

Osteoarthritis

Osteoarthritis (OA) is a heterogeneous group of diseases with a common clinical picture and X-ray findings.

Epidemiology

Globally, about 250 million people suffer from osteoarthritis, which represents 3.6% of the world's population^[1].

Etiology

The disease is multifactorial, with predisposing systemic factors (genetic, hormonal, and endocrine) and local influences.

Clinical presentation

- exertional and starting pains;
- joint stiffness after inactivity (typically in the morning), lasting for 15-30 minutes;
- limited joint mobility;
- sound phenomena (crepitus, grinding);
- joint deformities.

X-ray findings

Narrowing of the joint space, subchondral sclerosis, cysts, and osteophytes on the edges of the joint surfaces.

Classification of osteoarthritis

Primary (idiopathic)

- localized;
- generalized (3 or more joints);
- erosive.

Secondary (symptomatic)

- due to mechanical overload and incongruity of joint surfaces (DDH, Perthes disease);
- due to inflammatory joint diseases (arthritis);
- due to endocrinopathies (acromegaly, hyperthyroidism, DM);
- due to metabolic changes (chondrocalcinosis);
- due to neuropathies (Charcot's osteoarthropathy in DM).

Kellgren-Lawrence

Classification based on the severity of X-ray findings

- joint space narrowing
- joint space narrowing, subchondral sclerosis on X-ray, osteophyte formation
- joint space narrowing, subchondral sclerosis on X-ray, deformation of joint cavity and head, osteophytes
- vanished joint space, subchondral sclerosis on X-ray, deformation, cysts, osteophytes

Localization of changes in osteoarthritis

- Hands – **Heberden's nodes** (deformities of the distal interphalangeal joints - **DIP**), **Bouchard's nodes** (deformities of the proximal interphalangeal joints - **PIP**), **rhizarthrosis** (carpometacarpal joint of the thumb);
- Feet – hallux valgus, hallux rigidus;
- Knees – gonarthrosis;
- Hips – coxarthrosis;

genetic, joint damage,
connective tissue diseases
lies in the metabolic processes
of damaged cartilage
limitation of joint movement,
pain, joint deformation
physical therapy, drug therapy:
NSAIDs, corticoids,
chondroprotectants, TEP
limitation of function, joint
swelling, septic arthritis
M15 (<https://mkn10.uzis.cz/prohlizec/M15>), M19 (<https://mkn10.uzis.cz/prohlizec/M19>), M47 (<https://mkn10.uzis.cz/prohlizec/M47>)
165720 (<https://omim.org/entry/165720>)
Template:MedlinePlus
Template:Medscape



X-ray image – osteoarthritis in typical localization of distal and proximal interphalangeal joints of the hand

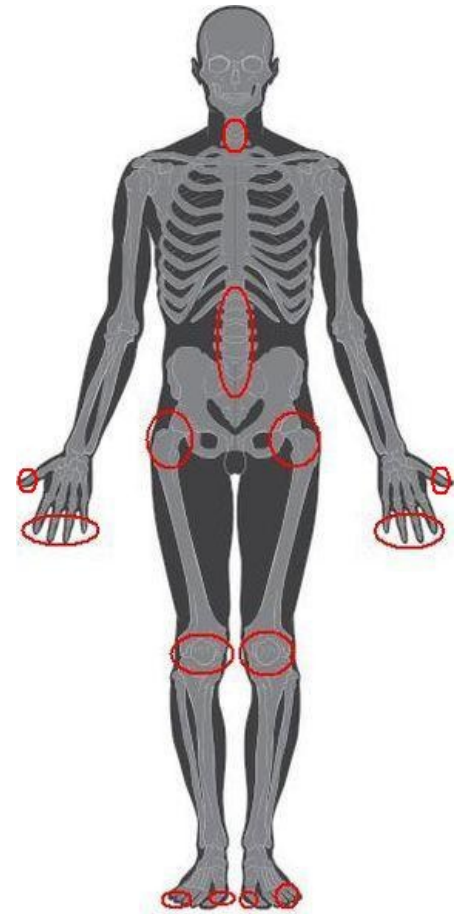
- Spine – spondyloarthritis (intervertebral joints), spondylosis (vertebral bodies), discopathy (intervertebral discs);
- Shoulders – omarthrosis.

