Approach to the Patient with Arthritis

Articular Vs. Periarticular

Clinical feature	Articular	Periarticular
Anatomic structure	Synovium, cartilage, capsule	Tendon, bursa, ligament, muscle, bone
Painful site	Diffuse, deep	Focal “point”
Pain on movement	Active/passive, all planes	Active, in few planes
Swelling	Common	Uncommon

Inflammatory versus Noninflammatory Arthritis

Inflammatory Arthritis

- Pain and stiffness typically are worse in the morning or after periods of inactivity (the so-called "gel phenomenon") and improve with mild to moderate activity.
- Elevated erythrocyte sedimentation rate (ESR) and a high C-reactive protein (CRP) level
- The synovial fluid WBC count is >2000/mm^3 in inflammatory arthritis.

Noninflammatory Arthritis

- Pain that worsens with activity and improves with rest. Stiffness is generally mild
- The ESR and CRP are usually normal.
- The synovial fluid WBC count is is <2000/mm^3 in noninflammatory arthritis

Constitutional Symptoms

Active infection

1. Septic arthritis
2. Disseminated gonococcal infection
3. Endocarditis
4. Acute viral infections
5. Mycobacterial
6. Fungal

Not due to active infection

1. Systemic lupus erythematosus
2. Drug-induced lupus
3. Still disease
4. Gout/ Pseudogout
5. Reactive arthritis (particularly in its early phases)
6. Acute rheumatic fever and poststreptococcal arthritis
7. Inflammatory bowel disease
8. Acute sarcoidosis
9. Systemic vasculitis
10. Familial Mediterranean fever and other inherited periodic fever syndromes
11. Paraneoplastic arthritis

Skin Lesions Useful in Diagnosis

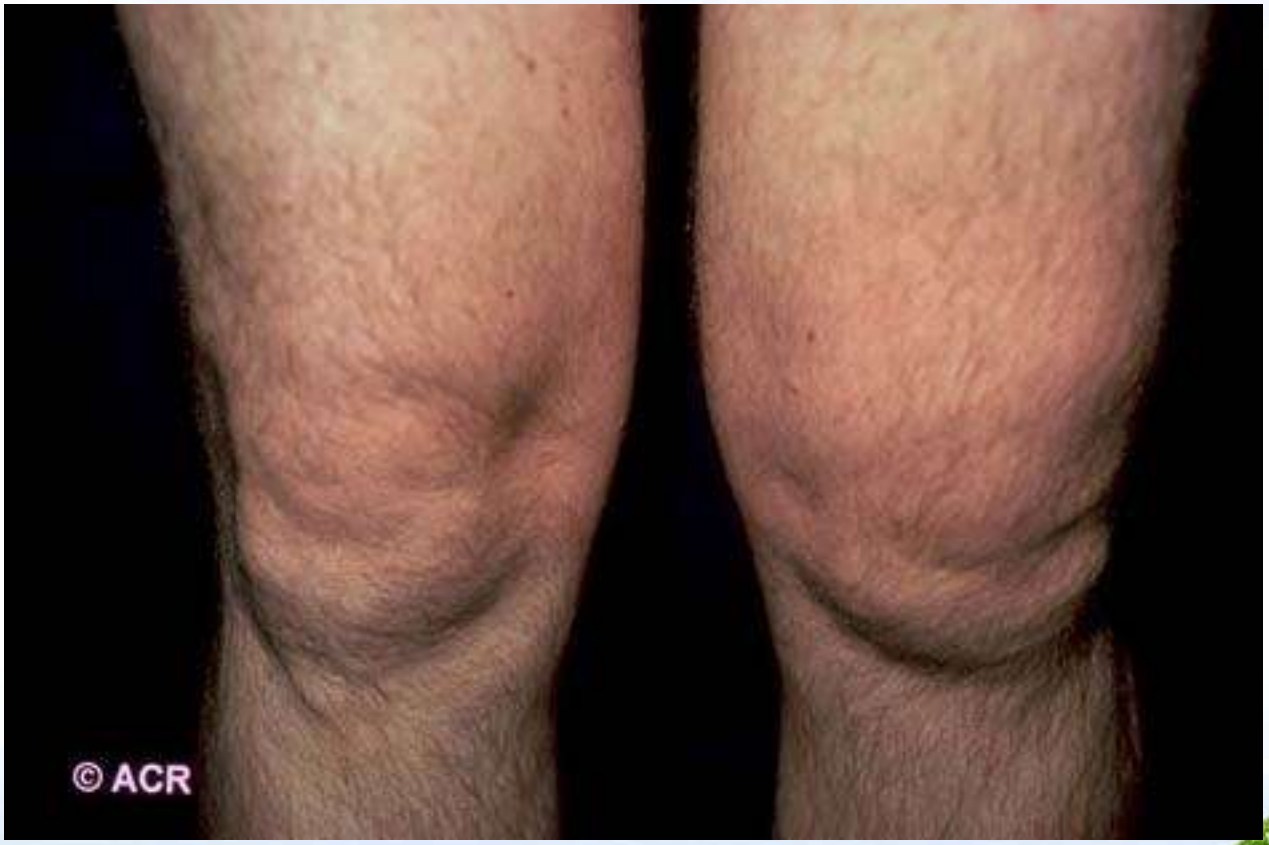
- Psoriatic plaques
- Keratoderma Blenorrhagicum (reactive arthritis)
- Butterfly rash (SLE)
- Salmon-colored rash of JRA, adult Still's
- Erythema marginatum (Rheumatic Fever)
- Vesicopustular lesions (gonococcal arthritis)
- Erythema nodosum (acute sarcoid, enteropathic arthritis)

