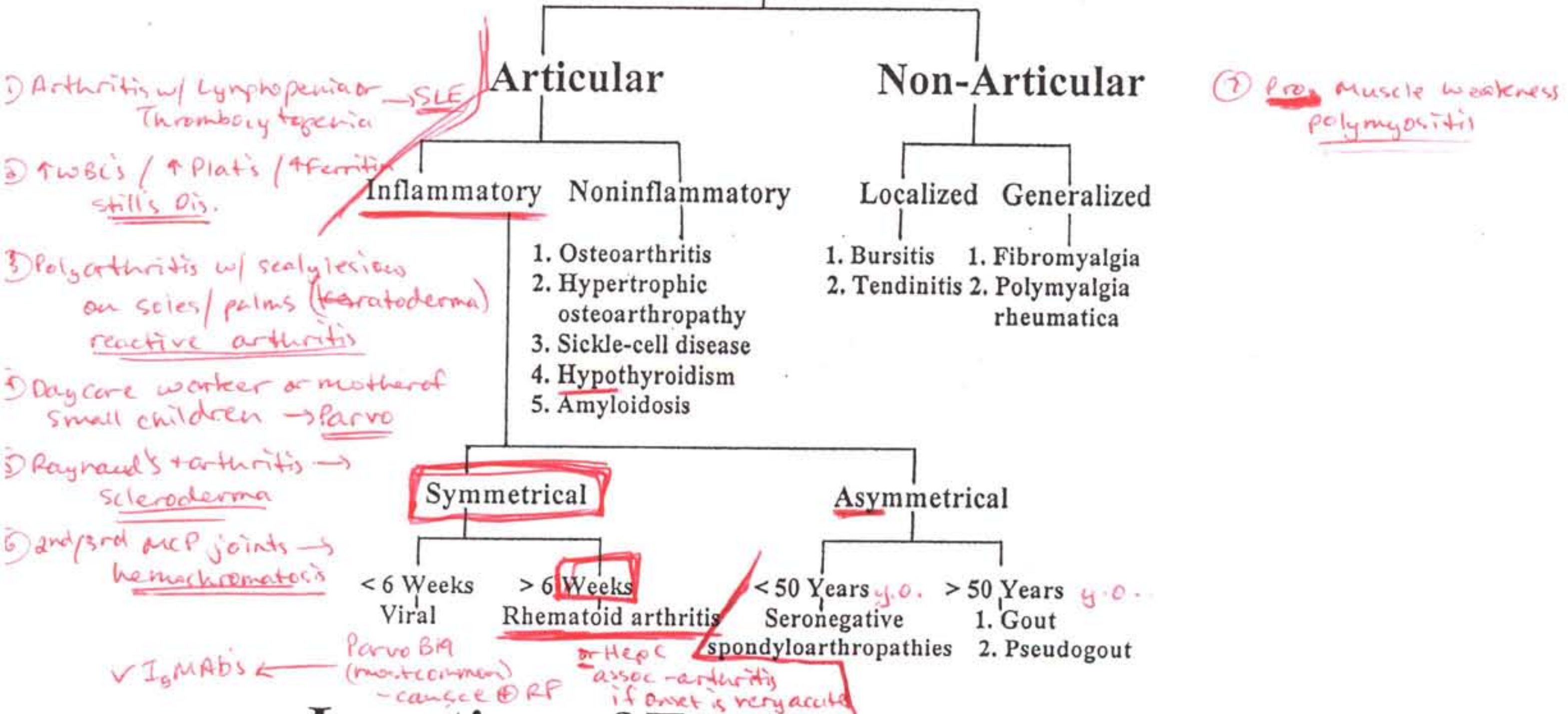
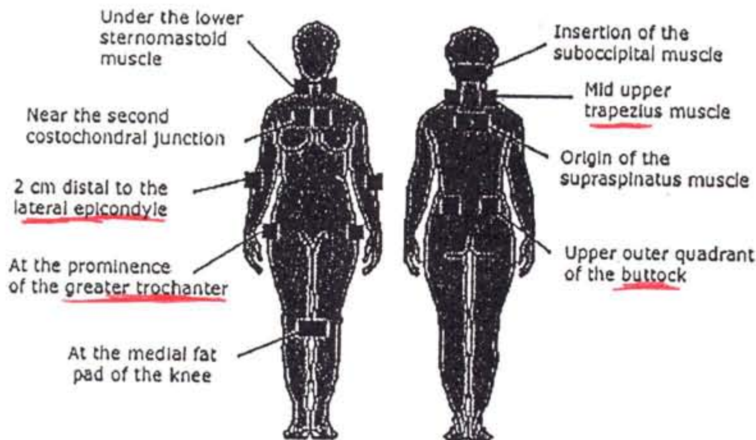
Musculoskeletal Pain



