Introduction

- Hippocrates: *On the Locations in the Human Body*, c. 350 B.C.E.: Rheuma = earlier catarrhos, humors (flowing from the brain)
- Guillaume Baillou (Ballonius): *The Book on Rheumatism and Back Pain* (1642): associated arthritis and rheumatism
- Thomas Sydenham:
  - fibromyalgia (*Hysteric Diseases*, 1681)
  - oligoarticular gout (1683)
  - febrile polyarticular arthritis of the young (rheumatic fever) (1685)
- More modern spectrum of rheumatology:
  - DJD
  - Fibromyalgia
  - Inflammatory arthritis of various types (RA, gout, etc.)
  - System autoimmune diseases including those against joint synovium, cartilage, tendons, or connective tissue including vasculitis

General Approach to Acute Arthritis
- **oligoarticular**
  - Stick a needle in it (unless classic recurrent gout, ? overlying cellulitis/infected bursitis only)
- Is it really **bursitis**?
  - Elbow, knee, shoulder, trochanteric, deltoid, subacromial
  - Septic Bursitis: warmth most distinguishing feature
- **Gout/pseudogout**
  - Well-fed men who drink plenty of port
  - How useful is serum uric acid? Useless.
  - How do you tell septic joint from gout? Only 25% of GC joints gram stain or culture +!
  - Joint fluid WBC >50-100K suggests infection
  - May have gout crystals in joints without clinical gout
- Gout and Pseudogout x-rays? Bony erosions, bony destruction (may look like osteo; hard to tell apart)
  - Criteria
    - more than 1 attack
    - max inflammation within a day
    - mono articular
redness
podagra (1\textsuperscript{st} MTP joint)
culture negative
unilateral 1\textsuperscript{st} MTP joint
unilateral subtarsal joint
tophus
hyperuricemia
...

\textbf{Gout Rx:}
\begin{itemize}
  \item colchicine IV?
  \item NSAIDs?
  \item Indocin?
  \item Narcotics?
  \item Steroids?
  \item Inject joint?
  \item Allopurinol?
\end{itemize}

- GC
  - vag or penile DC
  - Classic triad:
    \begin{itemize}
      \item 50\% dermatitis-arthritis syndrome with hemorrhagic pustules
      \item Fleeting tenosynovitis of flexor hand tendons (immune complex inflammation)
      \item Migratory hot red joints: Wrist, KNEE, ankle (immune complex, later septic)
    \end{itemize}
- Non-GC septic joint
- Knee, hip, shoulder, ankle, elbow, hand wrist (19% mortality if also RA)
- IVDA: sternoclavicular, SI (FABER test: Forced Abduction, External Rotation of hip causes pain; Patrick test: Lotus position, press down on knee; causes pain), manubriosternal joints
  - "Inflammatory DJD"
  - "Toxic synovitis" in kids
  - IBD inflammatory arthritis
- Polyarticular: see below

**RA/JRA**
- Autoimmune against IgG ("RF"): deposit in synovium (don't retest; retesting ESR OK)
- Familial tendency, more in women
- ARA RA criteria: 4 of 7:
  - Morning stiffness*
  - Arthritis 3 or more joints*
  - PIP or wrist swelling*
  - Rheumatoid nodules
  - +RF
  - Erosions or periarticular osteopenia on films
  - (* more than 6 weeks, else likely viral)
- May involve arytenoids: hoarseness, dyspnea, respiratory arrest
- May develop atlantoaxial (-dens) subluxation:
  - nl: <3.5 mm (<4 mm if <12 yrs), flexion view (how do you get flexion view?)
  - may get cord compression slowly or after minor trauma
  - normal signs of cord compression:
    - bowel/bladder
    - focal neuro sx or signs
    - Lhermitte’s Sign: electric shock down back with neck flexion
  - if intubating someone with RA, treat like trauma patient: immobilize neck

- Pulmonary effusions: low glucose like TB
- Pericarditis common but seldom serious
- Sjogren’s: + dry eyes (Schirmer test)
- Felty’s: + splenomegaly and thrombocytopenia
- Red eye:
  - episcleritis? Triangular, up against corneal limbus: benign, painless, self-limiting
  - scleritis? Diffuse, painful, changes in vision, may rupture: consult, steroid drops
Systemic Lupus Erythematosus (SLE); lupus basics:

- 1:1000 women of child-bearing years
- genetic predisposition (HLA), environmental (sun) and hormonal (estrogen)
- triggered by hydralazine, INH, Procan/quinidine (milder) (sulfa, TCN, Macrodantin, Dilantin, PTU, lithium, Thorazine, allopurinol)
- Tan criteria (any 4 of 11): malar or discoid rash, photosensitivity, oral ulcer, arthritis, serositis, renal, neuro (sx/psychosis), hematologic, + immuno tests, + ANA

Autoimmune:

- ANA, LE Prep, anti-DS DNA (just anti-SS DNA/anti-histone in drug-induced), anti-Smith antigen, v complement levels
- Lupus “anticoagulant”:
  - may be seen without SLE, especially in HIV,
  - procoagulant
  - elevated PTT
  - anti-phospholipid/cardiolipin antibodies
spontaneous Abs
premature atherosclerosis
(? early MI instead of pericarditis)

Clinical:
- fever, joint pain, rash, in childbearing years
- mild (skin only) to severe
  - ESRD: 50% of SLE
  - cerebritis: sz, CVA, psychosis, migraines, peripheral neuropathy; 10% mortality, but 75% recover; can also be bacterial meningitis
  - transverse myelitis: “an inflammatory process involving both gray and white matter of spinal cord.”
- polyserositis:
  - pericarditis (30%):
    - tamponade rare, responds to steroids; pleurisy; abdominal pain
  - pancreatitis (from SLE or steroids)
  - Anemia, thrombocytopenia
- PIP and MCP joints (like rheumatoid), tendonitis
- Butterfly rash, discoid lupus (only 10% of discoid will have SLE); 25% of SLE will have rash

Treatment:
- general:
avoid precipitants (sun, estrogen, stress)
- NSAIDs (if kidney OK), avoid estrogen/UV/sleep deprivation
- steroids (Solu-Cortef 100 mg for routine, big doses for cerebritis)
- antimalarials: chloroquine, etc. (may cause blindness)
- immunosuppressants (azathioprine=Imuran cyclophosphamide=Cytoxan)

ED:
- cerebritis/sz: work up for other causes, then one gram SoluMedrol, admit
- nephritis: check urine microscopic, check for elevated PTT and check for renal vein thrombosis (CT?)

Vasculitis

- Wegener’s Granulomatosis (“Lethal Midline Granulomatosis”)
  - Sinusitis, nasal ulcers, pulmonary nodules, infiltrates, bronchospasm, hemoptysis
- Temporal Arteritis (“Giant-Cell Arteritis”)
  - why may be hidden timebomb:
    - may cause sudden blindness 3-4 months after onset
• may cause aortic dissection
  ▪ when to treat: if suspect enough to get bx
  ▪ Treat with prednisone 60/day, still have a week to get a temporal artery biopsy
  ▪ when to suspect
    ♦ older women
    ♦ temporal aa tenderness
    ♦ ESR ~60
    ♦ jaw, tongue or upper extremity claudication
    ♦ locally tender scalp in a blood vessel distribution
  ➢ Younger women: Takayasu’s Arteritis ("pulseless disease")
    ♦ large vessel and coronary ischemia
    ♦ both associated with:
  ➢ Polymyalgia Rheumatica (PMR)
    ▪ Inflammatory condition of proximal limb girdle muscles
    ▪ Normal CPK, elevated ESR
    ▪ dramatic response to low-dose steroids (2.5-5 mg/day prednisone)
  ➢ Kawasaki's
    ▪ arteritis of medium to small vessels
    ▪ likely caused by retrovirus
    ▪ gamma globulin combined with high dose aspirin is somewhat
effective in preventing cardiovascular complications.