Acute Monarthritis

Common Causes of Acute Monarthritis

- Bacterial infection of the joint space
- Nongonococcal: especially *Staphylococcus aureus*, -hemolytic streptococci, *Streptococcus pneumoniae*, gram-negative organisms
- Gonococcal: often preceded by a migratory tenosynovitis or oligoarthritis associated with characteristic skin lesions
- Crystal-induced arthritis :Gout (monosodium urate crystals) Pseudogout (calcium pyrophosphate dihydrate crystals) Trauma

Acute Monoarthritis



Indications for Arthrocentesis

- The single most useful diagnostic study in initial evaluation of monoarthritis: SYNOVIAL FLUID ANALYSIS

1. Suspicion of infection
2. Suspicion of crystal-induced arthritis
3. Suspicion of hemarthrosis
4. Differentiating inflammatory from noninflammatory arthritis

Tests to Perform on Synovial Fluid

- Gram stain and cultures .
- Total leukocyte count/differential: inflammatory vs. non-inflammatory.
- Polarized microscopy to look for crystals.
- Not necessary routinely: Chemistry (glucose, total protein, LDH) unlikely to yield helpful information beyond the previous tests.

Polyarthritis

- Definite inflammation (swelling, tenderness, warmth of > 5 joints
- A patient with 2-4 joints is said to have pauci- or oligoarticular arthritis

Acute Polyarthritis

- Infection

1. Gonococcal
2. Meningococcal
3. Lyme disease
4. Rheumatic fever
5. Bacterial endocarditis
6. Viral (rubella, parvovirus, Hep. B)

- Inflammatory

1. RA
2. JRA
3. SLE
4. Reactive arthritis
5. Psoriatic arthritis
6. Polyarticular gout
7. Sarcoid arthritis

Temporal Patterns in Polyarthritis

- Migratory pattern: Rheumatic fever, gonococcal (disseminated gonococcemia), early phase of Lyme disease, palindromic rheumatism
- Additive pattern: RA, SLE, psoriasis
- Intermittent: Gout, reactive arthritis

Patterns of Joint Involvement

- Symmetric polyarthritis involving small and large joints: viral, RA, SLE, one type of psoriatic (the RA-like).
- Asymmetric, oligo- and polyarthritis involving mainly large joints, preferably lower extremities, especially knee and ankle : reactive arthritis, one type of psoriatic, enteropathic arthritis.
- DIP joints: Psoriatic.

Viral Arthritis

- Younger patients
- Usually presents with prodrome, rash
- History of sick contact
- Polyarthritis similar to acute RA
- Prognosis good; self-limited
- Examples: Parvovirus B-19, Rubella, Hepatitis B and C, Acute HIV infection, Epstein-Barr virus, mumps

Parvovirus B-19

- The virus of “fifth disease”, erythema infectiosum (EI).
- Children “slapped cheek”; adults flu-like illness, maculopapular rash on extremities.
- Joints involved more in adults (20% of cases).
- Abrupt onset symmetric polyarthralgia/polyarthritis with stiffness in young women exposed to kids with E.I.
- May persist for a few weeks to months.

Rubella Arthritis

- German measles.
- Young women exposed to school-aged children.
- Arthritis in 1/3 of natural infections; also following vaccination.
- Morbilliform rash, constitutional symptoms.
- Symmetric inflammatory arthritis (small and large joints).