Location of Tender Points in Fibromyalgia

(most common rheumatic D/o)



S/S:
- fatigue
- diffuse aches/pains
- multiple tender points
- sleep disturbances
- ∅ muscle weakness
- Normal ESR, CK + TFT's
- ⊝ ANA

Treatment of Fibromyalgia

Step I: Evaluate and treat comorbid illness, such as mood disturbance, and primary sleep disturbance

Step II: Trial with low dose amitryptiline 25-50 mg/day or Cyclobenzaprine 10-30 mg at bedtime, exercise, behavior therapy

Step III: Add SSRI or venlafaxine (effexor xr) or pregabaline

Analgesics: Tramadol with or without acetaminophen

No evidence of efficacy for opioids, steroids, NSAIDS and benzodiazepine

Histories on Orthopedics

1. Pain lateral aspect of right hip + point tenderness over the right trochanteric area
   Dx: Trochanteric Bursitis Tx: Local Steroid Injection
2. Paresthesia and burning pain between 3rd and 4th toe + tenderness between 3rd and 4th metatarsal heads
   Dx: Morton's Neuroma Tx: Local Steroid Injection or excision
3. A 30-year-old female with knee stiffness after prolonged sitting + crepitus + pain when patella is compressed against the femoral condyle
   Dx: Chondromalacia Patella Tx: Quad strengthening exercises
4. Numbness and burning of toes + percussion posterior and inferior to medial malleolus produces the pain
   Dx: Tarsal Tunnel Syndrome Tx: Surgical decompression
5. Severe pain in the left shoulder after falling on a outstretched hand + can not abduct the left shoulder
   Dx: Rotator Cuff Tear Tx: Surgery
6. Severe pain over anterior aspect of the right shoulder + Tenderness in the bicipital groove
   Dx: Bicipital Tendinitis Tx: Local Steroid Injection in bicipital groove
7. Pain with lifting of the shoulder + painful abduction and internal rotation
   Dx: Rotator Cuff Tendinitis Tx: Local Steroid Injex + NSAID's
8. Generalized pain and tenderness around the shoulder + severe loss of active and passive motion + osteopenia on x-rays
   Dx: Adhesive Capsulitis (Frozen Shoulder) Tx: Local Steroid Injex + NSAID's
9. Burning and tingling of hand and fingers + ↓sensation in the first 3 ½ digits + atrophy of thenar muscles - median nerve ✓TSH if fatigued
   Dx: Carpal Tunnel Synd. Tx: Splint wrist in dorsiflexion @ night + Local Steroid Injex.
10. Numbness and tingling of little finger + ↓sensation over 5th finger, ulnar aspect of the 4th finger and ulnar border of the palm + weakness of fingers abduction and adduction
    Dx: Ulnar Nerve Entrapment Tx: Surgery
11. Pain and tenderness over lateral epicondyle of the elbow
    Dx: Lateral Epicondylitis (Tennis Elbow) Tx: NSAID's or Local steroid Injex.
12. Pain and tenderness over medial epicondyle of the elbow
    Dx: Medial Epicondylitis (Golfer's Elbow) same Tx as above
14. A runner with pain in the shin area + pain worse by exercise
    Dx: Shin splints Tx: Rest + ice packs
15. Pain and tenderness medial aspect of the knee 2 inches below the joint line
    Dx: Anserine Bursitis Tx: Local Steroid Injex + NSAID's
16. Diabetic patient with burning pain anterior and lateral aspect of the thigh + ↓sensation over antero-lateral thigh
    Dx: Meralgia Paresthetica Tx: wt. loss, heel correction + local Steroid injex.
17. Pain and tenderness over lateral aspect of the wrist over radial styloid process
    Dx: Dequervain Tenosynovitis Tx: NSAID's + Local steroid Injex
18. Bilateral swollon ankles + erythema nodosum + bilateral hilar lymphadenopathy
    Dx: Sarcoid (Lofgren's Syndrome) Tx:
    CXR

