Seronegative Spondyloarthritis

- Joint inflammation involving the axial skeleton (spine and sacroiliac joints) with some association with peripheral joints (lower extremities)
- It is more common among adolescent boys and young men : typical age is 15-40
- They are highly heritable diseases
- It is strongly associated with HLAB27 (MHC class 2)
- There is Seronegativity for Rheumatoid factor (RF) and ANA
- Types
    - Ankylosing Spondylitis : chronic
    - Reactive arthritis (posturethral and postdysenteric) : acute or chronic
    - Psoriatic Arthritis : chronic
    - Enteropathic Arthritis : acute or chronic

Common Clinical Features between all types

- The cardinal clinical features are sacroilitis and spondylitis (axial skeleton arthritis)
- Enthesitis
    - Inflammation of tendon insertion sites of both juxtaarticular and extraarticular joints
    - The most common sites of swelling are at the insertion of the Achilles tendon or at the insertion of the plantar fascia ligament into the calcaneus (plantar fasciitis)
    - It is evaluated by Scintigraphy and MRI
- Dactylitis aka sausage fingers
    - Inflammation of entire digits
    - It can be found in TB, syphilis, Sickle cell disease, sarcoidosis and gout
- Oligoarthritis : When peripheral arthritis of spondyloarthritis occurs it begins as an episodic asymmetrical oligoarticular process that often involves the lower extremities, it then can progress and become chronic and disabling
- Eye involvement
    - Conjunctivitis : non purulent and transient
    - Anterior uveitis : Acute onset of unilateral redness, pain & photophobia
- A positive family history, eye inflammation (anterior uveitis or conjunctivitis) and the absence of rheumatoid factor and subcutaneous nodules are enough for diagnosis
- ALL forms have elevated CRP & ESR, HLAB27 association and negative autoantibodies (like RF and ANA)

Ankylosing Spondylitis (ANK)

- Axial spondyloarthritis is chronic inflammatory arthritis affecting the axial skeleton
- ANK is axial spondyloarthritis with inflammatory changes in the sacroiliac joints and spine seen on plain radiographs
- 90-95% of patients are HLA-B27 positive
- Family History is a strong risk factor

- Typical presentation : patients < 45 years of age who present with features of inflammatory back pain lasting > 3 months and confirmed sacroilitis on imaging
- Pathophysiology
    - Innate immune response & the release of cytokines like TNF-α
    - Infiltration of the sacroiliac joint, entheses and the annulus fibrosus of the vertebral column with CD8+ T cells
    - Erosions of the affected joints and entheses sites
    - The Annulus fibrosis is replaced by bone (syndesmophytosis) along the spinal ligament after which they can fuse causing ankylosis of intervertebral discs and vertebral bodies leading to loss of range of motion
- Clinical features
    - Pain : chronic (> 3 months) / insidious dull / slowly progressive / Morning stiffness for more than 30 minutes that improves with activity not with rest / Pain is independent of positioning / Pain awakens patient at 2nd half of night / There might be alternating gluteal pain
    - Reduced spinal mobility
    - Tenderness over the sacroiliac joints
    - Extraspinal : enthesitis / dactylitis / arthritis / anterior uveitis
    - Limb girdle joints (shoulders and hips) are affected
    - Costovertebral involvement leads to decreased chest expansion and restrictive lung physiology (chest pain) - might lead to upper lobe pulmonary fibrosis
    - Prostatitis
    - Aortitis and aortic regurgitation
    - IgA nephropathy
    - Cauda equina syndrome and amyloidosis are seen in late disease
- Physical examination reveals
    - FABER test : Sacroiliac and lumbar spine tenderness upon Flexion, ABduction and External Rotation
    - Loss of lumbar lordosis
    - Loss of lumbar spine range of motion
    - Schober test measures the degree of lumbar spine flexion by making 2 points while the patient is standing and asking the patient to flex : < 5 cm distance upon flexion between the 2 point indicates abnormal flexion
    - Chest expansion is limited in patients with thoracic involvement
- Grading of sacroilitis
    - grade 0 : normal
    - grade 1 : suspicious imaging
    - grade 2 : minimal
    - grade 3 : unequivocal
    - grade 4 : severe
- Diagnostics
    - Spine xray findings