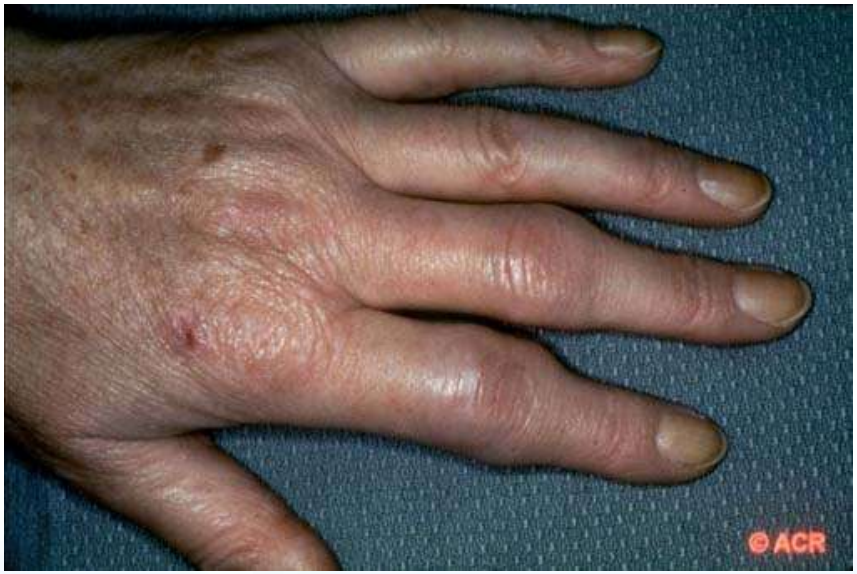
Rheumatoid Arthritis

- Symmetric, inflammatory polyarthritis, involving large and small joints
- Acute, severe onset 10-15 %; subacute 20%
- Hand characteristically involved
- Acute hand deformity: fusiform swelling of fingers due to synovitis of PIPs
- RF may be negative at onset and may remain negative in 15-20%! (ACPA is more specific)
- RA is a clinical diagnosis, no laboratory test is diagnostic, just supportive!

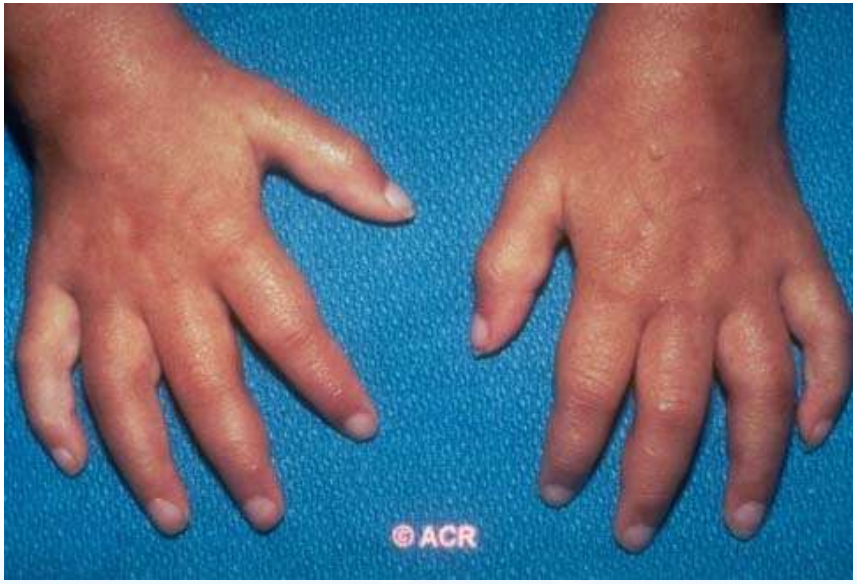
Acute Sarcoid Arthritis

- Chronic inflammatory disorder – noncaseating granulomas at involved sites
- 15-20% arthritis; symmetrical: wrists, PIPs, ankles, knees
- Common with hilar adenopathy
- Erythema nodosum
- Löfgren's syndrome: acute arthritis, erythema nodosum, bilateral hilar adenopathy

