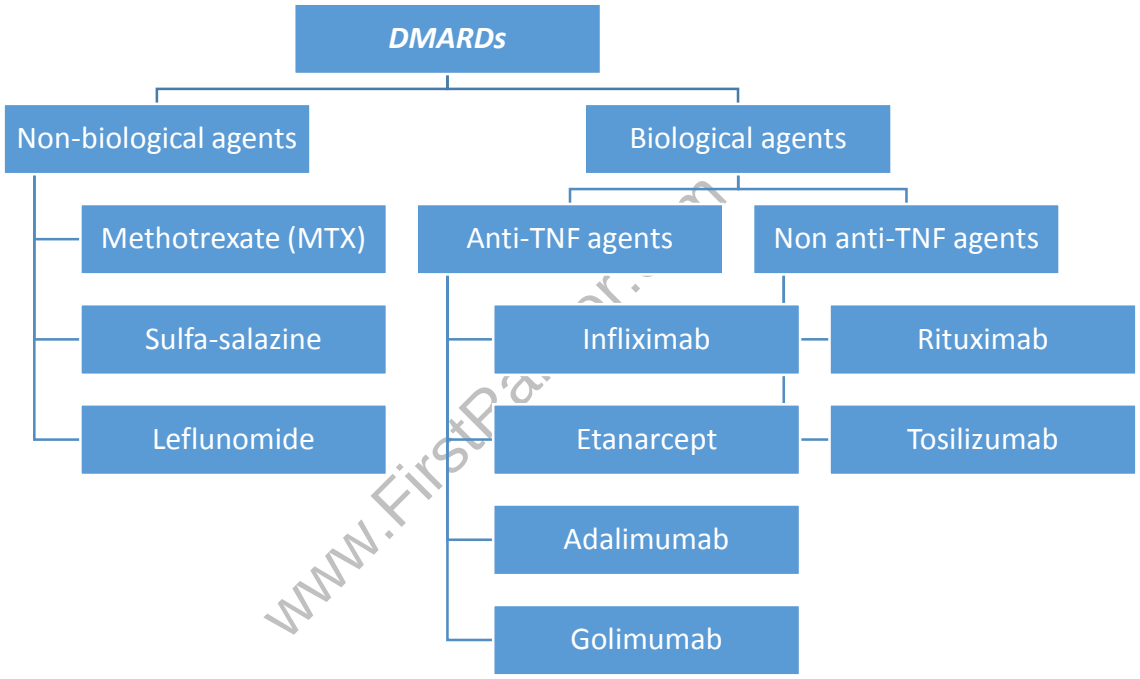
There are 3 headings in the treatment options of RA:

1. Supportive/ symptomatic treatment
2. Disease modifying anti-rheumatoid drugs (DMARDs)
3. Surgery.

Supportive treatment

- Joint rehabilitation:
  - ✓ Exercise
  - ✓ Physiotherapy
  - ✓ Splinting.