        - Signs of sacroilitis : erosion and sclerosis
        - Ankylosis (fusion) of the articular surfaces (apophyseal joints)
        - Squaring of vertebral bodies
        - Loss of lumbar lordosis : abnormal straightening of the spine
        - Dagger sign : ossification of vertebral ligaments
        - Bamboo sign : Ossification of outer fibers of the annulus fibrosus resulting in ankylosis (fusion) of intervertebral joints & Syndesmophytes
    - MRI in negative or equivocal xrays
- Patients with HIV are more likely to have more severe form of ANK
- Treatment
    - Regular physical therapy to maintain range of motion and posture
    - First-line drug in most patients : NSAIDs NOT glucocorticoids
    - Second-line are TNF-α inhibitors etanercept and adalimumab
    - DMARDs
        - Sulfasalazine and methotrexate
        - Tofacitinib (a targeted DMARD) is used in patients who do not respond to NSAIDs or TNF-α inhibitors
    - Hip and Spine Surgery

Reactive Arthritis

- Reactive arthritis refers to spondyloarthritis with onset within 2-4 weeks of certain types of infection
- Reactive arthritis is more common among young men followed by genitourinary Chlamydia trachomatis infection
- Genitourinary infection with chlamydia or diarrheal illness with Shigella, Salmonella, Campylobacter, and Yersinia can induce reactive arthritis
- HIV can also cause reactive arthritis
- Reactive Arthritis usually presents with a triad of arthritis, conjunctivitis and urethritis or enteritis : cant see cant pee cant climb a tree
- Clinical features
    - Musculoskeletal symptoms
        - Oligoarthritis (sometimes polyarthritis) : Acute / asymmetrical /migratory / predominantly in the lower extremities
        - Sacroiliitis
        - Enthesitis
        - Dactylitis : Digitums 2 and 3 mainly affected with dactylitis
    - Ocular : Conjunctivitis, iritis, episcleritis, or keratitis
    - Keratoderma blennorrhagicum is a distinct papulosquamous rash usually found on the palms or soles
    - Circinate balanitis is a rash that may appear on the penile glans or shaft of men with reactive arthritis

    - Symptoms of a preceding infection like enteritis, urethritis, UTI or diarrhea
    - Cardiac : AV block / Pericarditis / Aortic regurgitation
- Diagnostics
    - Arthrocentesis will reveal inflammation with NEGATIVE gram straining
    - Tests for STDs or other sources of infection
    - Joint xray will reveal erosions
    - ECG and ECHO to exclude cardiac involvement
- Treatment
    - It is self limited so treatment is supportive
    - First line : NSAIDs
    - Glucocorticoids when NSAIDs are contraindicated
    - DMARDs : in chronic (> 6 months) or severe disease

Psoriatic Arthritis

- Prevalence is equal in men and women
- Psoriasis present prior to arthritis in 70% of cases
- Psoriasis is associated with all forms of spondylarthtopathies
- It primarily affects the hands, feet or spine
- Psoriatic Arthritis can occur alone without psoriasis
- 5 types of joints involvement (can change overtime)
    - Symmetrical Polyarthritis : identical to rheumatoid arthritis
    - Asymmetrical Oligoarthritis of large and small joints (≤ 4 joints)
    - Distal interphalangeal joint involvement with nail pitting
    - Arthritis Mutilans : severe, destructive arthritis resulting in telescoping fingers or opera glass hand
    - Axial disease : most predominant
- Other symptoms : enthesitis / dactylitis / Tenosynovitis / Nail changes like Onycholysis and pitting / uveitis
- Diagnostics
    - High uric acid
    - Xray
        - Pencil in cup deformity : erosion of the distal end of an interphalangeal joint with bony proliferation at the proximal end of the affected joint
        - Syndysmophytes are bulky and big
        - Asymmetry in bone erosions
- Treatment
    - Drugs of choice : DMARDs
    - NSAIDs
    - Intraarticular glucocorticoids

Enteropathic Arthritis

- Associated with Crohn disease and ulcerative colitis (IBD)
- Typically nonerosive, oligoarticular and episodic
- Musculoskeletal symptoms are the most common extra- intestinal symptoms in patients with IBD
- The degree of peripheral joint involvement correlates with gut activity but the axial arthropathy does NOT correlate with disease
- Extraaxial symptoms : Anterior uveitis / Oral aphthous ulcers / Erythema nodosum / Pyoderma gangrenosum
- Diagnosis and treatment are related to IBD