Acute Polyarthritis - RA



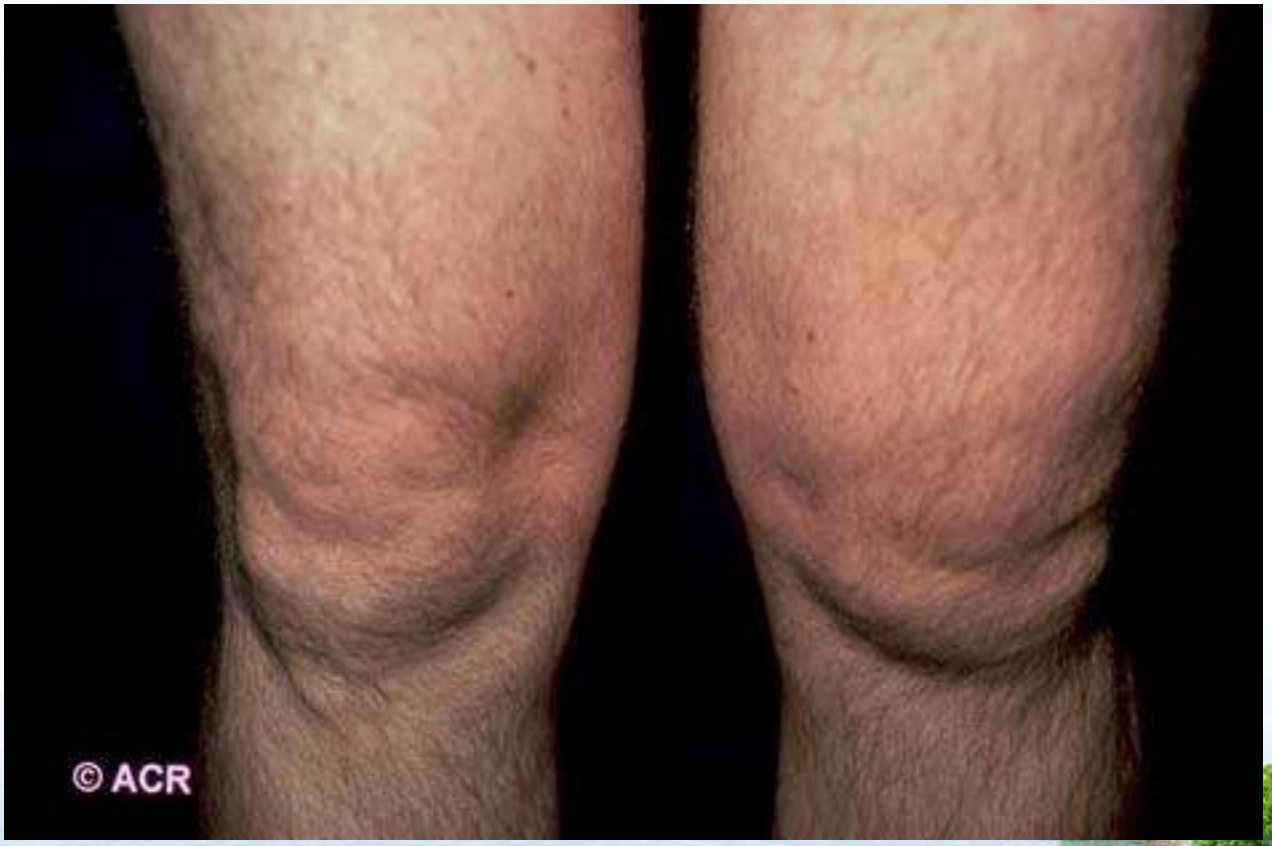
Acute Polyarthritis in Sarcoidosis



Reactive Arthritis

- Infection-induced systemic disease with inflammatory synovitis from which viable organisms cannot be cultured
- Association with HLA B 27
- Asymmetric, oligoarticular, knees, ankles, feet
- 40% have axial disease (spondylarthropathy)
- Enthesitis: inflammation of tendon-bone junction (Achilles tendon, dactylitis)
- Extraarticular: rashes, nails, eye involvement