(19) Fx of pubic ramus — Dx: Pubic Fx — Tx: PT + mobilize

(20) Knee is swollen + red (unilateral) — Next step → tap

(21) Wrist Drop → Radial Nerve — Sat. night palsy

(22) swelling + redness over extensor surface of elbow then redness extends upward + below w/ fevers/chills — Dx: septic olecranon Bursitis (↑pain w/ full flexion) — Tx: Abx to cover staph + tap/Cx

(23) sudden onset mid-calf pain then swelling plus bluish discoloration medially. ØDVT — Dx: Tear of medial Gastroc — Tx: Crutches + NSAID's

(24) Popping sound (R) knee anteriorly (+) Drawer/Lachman — Dx: ACL Tear

Meniscal tear — swelling days later (+) McMurray Test

(25) Pain/tenderness lateral ankle — Dx: Lateral Ankle Sprain — Tx: Full Leg Cast + PT

(26) Heel Pain worse in AM + most severe for 1st few steps, tender over medial calcaneus — Dx: Plantar Fasciitis — focal ↑'d activity on bone scan — Tx: Stretch calf + arch supports

Interpretation of Joint Fluid

Type of Fluid	Special Features	Leukocytes/mm3
Normal	Clear	< 200 (<25% PMNs)
Noninflammatory	Clear	200-2000 (< 25% PMNs)
Inflammatory	Cloudy Glucose may be low	2000-100000 (> 50% PMNs)
Septic	Purulent Glucose very low	> 80000 (>75% PMNs)

Septic → Risk Factors: - Age > 80 - DM - Prosthetic Joint - Recent Surgery - Skin Inf. ↑ risk of septic arthritis

Crystals

Gout:	Needle-shaped and negatively birefringent by polarizing microscopy
Pseudogout:	Rhomboid-shaped and weakly birefringent

RSD: Bone scan ↑'d uptake in peri-articular tissues. Tx: NSAID's or steroids or sympathetic blockage, bisphosphonates. Significant pain/tenderness, mottled cyanosis, intense burning pain.

2-weeks post-Rubella vax w/ fever, post. cervical LAD, arthritis of small joints of hands, facial rash. Dx: Rubella vaccine side effect.

Swollen, red knee w/ ↑'d ESR; tap shows WBC 30,000, 80% PMN's, ⊖ Cx/Gram stain, ⊖ crystals. Next step: PCR for Lyme Dis.

Hip Pain – may be referred to anteromedial thigh or groin.

Autoantibodies

Disease	Antibody to:
SLE	ds DNA (peripheral/rim pattern), Sm (speckled pattern)
Drug Induced SLE	Histones → may be seen in SLE (not drug-induced) as well though
Subacute cutaneous SLE	Ro/SSA
Congenital SLE	Ro/SSa
Scleroderma	Scl 70
CREST	Centromere
Mixed connective tissue disease	RNP (anti ribonucleoprotein Ab's)
Dermatomyositis & Polymyositis	Jo1
Sjogren syndrome	Ro/SSA, La/SSB
Wegener granulomatosis	C-ANCA (Antibody to Proteinase-3) (NOT anti-GBM Ab's)
Churg-Strauss and Microscopic polyangitis	P-ANCA (antibody to myeloperoxidase)
RA	RF, cyclic citrullinated peptide (CCP) → more specific than RF (94% specific)

Shoulder pain then bulge in mid-UE. Dx: Ruptured long-head of biceps.