- mostly in kids
- may cause coronary disease
- mnemonic CRASH:
  - C - conjunctivitis
  - R - rash: red lips, palms and soles, desquamation of the fingertips
  - A - adenopathy
  - S - strawberry tongue
  - H - high fever

- **Polyarteritis Nodosa:**
  - medium-sized arteritis including coronaries

- **Scleroderma (systemic sclerosis):**
  - prunified skin
  - big killer: dehydration leading to hypertensive renal-failure crisis (controlled by ACE inhibitors now)
  - Benign free air in belly, ignore
  - + ANA

- **Polymyositis, Dermatomyositis**
  - Proximal muscle involvement; Trouble getting out of chair, up steps, 
  - CPK
  - Often paraneoplastic
  - Treat with big doses of steroids
  - May get in respiratory problems but not be able to show costal
retractions, look for nasal flaring instead

- Check bedside PFTs as with Myasthenia (NIF, TV): if <30% predicted, plan to intubate
- May also get fulminant pulmonary fibrosis (as well as pneumonias from immunosuppression)

- **Rheumatic Fever: migratory polyarthritis**
  - Differential of migratory arthritis: SBE, HSP, Ceiolr reaction (kids), sepsis, Mycoplasma, histo, coccidio, Lyme Disease
  - "If supported by evidence of preceding group A strep infection, the presence of two major manifestations or of one major and two minor manifestations indicates a high probability of acute rheumatic fever."
  - Major Manifestations:
    - Carditis
    - Polyarthritis
    - Chorea
    - Erythema Marginatum
    - Subcutaneous Nodules
  - Minor Manifestations:
    - Clinical Findings:
      - Arthralgia, Fever
Lab Findings: Elevated ESR or CRP

- Supporting Evidence of antecedent Group A Strep infection:
  - positive rapid strep or + culture,
  - elevated or rising strep antibody titre

- HLA-B27 “seronegative spondyloarthopathies” (never retest HLA-B27 or ask for a titer)
  - Reiter’s
    - Urethritis, conjunctivitis, arthritis
    - Association with Chlamydia, Salmonella, Shigella
  - psoriasis
  - ankylosing spondylitis
    - AS: decreased rib excursion, diminished pulmonary reserve
    - c-spine fracture with AS “bamboo spine”: after minor trauma, usually through remains of disk space

- Fibromyalgia
  - Inflammatory condition of proximal and spinal muscles; associated with lack of Stage IV sleep; Flexeril helps; normal CPK
  - nine paired points that are almost invariably tender. Testing for tenderness there, and for control
points that shouldn't be tender, helps establish the diagnosis.

- Tender points:
  - 1. Insertion of nuchal muscles into occiput
  - 2. Upper trapezius, midpoint
  - 3. Pectoralis muscle - just lateral to second costochondral junction
  - 4. 2 cm below lateral epicondyle
  - 5. Upper gluteal region
  - 6. 2 cm posterior to Greater Trochanter
  - 7. Medial knee in area of anserine bursa
  - 8. Paraspinous, 3 cm lateral to midline at the level of the mid-scapular
  - 9. Above the Scapula spine near the medial border

- Control points:
  - 1. Middle of forehead
  - 2. Volar aspect of Mid-forearm
  - 3. Thumbnail
  - 4. Muscles of anterior thigh
  - Benner RM: Fibrositis. In: Kelly WN, Harris ED, Rudy S, Sledge CB
Anterior Spinal Syndrome
- thrombosis or embolism or arteritis of the anterior spinal artery “artery of Adamkiewicz” “arteria radicularis magna” “great anastomotic artery,” “great radicular artery”

Erythema Nodosum
- Women on BCPs; also Motrin, Sulfa.
- May see with sarcoid, SLE, other vasculitis, but usually isolated
- Treat with high-dose ASA

Extra Credit

Associated S/Sx
- psoriasis (psoriatic arthritis)
- kidney stones (pseudogout)
- IBD (IBD arthritis)
- immunosuppression (septic joint)
- rash
  - erythema migrans (Lyme)
  - erythema marginatum (rheumatic fever)
  - erythema nodosum (SLE)
  - discoid lupus (SLE)
  - keratoderma blennorrhagicum of soles (Reiter’s)
  - circinate balanitis (Reiter’s)
- **Relapsing polychondritis** (ears, nose and other cartilage: can cause tracheal rings to turn to mush (check flow-volume loops via formal PFTs))
- **Addisonian crisis** from long-term steroid use: if unsure, give Decadron as won’t interfere with cortisol assays (also get random cortisol first, should be > 20 mcg/cc)