

Rheumatology Revealed: Updates on Common Diseases and Referral Tips for Family Physicians | Pearls for practice

The Joint Effort: OA management- Common Practices Versus Clinical Guidelines

Dr. Shafiq Akbar



Epidemiology

- Globally, 595 million people had Osteoarthritis (OA) in 2020
- A total of 7.6% of the global population- increase of 132.2% in total cases since 1990.
- Given that global populations are ageing, the health and economic burden of osteoarthritis is increasing.
- OA is the seventh leading cause for Years lived with disability (YLDs).

2050 projections of joint pain

- The most common areas for osteoarthritis are knees and hips.
- By 2050, osteoarthritis is projected to increase by the following percentages based on problem areas of the human body.
 - Knee +74.9% Hand +48.6%
 - Hip +78.6% Other (e.g., elbow, shoulder) +95.1%

Clinical Features

Typical symptoms

- Pain on usage and only mild morning or inactivity stiffness affecting one to a few joints at any one time
- Symptoms are often intermittent and target characteristic sites (DIP joints, PIP joints, thumb base, index and middle MCP joints).
- With such typical features, a confident clinical diagnosis can be made in adults aged >40 yr

Clinical Features

- OA is the most common form of arthritis, is strongly associated with aging and typically affects the knee, hip, spine, great toe, and hands.
- OA can be defined by x-rays, clinical examination, or symptoms, with frequency dependent on both definition and population.
- The mortality rate may be increased in individuals with OA, particularly painful OA, compared with the general population.
- As more sensitive measures of OA such as magnetic resonance imaging and biomarkers are developed and validated, definitions of OA will continue to evolve.

Pathologic features OA

- Early:
 - Swelling of articular cartilage. Loosening of collagen framework.
 - Chondrocytes increase proteoglycan synthesis but also release more degradative enzymes.
 - Increased cartilage water content.

Risk Factors OA

- Female sex - Age >40 yr -Menopausal status
- Family history of OA. - Obesity - Higher bone density
- Joint laxity - Prior hand injury
- Occupation or recreation-related usage-

Clinical Features

- Joint pain and functional impairment are the hallmarks of OA.
- Pain -multifactorial biopsychosocial process including:
 - Cartilage
 - Non-cartilaginous structures- subchondral bone, synovium, and periarticular structures,
 - Peripheral and central sensitization of nociceptive pathways
- OA-related pain has negative impacts on mood and sleep and frequently affects participation in occupational and recreational activities

Pathogenesis of OA Inflammation

- Mechanical factors play a key role in OA
- Joint tissue damage by wear and tear, excessive /abnormal joint loading → stimulates joint tissue cells to produce proinflammatory factors and proteolytic enzymes/proteases → joint tissue destruction
- Classic cellular inflammation is not prominent in OA.
- Number of WBC in the joint fluid is normally low, and rarely exceeds 1000 to 2000

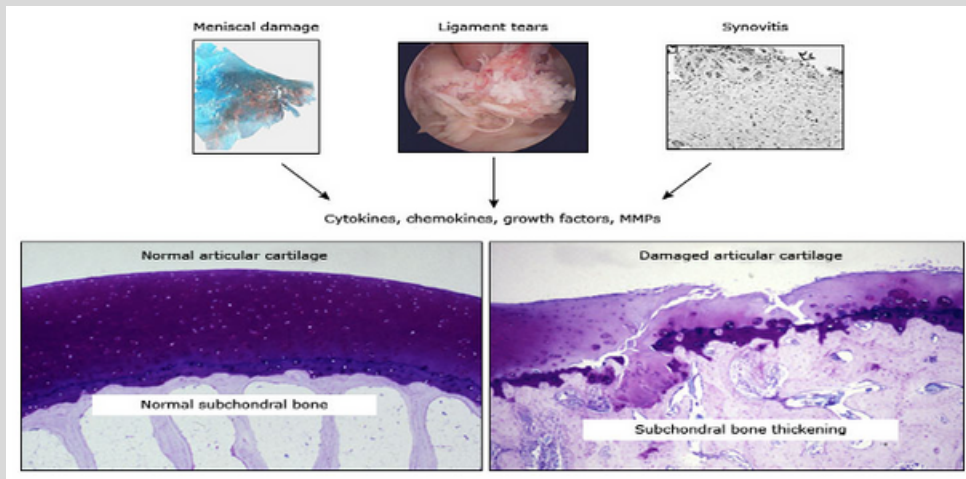
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Pathologic features OA

- Late:
 - Degradative enzymes break down proteoglycan faster than it can be produced by chondrocytes, resulting in diminished proteoglycan content in cartilage.
 - Articular cartilage thins and Fissuring and cracking of cartilage.
 - Repair is attempted but inadequate.
- Underlying bone is exposed, allowing synovial fluid to be forced by the pressure of weight into the bone.