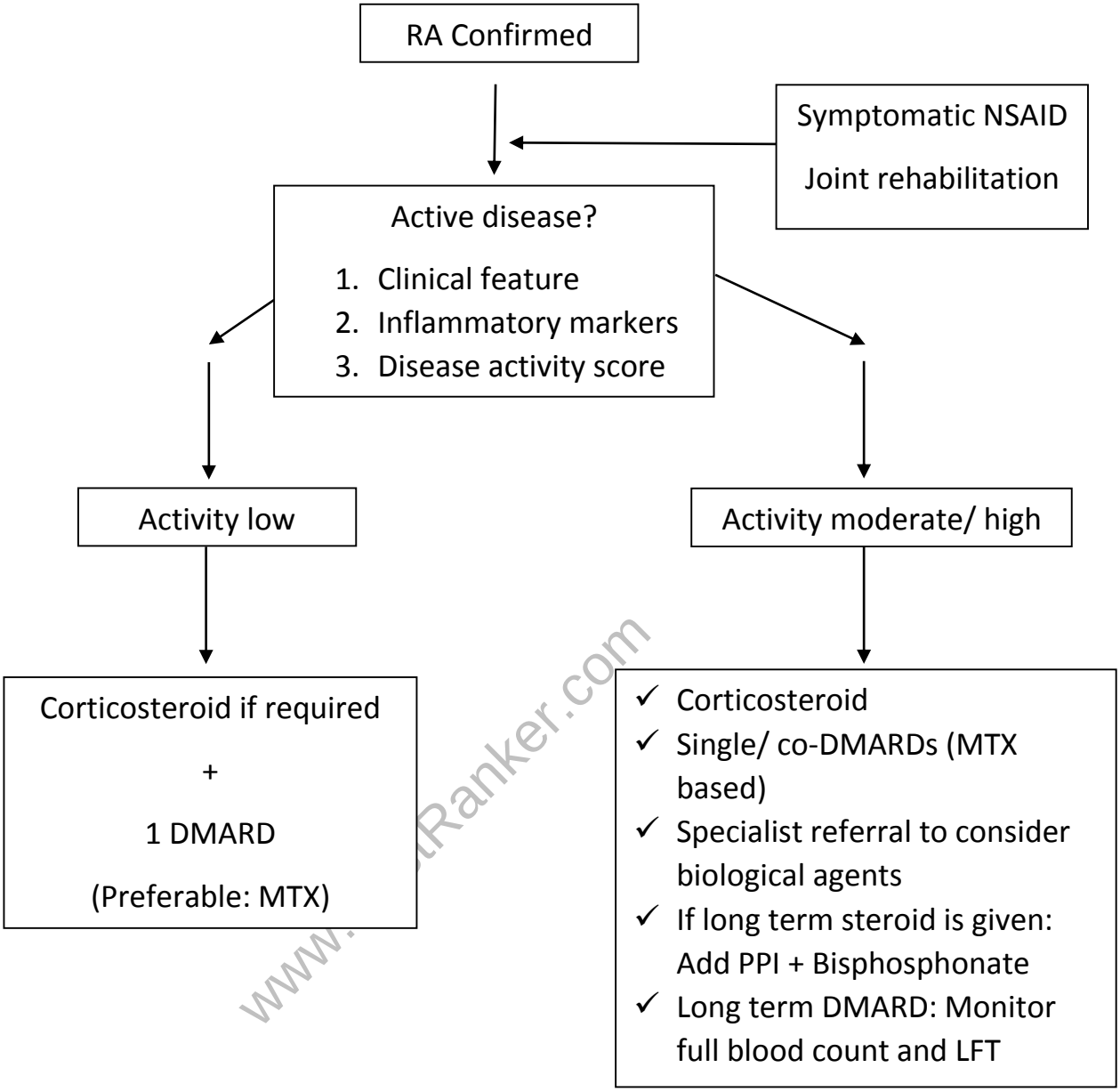
- NSAIDs:
  - ✓ Non selective COX inhibitors:
    Ibuprofen
    Indomethacin
    Diclofenac.
  - ✓ Selective COX-2 inhibitors:
    Etoricoxib.
- Corticosteroids:
  - ✓ In case of severe inflammation, short course systemic corticosteroid is used to secure acute inflammation
  - ✓ If long term steroid is required, patients are kept on minimal effective dose of steroids.



Surgery

Reconstructive surgery for permanent deformities.