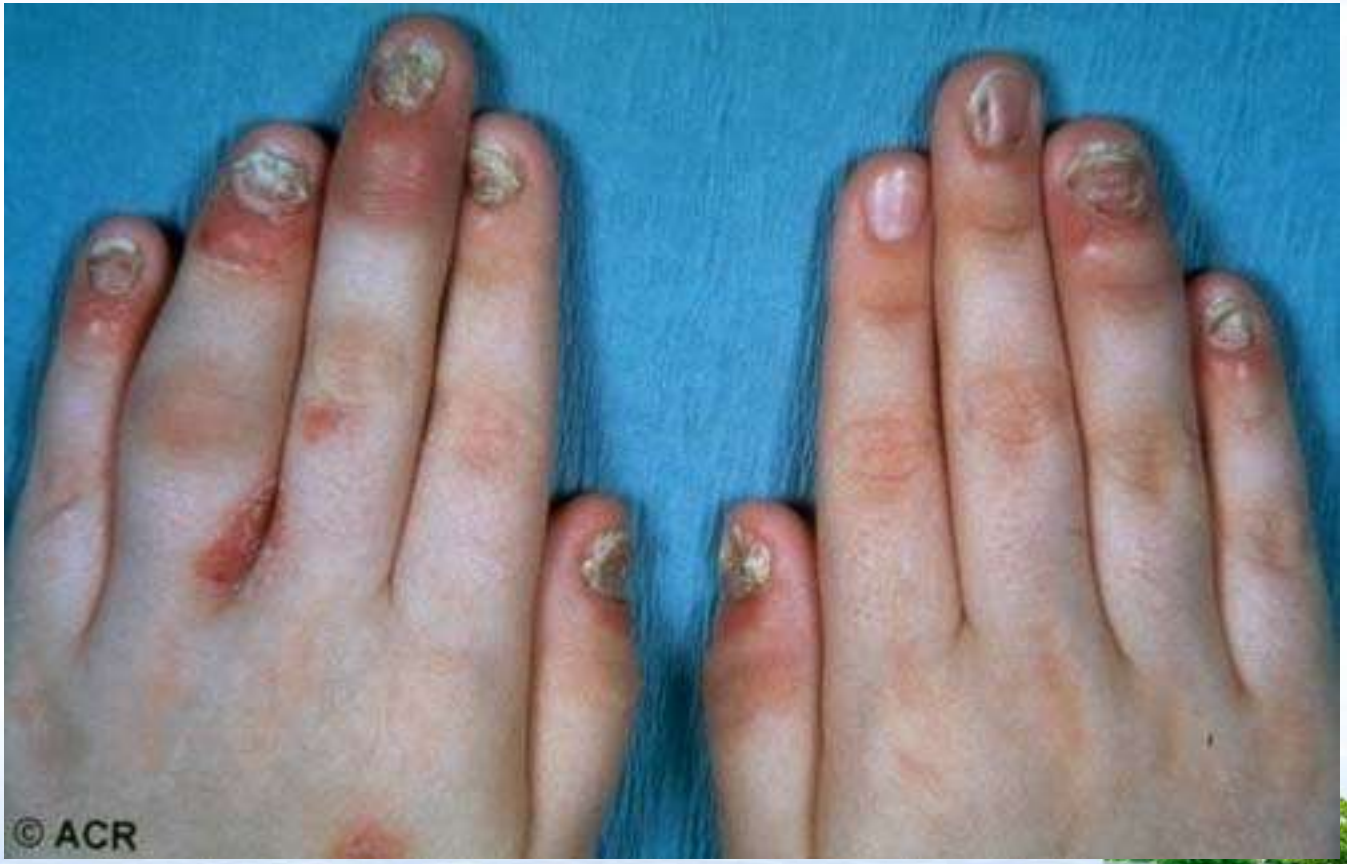
Asymmetric, Inflammatory Oligoarthritis



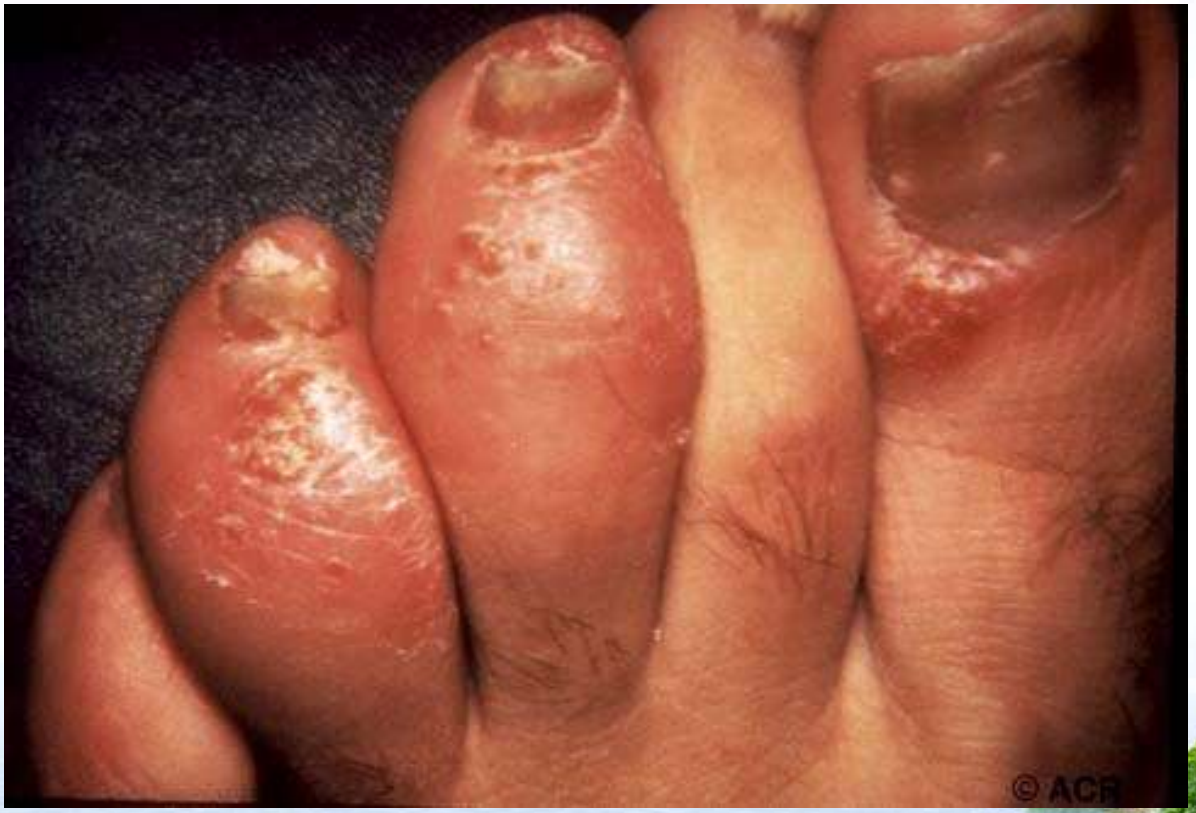
Psoriatic Arthritis

- Prevalence of arthritis in Psoriasis 5-7%
- Dactilytis (“sausage fingers”), nail changes
- Subtypes:
  - Asymmetric, oligoarticular- associated dactylitis
  - Predominant DIP involvement – nail changes
  - Polyarthritis “RA-like” – lacks RF or nodules
  - Arthritis mutilans – destructive erosive hands/feet