- Osteoarthritis involves all the joint tissues including the menisci in the knee, ligaments, synovium, articular cartilage, and bone
- Damage to the menisci and ligament tears not only alter joint mechanics but, along with the inflamed synovium (synovitis), produce proinflammatory factors (cytokines and chemokines) and matrix-degrading enzymes (eg, matrix metalloproteinases [MMPs]). These factors are also produced by chondrocytes and serve to promote joint tissue destruction

Classification of OA

Primary, idiopathic OA

- Localized
- Hands (DIP, PIP, and first CMC joints): nodal OA
- Hands (DIP, PIP, and first CMC joints): EOA, inflammatory OA
- Feet (first MTP joint), Hip, Knee, Spine
- Generalized (also called Kellgren's syndrome)

Differential diagnosis includes:

- Psoriatic Arthritis (which may target DIP joints or affect just one)
- Rheumatoid Arthritis (mainly targeting MCP joints, PIP joints, wrists)
- Gout (which may superimpose on preexisting HOA)
- Hemochromatosis (mainly targeting MCPJs, wrists)



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Classification of OA-cont

Secondary OA

- Congenital disorders-
 - Hip-Legg-Calvé-Perthes disease, Congenital hip dislocation, Slipped capital femoral epiphysis, Femoroacetabular impingement (FAI)
- Dysplasia
- Mechanical features
 - Joint hypermobility syndromes
 - Leg length discrepancy
- Trauma
 - Anterior cruciate ligament tear;
 - Fracture through joint; meniscectomy
- Metabolic diseases
 - Hemochromatosis, Ochronosis, Gaucher's disease, Hemoglobinopathy, Crystal deposition disorders
- Endocrine disorders-
 - Acromegaly, Hypothyroidism, Hyperparathyroidism
- Neuropathic joints
 - Diabetes mellitus, Syphilis
- End result of any infectious or inflammatory arthropathy
 - Paget's

Radiographic changes vs symptomatology

- Radiographic OA is at least twice more common than symptomatic OA.
- Therefore, changes in OA on radiographs do not prove that OA is the cause of that patient's musculoskeletal pain.
- Radiographic knee OA in 14% to 37%; Symptomatic knee OA in 7% to 17%

Goals of OA management



PAIN CONTROL



FUNCTIONAL IMPROVEMENT



EDUCATION ABOUT THE DISEASE



SELF-MANAGEMENT



PREVENTION OR SLOWING OF STRUCTURAL CHANGE TO THE JOINTS

Radiographic classification of OA

Kellgren-Lawrence Radiographic Grading System for Osteoarthritis

Grade	Classification	Description
0	Normal	No features of osteoarthritis
1	Doubtful	Minute osteophyte, doubtful significance
2	Minimal	Definite osteophyte, unimpaired joint space
3	Moderate	Moderate diminution of joint space
4	Severe	Joint space greatly impaired with sclerosis of subchondral bone

Adapted from Kellgren JH, Lawrence JS, editors. The epidemiology of chronic rheumatism, atlas of standard radiographs. Oxford: Blackwell Scientific; 1963.

- Plain radiographs provide the gold standard for morphologic assessment of HOA.
- A posteroanterior radiograph of both hands on a single film or field of view is adequate for diagnosis.
- Classical features are:
 - joint space narrowing
 - osteophyte
 - subchondral bone sclerosis and subchondral cyst
 - subchondral erosion occurs in erosive hand OA.
- Further imaging modalities are seldom indicated for diagnosis

Management of OA

- Nonpharmacologic
- Pharmacologic
 - Conventional therapy for OA has mainly targeted symptomatic relief, with agents such as:
 - nonsteroidal anti-inflammatory drugs (NSAIDs)
 - acetaminophen
 - opioid analgesia,
 - intra-articular injections

Kolasinski S et.al. 2019 American College of Rheumatology/Arthritis Foundation Guideline for the Management of Osteoarthritis of the Hand, Hip, and Knee. *Arthritis Care Res*, 72: 149-162. <https://doi.org/10.1002/acr.24131>

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Management of OA-cont

- Disease Modifying DMOADs or structure modifying OA drugs SMOADs
 - Drugs whose mechanism of action are directed towards different pain pathways, as well as the inhibition of catabolic processes or stimulation of anabolic processes in the OA joint.
- Surgical approaches
- To date, no pharmacologic agents have been approved by regulatory authorities for disease modification in OA.