Protocol of using various treatment options in RA



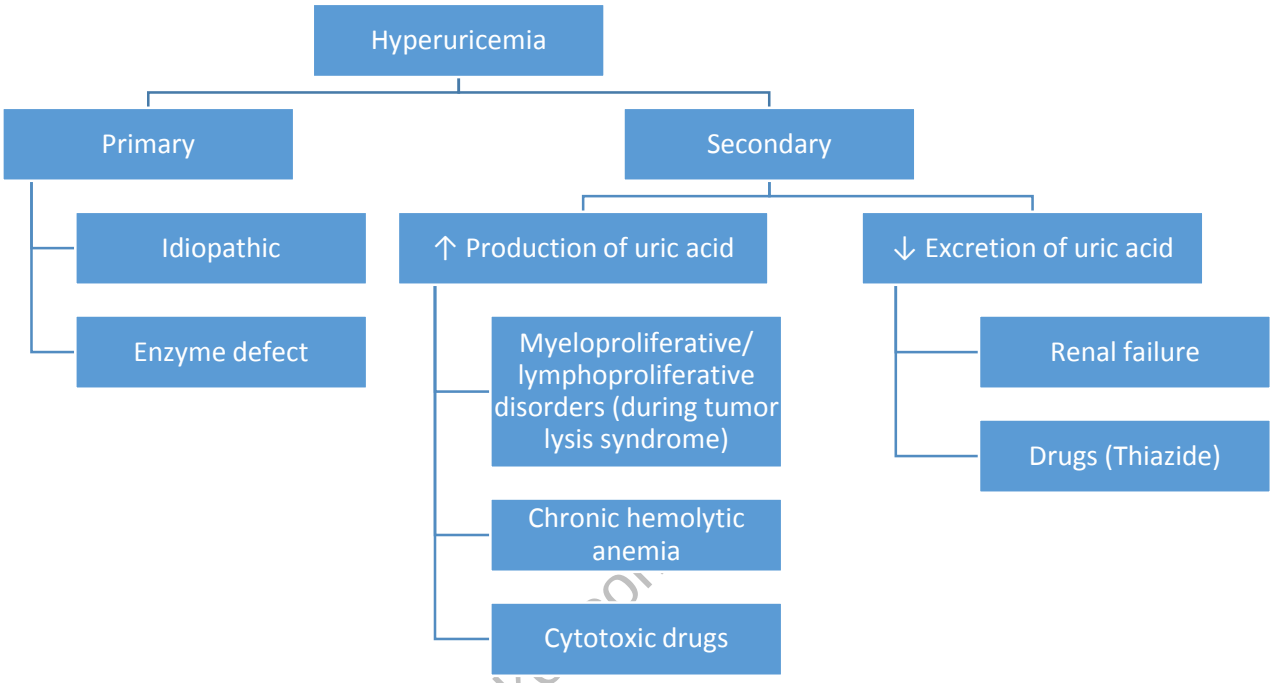
Gout

It is a metabolic disease associated with abnormal amount of urate in the body and characterized by acute recurrent mono-arthritis initially and later chronic deforming polyarthritis.

Types:

1. Acute gouty arthritis
2. Chronic tophaceous gout.

Cause:



Clinical features:

Acute gout (Acute gouty arthritis)

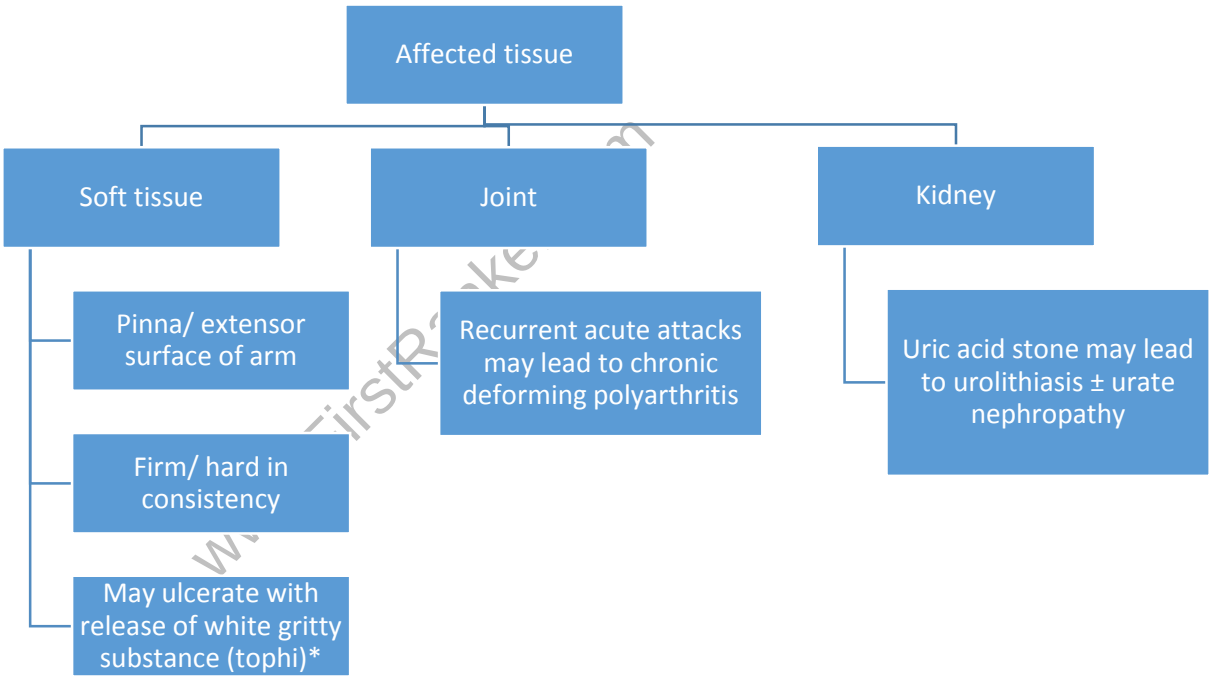
1. Onset: Abrupt
2. Precipitating factors:
   a. High protein diet
   b. Alcohol
   c. Surgery
   d. Infection
   e. **Rapid fluctuation of urate level** (may be caused by drugs used to treat gout itself, i.e. allopurinol)
   f. Drugs: Thiazide.

