

Normal joint



Normal articular cortex

Joint disease

- 1-degenerative disease (osteoarthritis) ■
- 2- inflammatory disease (still disease, RA)
- 3-infective disease (septic arthritis, TB arthritis)
- 4-malignant disease (synovium)
- 5-traumatic disease
- 6-congenital disease (displacement hip)
- 7-abnormal trabecular pattern (Paget disease)

Classification

- **Hypertrophic**
 - **Hallmarks**
 - Bone production
 - Sclerosis
- **Infectious**
 - **Hallmark**
 - Destruction of articular cortex
- **Erosive**
 - **Hallmark**
 - Erosions

Hypertrophic Arthritis

- **Degenerative arthritis(osteoarthritis)**
 - **Primary**
 - **Secondary**
- **Charcot arthropathy**

1° Degenerative Arthritis

- **Intrinsic degeneration of articular cartilage**
- **Excessive wear and tear**
 - **Most commonly hips and knees**
 - **Less commonly shoulders and elbows**



**1° DJD of knees affects medial,
weight-bearing surface**



**1° DJD of hips affects superior,
weight-bearing surface**

2° Degenerative Arthritis

- **Another process destroys articular cartilage**
- **Degenerative changes supervene**
- **How to recognize**
 - **Atypical locations (knee)**
 - **Atypical appearance (Marked DJD of 1 hip)**
 - **Atypical age (DJD in 20 year-old)**

2° Degenerative Arthritis

Causes

- Trauma
- Infection
- Avascular necrosis
- CPPD
- RA
- Hemophilia

Osteoarthritis (degenerative joint disease):

RADIOLOGICAL SIGN : ■

- 1-normal bone density(no osteoporosis)
- 2-narrowing of the joint space maximal at weight bearing site
- 3- subchondral sclerosis and cyst may be seen
- 4-osteolytic lesion
- 5-sclerosis of the bone is a prominent feature
- 6-osteophyte formation
- 7-loose bodies

osteoarthritis

- 1-bone appearing closer to each other ,the joint space narrow
- 2-cysts:as the body responds to cartilage destruction and attempts to stabilize the joint , cyst or fluid filled cavities can form in the bone
- 3-uneven joints
- 4- bony spurs



2° DJD of right ankle following fracture

Charcot's Arthropathy

- Neuroarthropathy
- Causes:
- 1-DM
- 2-Syphilis
- 3-alcoholism
- 4-renal dialysis
- 5-spinal cord injury

Charcot's Arthropathy

General

- Disturbance in sensation leads to multiple microfractures
- Pain sensation intact from muscles and soft tissue
- Causes
 - Shoulders – syring, spinal tumor
 - Hips – tertiary syphilis, diabetes
 - Feet – diabetes

Charcot's Arthropathy

Findings

- **X-ray findings**
 - **Fragmentation**
 - **Soft tissue swelling**
 - **Destruction of joint**
 - **Sclerosis**
 - **Osteophytosis**



Charcot's Knees-Diabetes

Infectious Arthritis

- **More common in adults**
 - Usually from local trauma-surgery or accident
 - Children get osteomyelitis
- **Destruction of articular cartilage & cortex**
- **Tends to affect one joint (DDx from gout)**
 - Fingers from human bites
 - Feet from diabetes