  - Axial involvement –spondylitis – 50% HLAB27 (+)
  - HIV-associated – more severe

Acute Polyarthritis - Psoriatic



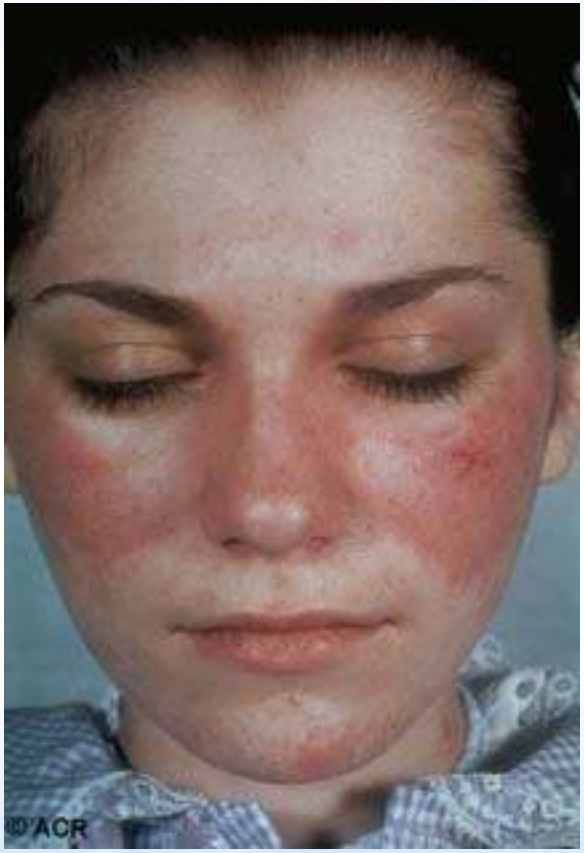
Dactylitis “Sausage Toes” – Psoriasis



Arthritis Of SLE

- Musculoskeletal manifestation 90%.
- Most have arthralgia.
- May have acute inflammatory synovitis RA-like.
- Do not develop erosions.
- Other clinical features help with DD: malar rash, photosensitivity, rashes, alopecia, oral ulceration.