3. Typical episode:
   - Joints affected: Typically ***1st MTP*** joint, but feet, ankle and knee can also be affected: 1 or >1 joints may be affected. If >1 joints get affected, symptoms are usually asymmetrical.
   - Symptoms and signs:
     - ✓ Severe pain and swelling
     - ✓ On examination: Tenderness, ↑ Temperature, Swollen joint
     - ✓ Systemic feature + Fever

       [Attack may also start in the soft tissue and arch of the foot]

Chronic gout (Chronic hyperuricemia)

It is seen particularly in foot due to deposition of monosodium urate.



[*: Urate crystals coming out as cheesy substance]

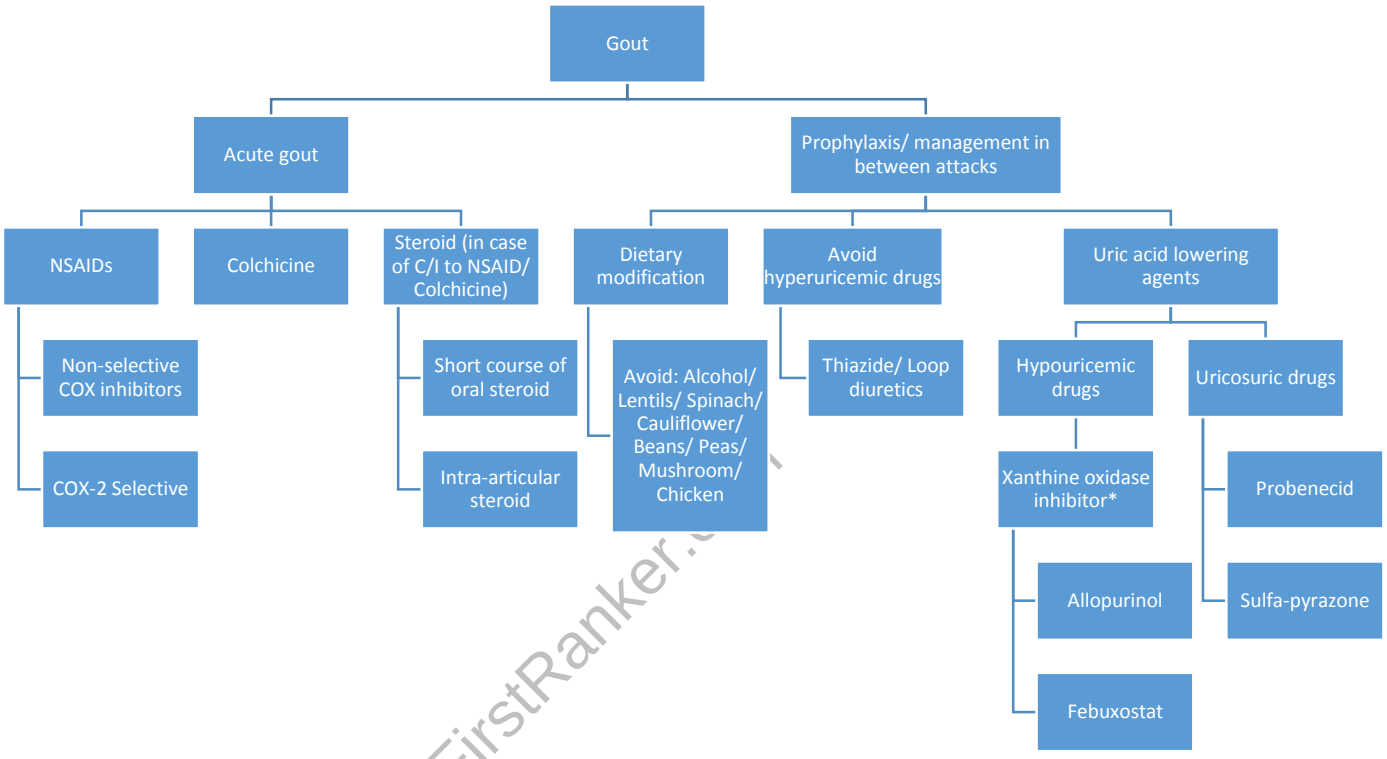
Investigations:

During acute attack:

1. WBC count: ↑
2. Serum uric acid: ↑ (But normal uric acid level does not exclude gout)

3. Aspiration of joint fluid: Needle shaped, negatively birefringent crystals
4. CRP: ↑
5. Temperature: ↑
6. Culture-sensitivity: To rule out septic arthritis (Gram stain +Ve)
7. Imaging studies.

Treatment:



[*: Should **always** be started with prophylactic dose of NSAIDs/ Colchicine to prevent acute flare up as rapid lowering of uric acid level can precipitate acute gout]

SLE

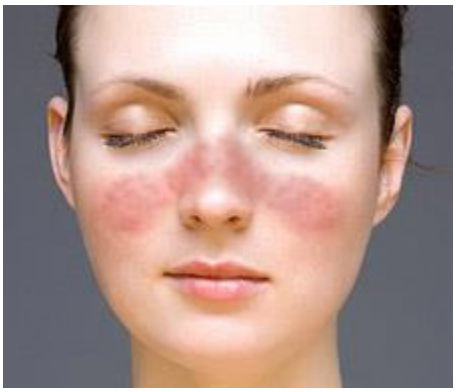
Non-organ specific autoimmune disease in which auto-antibodies are produced against varieties of autoantigens.

Clinical features:

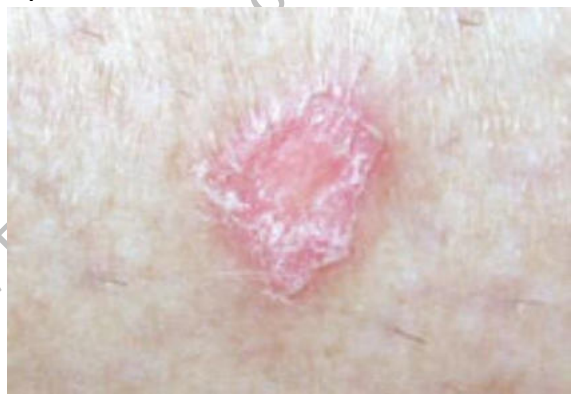
1. ***Systemic***: Fever + Weight loss + Anorexia + Myalgia
2. ***Skeletal***:
   - Polyarthritis: Usually symmetrical, non-erosive arthritis

- Joints affected: Small joints (PIP/ MCP/ Wrist)
- Signs of inflammation: +Ve
- Deformity: Rare (Jaccoud's arthropathy: Permanent deformity due to capsular subluxation).

3. ***Skin***:
   - Photosensitivity
   - Photosensitive rash/ Malar rash/ Butterfly rash: Typically erythematous rashes over chick, bridge of the nose, chin, ears



   - Discoid lupus: Scaly, circular, scarring rashes over scalp, eyes, face and sun-exposed parts of arm, back and chest.



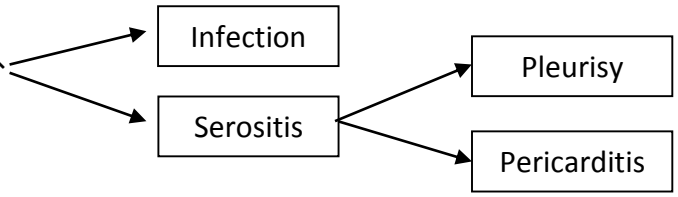
   - Alopecia
   - Raynaud's phenomenon
   - Livdo reticularis
   - Cutaneous vasculitis: Leading to nail fold infarct/ splinter hemorrhage/ distal gangrene
4. ***CVS***:
   - Pericarditis
   - Myocarditis ± Cardiac failure

- Atypical endocarditis of Libman-Sacks: Usually silent, but may lead to chronic valvular regurgitation: most commonly **MR**.