Infectious Arthritis

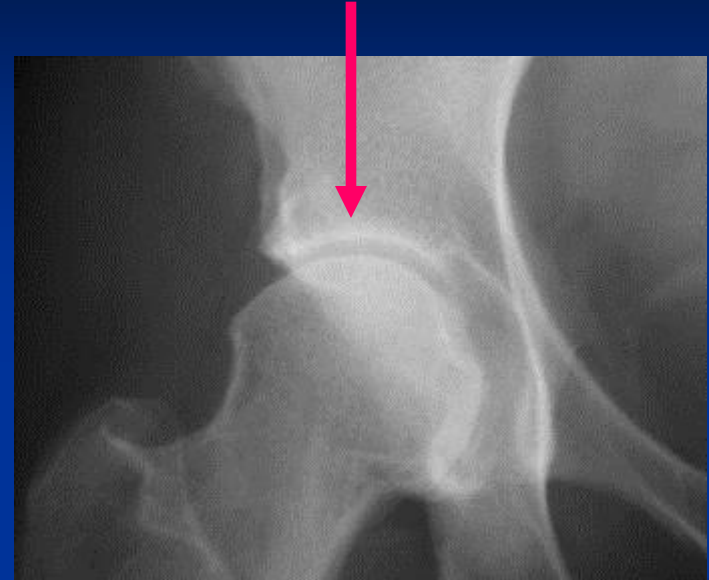
Causes

- **Usually staph - “early” destruction of articular cortex**
 - **Rapid course (unlike most arthritides)**
- **TB spreads via bloodstream from lung**
 - **More protracted course**
 - **In children, spine most common; in adults, knee**
 - **Severe osteoporosis**
- **Healing with ankylosis common in both**



**Septic arthritis of hip with
pathologic fracture**

Acetabular white line



Normal hip

Erosive Arthritis

Types

- Rheumatoid arthritis
- Gout
- Hemophilia
- Erosive osteoarthritis
- Rheumatoid variants
 - Psoriatic arthritis
 - Reiter's
 - Ankylosing spondylitis
 - Inflammatory bowel disease

Gout

General

- Long latent period between onset of symptoms and bone changes
- Asymmetric and monoarticular
- More common in males
- Most common at 1st MT-P joint
- Tophi rarely calcify
- Olecranon bursitis is common

Gout

Findings

- Juxta-articular erosions
 - Sharply margined with sclerotic rims
 - Overhanging edges (rat-bites)
- No joint space narrowing until later
- Little or no osteoporosis
- Soft tissue swelling
- Tophi not calcified



Gout

Rheumatoid artheritis

RADIOLOGICAL SIGN : ■

- 1-generalized osteopenia
- 2-swelling of the soft tissue around
- 3-articular erosion
- 4- sometime the joint ligment may undergo softening or complete cut

Rheumatoid Arthritis

General

- **Bilaterally symmetrical**
 - **Earliest change: MCP, PIP, ulnar styloid**
- **Radiocarpal jt most commonly narrowed**
- **Periarticular demineralization**
- **Begins MCP jts of 1st and 2nd fingers**
- **Large joints usually no erosions**

Rheumatoid Arthritis

General

- Can lead to 2° DJD
 - Marked narrowing of joint space with intact articular cortex, think of RA
 - Little or no sclerosis
 - Especially, hips and knees
 -



RA of Hips – Marked narrowing, little sclerosis



**RA usually
involves 5th
MT-P joint
first**

RA of Foot

Psoriatic Arthritis

- Almost always accompanies skin disease, especially nail changes
- Involves DIP joints of hands > feet
 - Cup-in-pencil deformity
- Resorption of terminal phalanges
- No osteoporosis



Psoriasis of hands

Reiter's Syndrome

- Urethritis, arthritis (50%) & conjunctivitis
- Periostitis at sites of tendinous insertion
 - Whiskering
 - Like DISH, ankylosing spondylitis
- Affects feet more than hands .
- Resembles RA
 - Reiter's also has osteoporosis



Reiter's Syndrome

Ankylosing Spondylitis

- HLA-B27 positive
- B/L SI arthritis
 -
- Squaring of vertebral bodies
- Bamboo-spine from continuous syndesmophytes
- Peripheral large joint erosive arthritis



Ankylosing Spondylitis

Inflammatory Bowel Disease

- Can occur with either Crohn's or UC
 - More common with UC
- Looks like AS in spine
- Asymmetric sacroiliitis
 - Like psoriasis, TB
- Peripheral joint STS without erosions

Hemophilia

General

- Usually seen in large joints
- Hemorrhage produces synovitis which leads to pannus
 - Incites hyperemic response
 - Bone resorption and remodeling
 - Especially in open epiphyses
- DDX: JRA

Hemophilia

Findings

- **Overgrowth of epiphyses**
- **Resorption of secondary trabeculae**
 - **Longitudinal striations**
- **Widening of intercondylar notch of knee**
- **Joint effusion**
- **Hemosiderin deposit around joint**



Hemophilic Arthropathy

Arthritis or Not



DJD



AVN

hyperparathyroidism

Generalized decrease in bone density

Subperiosteal bone resorption

Soft tissue calcification

Brown tumours



THANK YOU