Butterfly Rash – SLE

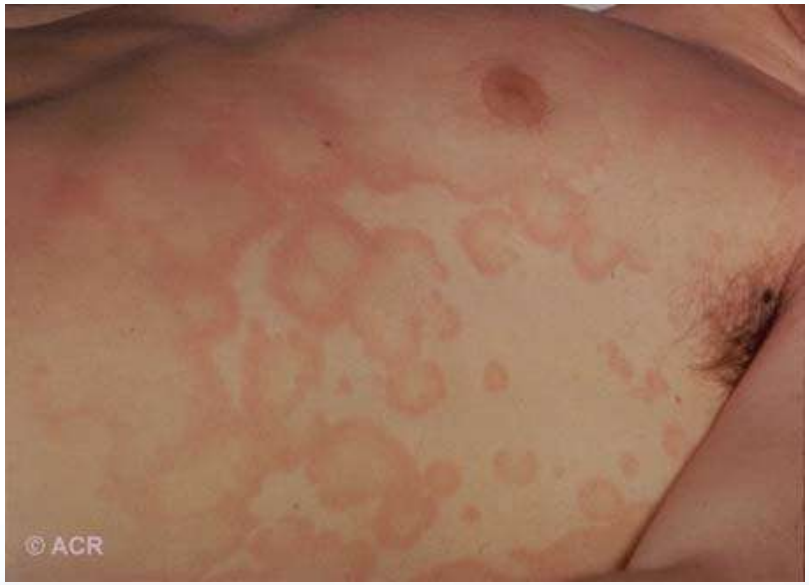


Arthritis of Rheumatic Fever

- Etiology: Streptococcus pyogenes (group A); there is damaging immune response to antecedent infection – molecular cross reaction with target organs “molecular mimicry”.
- Migratory polyarthritis, large joints: knees, ankles, elbows, wrists.
- Major manifestations: carditis, polyarthritis, chorea, erythema marginatum, subcutaneous nodules.