5. ***CNS***:
   Focal neurodeficit causing:
   - Headache
   - Seizure
   - Psychosis
   - CVA
   - Peripheral/ cranial neuropathies.
6. ***Eye***:
   - Conjunctivitis
   - Visual loss (due to transient retinal vasculitis).
7. ***Endocrine***:
   - Hashimoto's thyroiditis
   - SIADH.
8. ***Lungs***:
   - Pleurisy
   - Pleural effusion
   - ILD
   - Pneumonitis.
9. ***Lympho-reticular***:
   - Lymphadenopathy
   - Splenomegaly.
10. ***GIT***:
    - Mouth ulcers
    - Mesenteric vasculitis (leading to ischemic colitis):
      - ✓ Abdominal pain
      - ✓ Melena
      - ✓ Intestinal perforation.
11. ***Kidney***:
    - Glomerulonephritis: Leading to AKI/ CKD.

Investigation:

1. Full blood count: Hb ↓ (hemolytic anemia may occur), TC ↓, Platelet ↓
2. ESR: ↑
3. CRP: Usually normal but may ↑



4. Urea/ creatinine: Normal/ ↑

5. ***Autoantibodies***:
   a. Antinuclear antibody (ANA): Sensitive but not specific
   b. Anti ds-DNA/ Anti-Sm antibody: Specific but not sensitive
   c. RA factor + Anti SS-A+ Anti SS-B: May be nonspecifically +Ve (overlap syndrome)
   d. Antiphospholipid antibody may be +Ve in following cases:
      - ✓ Biological false +Ve test for syphilis
      - ✓ Anticardiolipin antibody
      - ✓ Lupus anticoagulant.
6. Urine R/E + M/E:
   - ✓ RBC +/ RBC cast +/ Dysmorphic RBC
   - ✓ Proteinuria +Ve.
7. Other relevant investigations depending on organ involvement.

Treatment:

1. Cutaneous disease:
   - ✓ Sunscreen lotion
   - ✓ Topical steroid
   - ✓ Hydroxy-chloroquine.
2. Arthritis:
   - ✓ NSAIDs
   - ✓ Hydroxy-chloroquine.
3. Steroid:
   Indications are:
   - ✓ Glomerulonephritis

- ✓ Pericarditis/ myocarditis
- ✓ CNS manifestations
- ✓ Significant immune hemolytic anemia/ immune thrombocytopenia.

4. Immunosuppression:
   - ✓ Cyclophosphamide/ Mycophenolate mofetil: For lupus nephritis
   - ✓ Mycophenolate Mofetil/ Azathioprine: For CNS vasculitis.

Scleroderma

Disorder characterized by progressive fibrosis of skin and internal organs.

Types:

1. Diffuse cutaneous sclerosis
2. Limited cutaneous sclerosis (CREST syndrome)
3. Localized cutaneous sclerosis.

Clinical features:

1. Systemic: Malaise + Weight loss
2. Skin:
   a. Initially subcutaneous pitting edema
   b. Progressive fibrotic thickening of skin: Overlying skin becomes tightly bound to subcutaneous tissues (Hidebound skin): Trunk/ extremities
   c. Pigmentation/ Depigmentation
   d. Telangiectasia: Lips/ tip of the finger/ buccal mucosa
   e. Cutaneous vasculitis: Nail-fold infarct/ Splinter hemorrhage/ Digital gangrene.
3. Skeletal: Poly-arthralgia
4. CVS:
   a. Pericarditis
   b. Heart block
   c. Myocardial fibrosis----→ Heart failure
   d. RHF secondary to PAH.
5. Esophagus:
   Dysphagia due to hypomotility.

6. Lungs:
   a. PAH
   b. ILD: Pulmonary fibrosis.
7. GIT:
   Features due to intestinal dysmotility:
   a. Abdominal pain
   b. Bloating
   c. Constipation
   d. Diverticular disease (due to bacterial overgrowth).
8. Kidney:
   Scleroderma renal crisis: Accelerated hypertension with rapidly progressing nephropathy.

CREST syndrome

C. **C**hondro-calcinosis cutis
R. **R**aynaud phenomenon
E. **E**sophageal dysmotility
S. **S**clerodactyly
T. **T**elangiectasia.