Generalized OA

It is divided into nodal, non-nodal, and erosive types.

Pathogenesis

- Combination of **degenerative**, inflammatory, and reparative changes affecting **articular cartilage** (loss of proteoglycans and impaired synthesis of collagen by chondrocytes), **subchondral bone** (sclerosis, cysts, formation of osteophytes), **ligaments**, **tendons**, and **synovium**.
- As a consequence of degenerative and biochemical changes, the cartilage loses its luster, softens, and develops fissures on its surface. Gradually, it becomes less resilient and experiences losses.
- Subchondral bone undergoes sclerosis, **cysts** form within it, and **osteophytes** (bony outgrowths) form on its edges.
- Osteoarthritis is a disease of the entire joint structure (not just articular cartilage).
- OA is a very common disease, affecting up to 80% of the population over the age of 50. However, degenerative changes may also occur at a younger age.



Localization of arthrotic changes

Diagnosis

The standard is an **X-ray** with typical changes, while laboratory tests are inconclusive.

In **diff. dg.** we think of:

- rheumatoid arthritis;
1. usually symmetrical polyarthritis, **DIP joints are rarely affected**;
 2. palpably painful joints (synovitis), pain is at rest (in osteoarthritis, it is exertional);
 3. longer morning stiffness (more than an hour);
 4. inflammatory markers and immunological indicators (RA, antinuclear antibodies...);
- psoriatic arthritis - when DIP is affected, psoriasis should be considered;
 - crystal-induced diseases - pseudogout episodes, chondrocalcinosis on X-ray, crystals in joint aspiration.

Forms of OA

- Gonarthrosis - most common localization, progresses slowly;
- Coxarthrosis - often after CDH or Perthes disease, usually intermittent course;
- Osteoarthritis of hand joints - affecting DIP (*Heberden's nodes*), PIP (*Bouchard's nodes*), rhizarthrosis (thumb base joint);
- Osteoarthritis of the spine - affecting vertebral bodies (spondylosis - osteophytes on the edges of vertebral bodies), intervertebral joints (spondylarthrosis), discs (discopathy), unlike spondylitis, pain is exertional and better at rest.

Treatment

1. **Regimen** measures and rehabilitation, physical therapy;
2. **Pharmacological:**
 - Analgesics (Template:HVLP) and nonsteroidal anti-inflammatory drugs (Template:HVLP, Template:HVLP...);
3. specific COX-2 inhibitors (nimesulide, coxibs);
4. corticosteroids intra-articularly - no more than 3 times a year;
 - symptomatic slow-acting drugs in osteoarthritis (SYSADOA) - (hyaluronic acid, chondroitin sulfate, glucosamine sulfate...) - effect after 3 months, given in series;
5. **Surgical:**
 - arthroscopic abrasion (lavage, synovectomy, debridement);
 - osteotomy;
 - partial or total joint replacement.

Prevention

- Elimination of the cause in all secondary arthritis;
- Screening for congenital hip dysplasia in newborns;
- Limiting meniscectomies;
- Correction of unequal leg length;
- Treatment of synovitis;
- Maintaining a healthy body weight;
- Prevention of long-term unilateral overloading of certain joints;
- In mild initial involvement (pre-osteoarthritis), movement, preferably swimming or cycling.

Summary video

RISK FACTORS

- AGE ~ long period of time
- INFLAMMATION
 - └ IL-1
 - └ IL-6
 - └ TNF→ CATABOLISM++



Total hip replacement prosthesis



Video in English, definition, pathogenesis, symptoms, complications, treatment.

Links

Bibliography

PASTOR, Jan. *Langenbeck's medical web page* [online]. [cit. May 24, 2010]. <<https://langenbeck.webs.com/>>.

References

1. VOS, Theo – FLAXMAN, Abraham D – NAGHAVI, Mohsen. , et al. Years lived with disability (YLDs) for 1160 sequelae of 289 diseases and injuries 1990-2010: a systematic analysis for the Global Burden of Disease Study 2010. *Lancet* [online]. 2012, vol. 380, no. 9859, p. 2163-96, Available from <<https://www.ncbi.nlm.nih.gov/pubmed/23245607>>. ISSN 0140-6736 (print), 1474-547X.