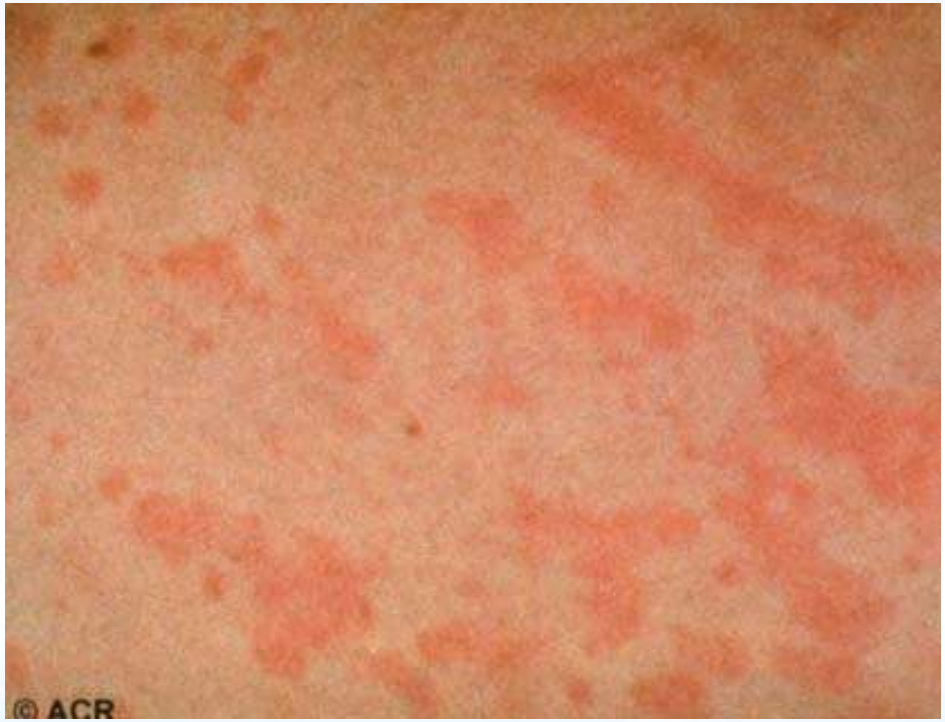
Erythema Marginatum – Rheumatic Fever

- Circinate
- Evanenscent
- Nonpruritic rash



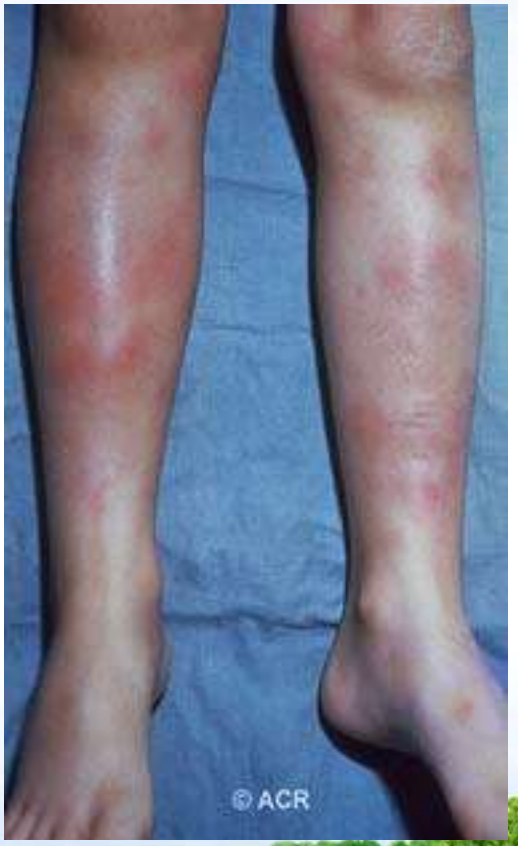
Adult Still's Disease and JIA Rash

- Salmon or pale-pink
- Blanching
- Macules or maculopapules
- Transient (minutes or hours)
- Most common on trunk
- Fever related



Erythema Nodosum

- Sarcoidosis
- Inflammatory Bowel Disease – related arthritis



Extraarticular Features Helpful in DD

- Eye involvement: conjunctivitis in reactive arthritis, uveitis in enteropathic and sarcoidosis, episcleritis in RA
- Oral ulcerations: painful in reactive arthritis and enteropathic, not painful in SLE
- Nail lesions: pitting (psoriasis), onycholysis (reactive arthritis)
- Alopecia (SLE)

Chronic Monarthritis

INFLAMMATORY

Infection

- Nongonococcal septic arthritis/ Gonococcal (particularly if symptoms have been partially masked by the use of nonsteroidal anti-inflammatory drugs, antibiotics, or glucocorticoids (systemic or intra-articular).
- Lyme disease and other spirochetal infections
- Mycobacterial
- Fungal

NON INFECTIVE

- Crystal-induced arthritis

  Gout Pseudogout Calcium apatite crystals
- Monarticular presentation of an oligoarthritis or polyarthritis

1. Spondyloarthropathy
   2.Rheumatoid arthritis
3. Lupus and other systemic autoimmune diseases

Chronic Noninflammatory Monarthritis

- Osteoarthritis
- Internal derangements (eg, torn meniscus)
- Chondromalacia patellae
- Osteonecrosis
- Neuropathic (Charcot) arthropathy

Chronic Oligoarthritis

Inflammatory causes

1. Reactive arthritis
2. Ankylosing spondylitis
3. Psoriatic arthritis
4. Inflammatory bowel disease
5. Atypical presentation of rheumatoid arthritis
6. Gout
7. Subacute bacterial endocarditis
8. Sarcoidosis
9. Behçet's disease
10. Relapsing polychondritis
11. Celiac disease

Noninflammatory causes

- Osteoarthritis
- Hypothyroidism
- Amyloidosis

Chronic Polyarthritis

Inflammatory polyarthritis

1. Rheumatoid arthritis
2. Systemic lupus erythematosus
3. Spondyloarthropathies (especially psoriatic arthritis)
4. Chronic hepatitis C infection
5. Gout
6. Drug-induced lupus syndromes

Noninflammatory polyarthritis

- Primary generalized osteoarthritis Hemochromatosis Calcium pyrophosphate deposition disease

Mimics of Chronic Rheumatoid Arthritis

- Arthritis with radiographic erosions

  Spondyloarthropathies, especially psoriatic arthritis Gout
- Arthritis with positive rheumatoid factor

1. Chronic hepatitis C infection
2. Systemic lupus erythematosus
3. Sarcoidosis
4. Systemic vasculitides
5. Polymyositis/dermatomyositis
6. Subacute bacterial endocarditis

- Arthritis with nodules

1. Chronic tophaceous gout
2. Wegener granulomatosis
3. Churg-Strauss syndrome
4. Hyperlipoproteinemia (rare)
5. Multicentric reticulohistiocytosis (rare)

- Arthritis of metacarpophalangeal joints and/or wrists

  Hemochromatosis

  Calcium pyrophosphate deposition disease