Sudden-onset posterior ankle pain w/ audible snap. Dx: Achilles Rupture. ↑'d risk w/ fluoroquinolones + steroids.

DM: Both hands stiff, ∅ pain, redness, tenderness, unable to straighten fingers. Dx: Diabetic Cheiroarthropathy (↑'d collagen deposition).

Lateral blow to knee playing football, cannot bend knee, severe pain, ⊕ Varus stress. Dx: LCL Injury. If valgus stress → MCL injury.

ANA → ⊕ in 10-15% of healthy women – very nonspecific

Rheumatoid Arthritis

1. Morning Stiffness lasting 1h > 6 weeks
2. Arthritis of three or more joint areas > 6 weeks
3. Symmetric Arthritis > 6weeks
4. Arthritis of hand joints> 6 weeks
4. Rheumatoid Nodules
5. Serum rheumatoid factor
6. Radiographic changes: Bony erosions, Osteoporosis around the involved joint

Four or more criteria necessary for diagnosis

Poor Prognostic Factors In Rheumatoid Arthritis

1. Early onset of severe synovitis with functional limitation
2. Bony erosions
3. Positive RF or anti-cyclic citrullinated peptide (CCP) antibody
4. Extra-articular manifestations
5. A family history of severe rheumatoid arthritis

Treatment of Rheumatoid Arthritis

NSAIDS

Steroids

Disease-Modifying Antirheumatic Drugs (DMARDS)

- Methotrexate (Folate antagonist)
- Sulfasalazine
- Hydroxychloroquin
- Leflunamide (Pyrimidine antagonist)
- TNF Antagonists
  - Infiximab (TNF antibody)
  - Adalamumab (TNF monoclonal antibody)
  - Etanercept (Blocks action of TNF)
- Anakinra(Interleukin 1 receptor antagonists)
- Others: Gold-oral or I/M, D-Penicillamine, Azathioprin, Cyclophosphamide, Chlorambucil

Side Effects of TNF Agents

1. TB reactivation (Do PPD before starting therapy)
2. Cancers and lymphoma
3. Vasculitis
4. SLE like autoimmune disease
5. Demyelinating disorder like MS
6. Aplastic anemia
7. Severe allergy and aseptic meningitis
8. Hepatotoxicity, optic neuritis, interstial lung disease

Contraindications:

1. Current or recurrent infections
2. TB
3. MS
4. SLE
5. Pregnancy or lactation
6. Uncompensated CHF
5. Active malignancy within 3-5 yrs (except skin cancer)

Cyclooxygenase-2 (COX-2) Inhibitors

No inhibition of COX-1 (no prostaglandin inhibition in the stomach)
No effect on platelet function or bleeding time
Less GI toxicity compared to other NSAIDS
Renal toxicity is similar to other NSAIDS
Contraindicated in patients with aspirin allergy

Side effects: Increase risk of cardiovascular events, including MI, stroke, hypertension, heart failure, and death

Agents

Celecoxib (celebrex)

Valdicoxib(Bextra) and Rofecoxib (Vioxx) were both withdrawn from the market

(18) 25 y.o. female on MTX + Hydroxychloroquine x6 mos. multiple tender joints ESR-70
-Add TNF Agents
(19) omega-3 FAcids role?
↓ pain + anti-inflammatory properties

