Arthropaties and arthritis

topics to discuss:

non-infectious

- osteoarthritis (arthrosis)
- revmatoid artritis and juvenile variants
- artritis as a part of rheumatic fever
- reactive arthritis
- goiter

infectious

- purulent arthritis
- Lyme disease
- tuberculosis

Arthrosis deformans - formerly / now - osteoarthritis

- usually a disease of aging, often affecting people over 65 years
  - the disease is characterized by
    degenerative changes of cartilage of a joint
  - inflammatory background - pathogenetic contribution
  - starts insidiously at about 50 years
  - in secondary types even earlier

primary (oligoarticular)
secondary (monoarticular or polyarticular - predispositions)
post**traumatic changes of a joint**
congenital defects
systeme diseases
hemochromatosis
ochronosis
diabetes
obesity

gender: women - knee, hip, hands + other joints
men hip + other joints

William Heberden 1719-1801, St. Jones´ College Cambridge, London

Arthrosis deformans - formerly / now - osteoarthritis

- **early**
  enlargement and proliferation of chondrocytes
  desorganisation of chondrocytes in the peripheral parts of the cartilage
  ↑ content of water
  ↓ concentration of proteoglycans

Arthrosis deformans / osteoarthritis changes in the joint cartilage

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  the cartilage is softer at the surface - granular due to a local swelling

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- **at a full blown stage**
  - fragmentation / loss of the cartilage, exposure to a subchondral bone
    pieces of cartilage form – ***joint mice***, pieces may inpige the bone
  - the bone – friction movements lead to smoothing the surfice (**eburneation**)
  - the bone unerneath **sclerotizes** – there are **pseudocysts** in the sclerosis
  - at a joint periphery – **osteophytes**

  the joint fluid (synovial) leakes into the bone and forms a filling
  of the pseudocysts

  at a joint periphery – there may develop a fibrous pannus

Arthrosis deformans / osteoarthritis

Stages

I. intial	**II. mild**	**III. moderate**	**IV. severe**
10% cart. loss	cart. fragmentation	disappearance	60% cart. loss
	joint slit narrowing	bone exposure	severe narrowing
osteophytes	initial	developed	large

Arthrosis deformans / osteoarthritis

- **symptomatology**
  pain
  nerve root syndromes
  stiffness

  contractures
  muscle atrophy

- **most affected joints**
  hip
  knee
  vertebra lumbal and neck
  distal interphalangeal
  carpometacarpal
  tarsometatarsal

Rheumatoid arthritis (RA)

frekvency: up to 1 / 100
gender: women 3-5x > men
age: 4. – 6. decade
course: progression 10 – 15 years

- genetic predisposition HLA DR4
- smoking
- switching due to infectious etiology

- major role

  activation of Th1 and Th17
  lack of Th2 and regulatory T lymphocytes

  TNF, IL1, IL6 → macrophage activation
  rheumatoid factor - immunocomplexes

Rheumatoid arthritis (RA)

chronic synovitis

- synovial hyperplasia – from 3 → 10 layers
  production of IL-6, IL-8 and GM-CSF
- Th1 and Th17
- B lymphocytes, plasma cells, macrophages
- neovascularisation
- neutrophils + fibrin at the surface and inside joint
- **pannus formation**
- cartilage erosion → destruction → bone ~
  → fibrosis, calcification, ossification → **ankylosis**

- periarticular edema
- destruction of tendons, joint capsule
- revmatoid nodules (extensors, and elsewhere – heart, lungs, vessels)
- rheumatoid factor – IgM / Fc IgG→ vasculitis
- effusions (pleural ect.)
- lung fibrosis
- keratoconjunctivitis, uveitis
- amyloidosis secondary

Rheumatoid arthritis– juvenile forms (JRA)

heterogeneous group, forms:

- **oligoarticular** (pauciarticular) up to 4 joints in the first 6m, *ANA + freq.* frequently large joints – knee, elbow 50%
- **polyarticular** more than 5 joints in the first 6m, even small joints, girls 40%
- **systemic** fever, skin erythema (*color of salmon*), undulates, m : f same

Still disease 10%

acute

systemic manifestations

WBC 15 – 25 thousands

skin

lymphadenopathy

hepatosplenomegaly

serositis (pericarditis)

RF absent, rheumatic nodules absent

sir G. Frederic Still 1868 -1941, Hospital for Sick Children, Great Ormond Street, Londýn, M.D.thesis Cambridge: A special form of joint disease met with in children, 1896

Reactive arthritis

- at primary infectious diseases outside joint
  - **urogenital** / chlamydia (Reiter syndrome) HLA-B27 in 80%
  - **GIT** / Shigella sp., Salmonella sp., Yersinia, Campylobacter

- ankles, knees, feet joints - symmetrical
- vertebral column – similar to m. Bechtěrev

- **psoriatic arthritis**
  - about 10% of patients with psoriasis
  - distal interphalangeal joints – hands, feet, even large joints, spinal
  - symmetrical distribution
  - similar findings to RA

Ankylosing spondylarthritis (Bechtěrev disease)

- men 2x
- HLA-B27
- predisposition to T reactivity

- chronic synovitis
- destruction of joint cartilages
- tendosynovitis and inflammation of ligaments → ossification
- **ankylosis** – sacro-illiac, intervertebral, hip, sometimes knee, elbow

- uveitis
- aortitis
- amyloidosis

Gout – arthritis uratica

primary 90%

- enzyme defects
  - unknown (85-90%)
  - known (HGPRT)

congenital diseases
Lesch-Nyhan sy
encephalopathy
hyperuricemia

secondary 10%

- increased uric acid turnover
- chronic renal failure

Arthritis

- **purulent arthritis**

- ***blood borne***

  mostly mononoarticular → knee, hip
  shoulder, elbow, wrist
  sternoclavicular joint

  Haemophilus influenzae children up to 2 years
  Staphylococcus aureus children and adults

  Gonococcus (polyartritis) women (deficit C5 / C6 / C7)
  Salmonella sp. sicle cell disease

- ***direct infection***

Arthritis

- **non-purulent**

- *blood borne*

- **Lyme disease**

<u>stage 1</u>	erythema chronicum migrans + lymphadenopathy, fever

Arthritis

non-purulent
blood borne

Lyme disease

<u>stage 1</u>	erythema chronicum migrans + lymphadenopathy, fever
<u>stage 2</u>	early disseminated phase skin, LN, **joints** + muscle aches arrythmia meningitis, head nerves affected
<u>stage 3</u>	**chronic arthritis** (even destructive) encephalitis

artritis - primary **large joints** (knee, elbow), recurrent, migrates
hyperplastic synovial membrane, papillary, fibrin, lymphocytes, vessels,
some resemble RA (10%)

Joint neoplasms

synovial
- lipoma
- chodroma / chodromatosis

Joint neoplasms

pigmented villonodular synovitis

knee, hip
limitation of movements
bone erosion