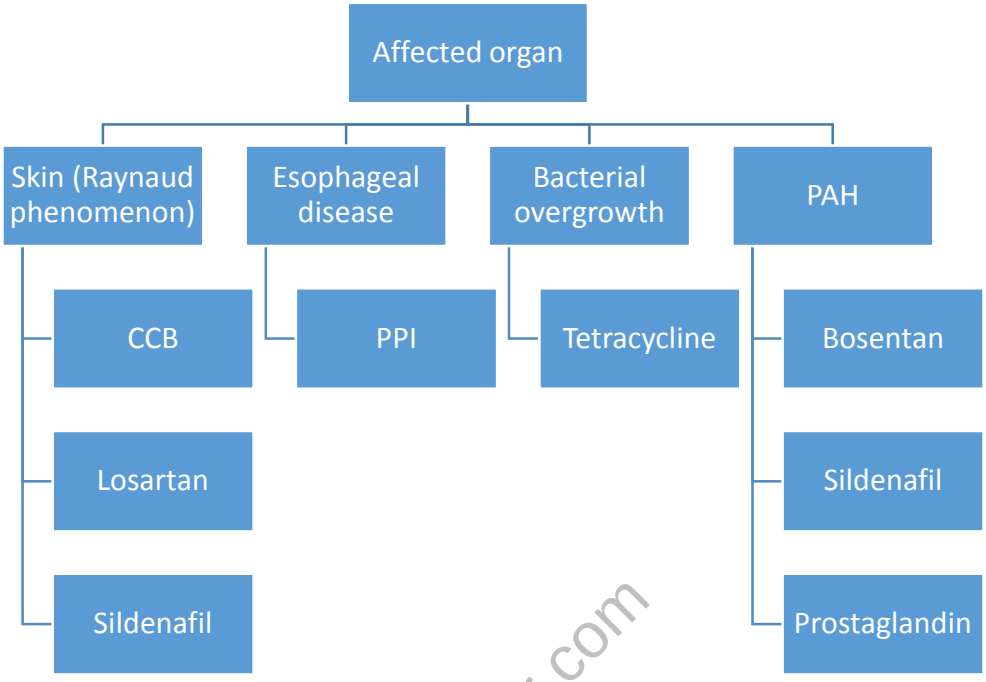
Investigations of scleroderma:

1. Hb: ↓
2. ESR: Usually normal
3. Urea creatinine Na+ K+: To assess renal function
4. Urea R/E and M/E: RBC +Ve and Protein +Ve in renal crisis
5. ECG/ Echocardiogram: To assess PAH and condition of right heart
6. Autoantibodies:
   - ✓ Anti Scl-70: +Ve in diffuse systemic sclerosis
   - ✓ Anti-centromere antibody: +Ve in CREST syndrome.
7. Organ specific investigations if required.

Treatment:

There is no effective therapy to halter disease process.

Therapy is mainly supportive and organ-specific:



Antiphospholipid syndrome

Disorder characterized by recurrent venous thrombosis and recurrent miscarriage.

Clinical features:

- Although it occurs in many patients with SLE, it may also occur in an isolated manner
- Females are more affected
- Recurrent unprovoked DVTs
- DVTs at unusual sites: lymph vein, portal vein, hepatic vein, renal vein, adrenal vein, cerebral venous sinus
- Recurrent miscarriage.

Investigations:

1. Autoantibodies:
   - ✓ False +Ve VDRL
   - ✓ Anticardiolipin antibody +Ve
   - ✓ Lupus anticoagulant.
2. Investigations to rule out underlying SLE
3. Coagulation profile: aPTT↑

Treatment: Anticoagulant.

Polymyalgia rheumatica

It is a syndrome characterized by pain/ stiffness usually in the neck, shoulder, hip.

Clinical features:

1. Age: Middle aged to elderly
2. Manifestations:
   - I. Pain and stiffness:
     Slowly progressive [Note: No muscle weakness/ wasting].
     Typically affecting:
     - ✓ Shoulder: Difficulty in combing hair
     - ✓ Pelvic girdle: Difficulty in climbing upstairs/rising from a chair.
   - II. Poly-arthralgia/ arthritis:
     Usually mild, affecting knee/ wrist.
   - III. Pyrexia + Fatigue + Malaise + Weight loss
   - IV. Psychiatric depression
   - V. May/ may not overlap with giant cell arteritis.

Investigations:

1. Hb: ↓
2. ESR: ↑
3. ALP: May be ↑
4. CK: Normal

Treatment: Low dose prednisolone.