Histories on Rheumatoid Arthritis

1. Leukopenia + Splenomegaly + recurrent infections
   Dx: Felty's Synd. Tx: steroids, DMARDs + G-CSF
2. High fever + arthritis/arthralgia + evanescent skin rash +↑WBC +↑↑ Ferritin, ANA/RF negative
   (may see hepatomegaly + palpable spleen tip as well)
   Dx: Adult Onset Still's Dis. Tx: NSAIDs, steroids, immunosuppressives
3. On Mtx, after URI develops ↑dyspnea + bilateral crackles + interstial infiltrates
   Dx: MTx Lung Tx: stop MTX
4. Edema + heavy proteinuria
   Dx: NSAIDs, Amyloidosis, Gold Toxicity
5. Arm paresthesias + hyperreflexia
   Dx: Atlantoaxial subluxation
   ✓ flexion view of C-spine and ✓ pre-odontoid space if >3 mm → dislocation
6. Cough + fever + lung infiltrates + restrictive features (PFTs)
   Dx: BOOP
7. Skin ulcers + peripheral neuropathy + foot drop or wrist drop
   Dx: Rheumatoid Vasculitis
8. On Mtx & Infiximab, fever + night sweats + patchy lung infiltrates + hepatosplenomegaly, anemia
   Dx: Miliary TB due to Infliximab
9. Edema + Ascites + JVP↑+ clear lung fields
   Dx: (R) HF → constrictive Pericarditis ✓ Echo
10. On Etanercept, worsening joint pain + malar rash + pleuritic chest pain + fever + ANA/RF positive
    Dx: Drug-Induced SLE
11. Hoarsness + pain anterior aspact of neck +painful swallowing
    Dx: Cricoarytenoid Dis. of Larynx → can develop obstruction w/ stridor
12. Multiple basal pulmonary nodules
    Dx: Rheumatoid nodules
13. Pleural effusion with low glucose (< 30 mg/dL)
    Dx: Rheumatoid Effusion
    -may see (+) RF from fluid. Tx: steroids

(14) Etanercept + Hydroxychloroquine pneumonia
-stop Etanercept (TNF Agent) during infx.

(15) fever, red swollen knee tap - 90000 WBC's 75% PMN's (+) Gram stain
-Abx
Dx: septic Arthritis

(16) Pregnant women exposed to Parvo B19
Reassuring serology?
(+) IgG (past)
(-) IgM (acute)

(17) Severe knee involvement X-ray tri-compartment joint space loss
-ortho referral for knee arthroplasty

Diagnostic Criteria for SLE

1. Malar Rash
2. Discoid Rash
3. Photosenstivity
4. Oral Ulcers
5. Non erosive arthritis
6. Pleuritis or pericarditis
7. Persistant Proteinuria or cellular casts
8. Seizures or psychosis
9. Cytopenias (hemolytic anemia, leukopenia / lymphopenia, thrombocytopenia)
10. Positive LE cell prep., anti-ds DNA, anti-sm, false positive serologic test for syphilis
11. Antinuclear antibodies

Four or more criteria required for diagnosis

Anti Ro (SS-A) Antibody

1. Subacute cutaneous lupus
2. Congenital heart block
3. Photosensitivity
4. ANA negative lupus
5. Sjogren's syndrome
6. Congenital SLE

Antiphospholipid Antibody Syndrome

1. Venous thrombosis
2. Arterial thrombosis
3. Pregnancy loss
4. Thrombocytopenia
5. False + VDRL
6. ↑PTT, N PT

hypo complementemia

considered an immunosuppressed state

↑risk of alveolar hemorrhage

Female:male (8:1)

Blacks > whites

most common lung presentation

Drug-Induced SLE
- ∅ CNS or renal involvement
- ⊖ ds DNA
- normal complement
- Hydralazine
- minocycline (Tx→Acne)
- TNF Agents
- Procainamide

Hemoptysis / Hematuria
↑BUN / Creat
Coombs ⊕ hemolysis
urine → RBC casts w/ 2⊕ protein
Dx: SLE

Sudden-onset hip pain in SLE pt. on Prednisone
⊖ x rays
Dx: Avascular necrosis
- MRI to confirm