Management of OA-Weight Loss

- Is strongly recommended for patients with knee and/or hip OA who are overweight or obese
- A dose-response -noted
- A loss of $\geq 5\%$ of body weight can be associated with changes in clinical and mechanistic outcomes.
- Clinically important benefits continue to increase with a Weight loss of 5–10%, 10–20%, and $>20\%$
- The efficacy of weight loss for OA symptom management is enhanced by use of a concomitant exercise program.

Management of OA-recommended AGAINST

- Massage therapy - in patients with knee and/or hip OA.
- Manual therapy with exercise - in patients with knee and/or hip OA.
- Transcutaneous electrical stimulation (TENS)
- Conditionally recommended: Acupuncture, thermal interventions and radio frequency ablation



Management of OA-Exercise

- Exercise is strongly recommended for patients with knee, hip, and/or hand OA
- Current evidence is insufficient to recommend specific exercise prescriptions
- Recommendations to patients should focus on the patient's preferences and access, both of which may be important barriers to participation.
- Aerobic exercise in the management of OA, walking is the most common form of exercise (treadmill or as supervised), community-based, indoor fitness walking.
- Tai chi is strongly recommended for patients with knee and/or hip OA

Management of OA-Assistive Devices

- Cane use is strongly recommended for patients with knee and/or hip OA in whom disease in 1 or more joints is causing a sufficiently large impact on ambulation, joint stability, or pain to warrant use of an assistive device.
- Tibiofemoral knee braces are strongly recommended for patients with knee OA

Management of OA-Pharmacologic management

- Topical NSAIDs are strongly recommended for patients with knee OA and conditionally recommended for patients with hand OA.
- Topical capsaicin is conditionally recommended for patients with knee OA and conditionally recommended against in patients with hand OA
- Oral NSAIDs remain the mainstay of the pharmacologic management of OA, and their use is strongly recommended. A large number of trials have established their short-term efficacy.
- Oral NSAIDs are the initial oral medication of choice in the treatment of OA, regardless of anatomic location, and are recommended over all other available oral medications.
- Doses should be as low as possible, and NSAID treatment should be continued for as short a time as possible.

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Management of OA-Pharmacologic management

- Intraarticular glucocorticoid injections are strongly recommended for patients with knee and/or hip OA and conditionally recommended for patients with hand OA
- Ultrasound guidance for intraarticular glucocorticoid injection is strongly recommended for injection into hip joints
- Intraarticular glucocorticoid injections versus other injections are conditionally recommended for patients with knee, hip, and/or hand OA.
- Acetaminophen is conditionally recommended for patients with knee, hip and/or hand OA
- Duloxetine is conditionally recommended for patients with OA
- Tramadol is conditionally recommended (contraindications to NSAID's use)

Management of OA-Surgical Options

Indications for total joint replacement for OA of the hip or knee:

- Severe pain unresponsive to medical therapy.
 - Consistently awakens from sleep due to pain.
 - Cannot stand in one place for >20 to 30 due to pain
- Loss of joint function.
 - Cannot walk more than one block. Can't put on shoes and socks.
 - Had to move to single-story house or apartment because of inability to climb stairs.

Clinical Pearls OA

- Treatment for OA is not one size fits all.
- Over time various options might be used then reused or changed in response to the patients symptoms
- Optimal management requires a comprehensive, multimodal approach emphasizing individualized treatment based on patient needs and preferences with shared decision making
- A strong preference for nonpharmacologic therapies as the foundation of OA management

References/links

- Hochberg MC, Altman RD, April KT, Benkhalti M, Guyatt G, McGowan J, Towheed T, Welch V, Wells G, Tugwell P; American College of Rheumatology. American College of Rheumatology 2012 recommendations for the use of nonpharmacologic and pharmacologic therapies in osteoarthritis of the hand, hip, and knee. *Arthritis Care Res (Hoboken)*. 2012 Apr;64(4):465-74. doi: 10.1002/acr.21596. PMID: 22563589.
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- Kolasinski S et al. 2019 American College of Rheumatology/Arthritis Foundation Guideline for the Management of Osteoarthritis of the Hand, Hip, and Knee. *Arthritis Care Res*, 72: 149-162. <https://doi.org/10.1002/acr.24131>

Management of OA-recommended AGAINST

- Colchicine, Fish oil, Vitamin D and Bisphosphonates are strongly recommended against in patients with knee, hip, and/or hand OA
- Intraarticular hyaluronic acid injections are conditionally recommended against in patients with knee and/or first CMC joint OA and strongly recommended against in patients with hip OA
- Intraarticular botulinum toxin injections are conditionally recommended against in patients with knee and/or hip OA
- Strongly recommended against: Glucosamine and/or Chondroitin, Hydroxychloroquine and methotrexate, Stem cell injections, Tumor necrosis factor inhibitors and interleukin-1 receptor antagonists