Red macules → scaly papulosquamous plaques on sun-exposed areas h/o pruritis
Ab → anti-Ro SSA

congenital SLE → 2. Congenital heart block, skin rash + ↓plat's

measure Lupus anti-coag + cardiolipin Ab's when suspected

BOTH (venous and arterial thrombosis)

Pregnancy → Aspirin + Heparin

Tx: Long-term anticoags if presents w/ a prior clot

Treatment of SLE

Arthralgia, mild pleuritis	NSAIDS
Skin rashes	Local steroids, hydroxychloroquine
Persistent fever, severe fatique, pleural effusion or pericarditis	Low dose steroids (10-20 mg/dL)
Glomerulonephritis, CNS disease, severe cytopenias, lupus pneumonitis, pulmonary hemorrhage, myocarditis, vasculitis	High dose steroids (1mg/kg/day) + Immunosuppressive drugs

Seronegative Spondyloarthropathies

Diseases	Common Features
1. Ankylosing spondylitis	a) Sacroiliitis and spondylitis
2. Psoriatic arthritis	b) Peripheral asymmetric arthritis
3. Reactive arthritis	c) Enthesopathy
4. Enteropathic arthritis (Crohn's, Ulcerative colitis, Whipple's)	d) HLA B 27
	e) Negative RF and ANA
	f) Involvement of other organ systems such as eye, aortic ring, skin, and mucosa

Scleroderma

Type		Antibody
Limited (Distal to elbow & face)	CREST	Anti-centromere
Diffuse (Proximal to elbow)		Scl 70
Overlap (Associated with other rheumatic diseases)		RNP

CREST: calcinosis, Raunaud,s, esophageal dysmotility, sclerodactyly, telangiectasias

Primary Raynaud's Phenomenon

Attacks are mild with symmetrical involvement of both hands
Normal nail- fold capillaries
Absence of digital ulcers or gangrene
No clinical features suggestive of a secondary cause
Normal ESR and negative ANA
Aggravating Factors: Nicotine, narcotics, estrogen, interferon, cocaine, sympathomimetic agents, carpal tunnel syndrome, use of vibrating tools

Gout & Pseudogout

Both produce asymmetric inflammatory arthritis

Precipitating causes : Trauma, surgery, acute medical illness

Treatment of Acute Gout

1. NSAIDS Rx of Choice
2. Colchicine PO
3. Steroids PO/IV/IM
4. Intraarticular steroids

Indications of Lowering Uric Acid

1. Frequent and disabling attacks of gouty arthritis (> 2-3 attacks/year)
2. Clinical and radiographic signs of chronic gouty joint disease
3. Tophaceous deposits
4. Gout and renal insufficiency
5. Recurrent nephrolithiasis
6. Urinary uric acid excretion > 1100 mg/d

Treatment of Hyperuricemia

Uricosuric agents
(Probenecid)

1. Uric acid excretion < 800 mg/d
2. Age < 60 years
3. Cr clearance > 80 ml
4. No history of nephrolithiasis

Allopurinol

1. Tophaceous gout
2. Contraindication to uricosuric agents
3. Prior to chemotherapy

Causes of Pseudogout
(CPPD disease)

1. Hyperparathyroidism
2. Wilson's disease
3. Hemochromatosis
4. Hypomagnesemia
5. Hypophosphatasia
6. Gout
7. Hypothyroidism
8. Hypercalcemia
9. Amyloidosis

Vasculopathies

1. Polymyalgia rheumatica &temporal arteritis
2. Polyarteritis nodosa
3. Allergic granulomatosis
4. Wegener's granulomatosis
5. Henoch-Schonlein purpura
6. Hypersensitivity vasculitis
7. Takayasu's arteritis

Polymyositis & Dermatomyositis

1. Idiopathic
2. Associated with other collagen vascular disease
3. Associated with malignancy

Sjogren's Syndrome

Lymphocytic infilteration of exocrine glands
Dry eyes & dry mouth
Bilateral parotid enlargement
↑Sedimentation rate & hypergammaglobulinemia
ANA +, RF +, Antibodies to Ro/SSA & La/SSB

Lumbar Nerve Root Compression

L4	Absent knee jerk
L5	Impaired dorsiflexion of foot & toes
S1	Impaired planter flexion of foot & toes Absent ankle jerk

Cervical Radiculopathy

Pain distribution

- C5 Lateral arm, medial scapula, ↓ biceps reflex
- C6 lateral forearm, thumb, index finger, ↓ biceps reflex
- C7 Posterior arm, dorsal forearm, lateral hand, ↓ triceps reflex
- C8 4th & 5th finger, medial forearm

Indicators of High Risk in Back Pain

Age > 50 yrs
Unexplained weight loss
Absence of response to therapy
H/O IV drug use
Presence of urinary tract or other infections
H/O cancer
Pain that lasts > 1 month
Pain worse at rest

Complications of Paget's Disease

-LBP
-Enlarged skull
-Thick pelvic brim
-Localized osteoporosis (esp. skull)

1. Deafness (VIII th nerve involvement)
2. Fractures
3. Osteosarcoma "star-burst" appearance
4. Osteoarthritis
5. Spinal cord compression
6. High output cardiac failure
7. Excessive bleeding w/ surgery → hypervascular bone

↑ Alk Phos suggests active dis.

Tx: Bisphosphonates (2nd line)
↑ then
(calcitonin also used but cells become resistant over time)
↓
↓'d bony resorption of Ca++
↑'d renal Ca++ excretion

Rhematic Manifestations in AIDS

1. Reiter's syndrome (Reactive Arthritis)
2. Ankylosing spondylitis
3. HIV associated arthropathy
4. Psoriatic arthritis
5. Myositis
6. Septic arthritis
5. Diffuse infilterative lymphocytosis syndrome

Risk Factors for Osteoarthritis

most important RF

1. Age, gender, race
2. Obesity
3. Repetitive use
4. Prior inflammatory arthritis
5. Metabolic : Hemochromatosis, Wilson's Disease
6. Endocrine : Diabetes, Hyperparathyroidism, Acromegaly
7. Chondrocalcinosis
8. Hypermobility syndromes : Ehlers-Danlos, Marfan

-Char. by: -crepitus
-noninflammatory synovial fluid, typically WBC's <2000, clear + viscous

Char by:
- Heberden Nodes

-can preclude to vertebrobasilar insufficiency

Treatment OF Osteoarthritis

1. Acetaminophen / Tramadol
2. Nonacetylated salicylates (Ex.) salsalate)
3. NSAIDS
4. Selective Cox 2 Inhibitors
5. Glucosamine
6. Chondroitin sulphate
7. Intraarticular steroids
8. Physical therapy
9. Joint replacement
10. Capasaicin cream

No treatment has been shown to slow progression

Behcet's Syndrome → -Assoc. w/:
- Aseptic Meningitis
- CNS Parenchymal Dis.
- Blindness
- Thrombosis
- Aneurysms
- N/V/D
- Abd pain
- Hypopyon (pus in the ant. chamber)

- genital/oral ulcers (usually painless)
- arthritis
- GI/Eye involvement (esp. uveitis)
- auto-Ab's to human oral mucosa
- fatigue, arthralgias

Symmetric tenderness of distal long bones

Dx: Hypertrophic Osteoarthropathy

Relapsing Polychondritis → (Inflammatory Destruction of cartilage)
- deformity of ear
- tracheal involvement → resp. issues
  (Ex.) collapse of tracheal cartilage)
- saddle nose deformity

Rosacea
- inflammatory dermatitis
- char by:
  - erythema
  - telangiectasia
  - papules
  - pustules
  - sebaceous hyperplasia
  - rhinophyma
- affects: central face