Overview of arthritis – A Public Health and Clinical View

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Overview of arthritis

Arthritis Overview and Epidemiology

- Osteoarthritis (OA) is the most common form of arthritis
- Rheumatoid arthritis (RA) also common; some patients may have a mix of both OA and RA

Arthritis Overview and Epidemiology (continued)

- Arthritis is the most common cause of disability among adults living in the United States (CDC, 2020)
- Arthritis limits everyday activities for 24 million Americans (CDC, 2020)
- Arthritis due to or associated with another disease process
  - Rheumatoid arthritis (Autoimmune disease causing inflammatory arthritis)
  - Psoriatic arthritis (arthritis in association with psoriasis)
  - Inflammatory arthritis (Gout)
  - Arthritis as a manifestation of other connective tissue diseases (Lupus, others)
  - Infectious arthritis (Gonococcal arthritis, etc.)
  - Conditions similar to arthritis (Fibromyalgia, Post-COVID syndrome, etc)

Arthritis Overview and Epidemiology (continued)

- Global prevalence of OA = about 500-600 million people
- U.S. prevalence of OA = about 50 million people; has increased from 1990 to present, and also from 2010 to present
- As a comparator, in 2022, the prevalence of coronary artery disease was about 20 million people in the U.S.
- Incidence (new cases) of OA increases with age and more cases in females than males

Arthritis Overview and Epidemiology (continued)

- Most common joints affected by arthritis
  - Knee(s): most commonly reported site of OA – knee OA accounts for about 80% of the total burden of disease; about 1.5 times more common in females than males
  - Hand(s): commonly affected in both women and men – a little more in women
  - Hip(s): less common than knee or hand OA; no gender difference in prevalence
  - Spine: less data about the true prevalence of spinal OA

- Important note = not everyone with OA radiographically is symptomatic

- Study published in 2008 – part of Framingham Heart Study – did CT scans on ~3500 people to look for aortic calcifications in people aged 40-80; in about 200 people, looked at spinal facet joint OA and whether related to low back pain (LBP)
  - Facet joint OA quite common: 60% in men; 67% in women
  - However, no association between facet joint OA and LBP

Arthritis Overview and Epidemiology (continued)

- Predictors of OA

  - **Age** = one of the strongest predictors of OA, particularly after age 50. Older age = more OA
  - **Female sex** = higher prevalence and severity of OA
  - Genetics = unclear what role genetics plays
  - **Injury to the joint** = associated with development of OA = post-traumatic OA
  - **Overweight and obesity** = one of the most important risk factors associated with new cases of OA and progression of disease – as weight increases → more OA in weight-bearing joints (hips and knees), but also non weight-bearing joints (hands, shoulders)
    - Relatively small decreases in weight have lead to notable symptom reduction
  - Occupation = OA in knees, hips, spine associated with more physical work (e.g., repeated bending of knee, putting loads on joints)

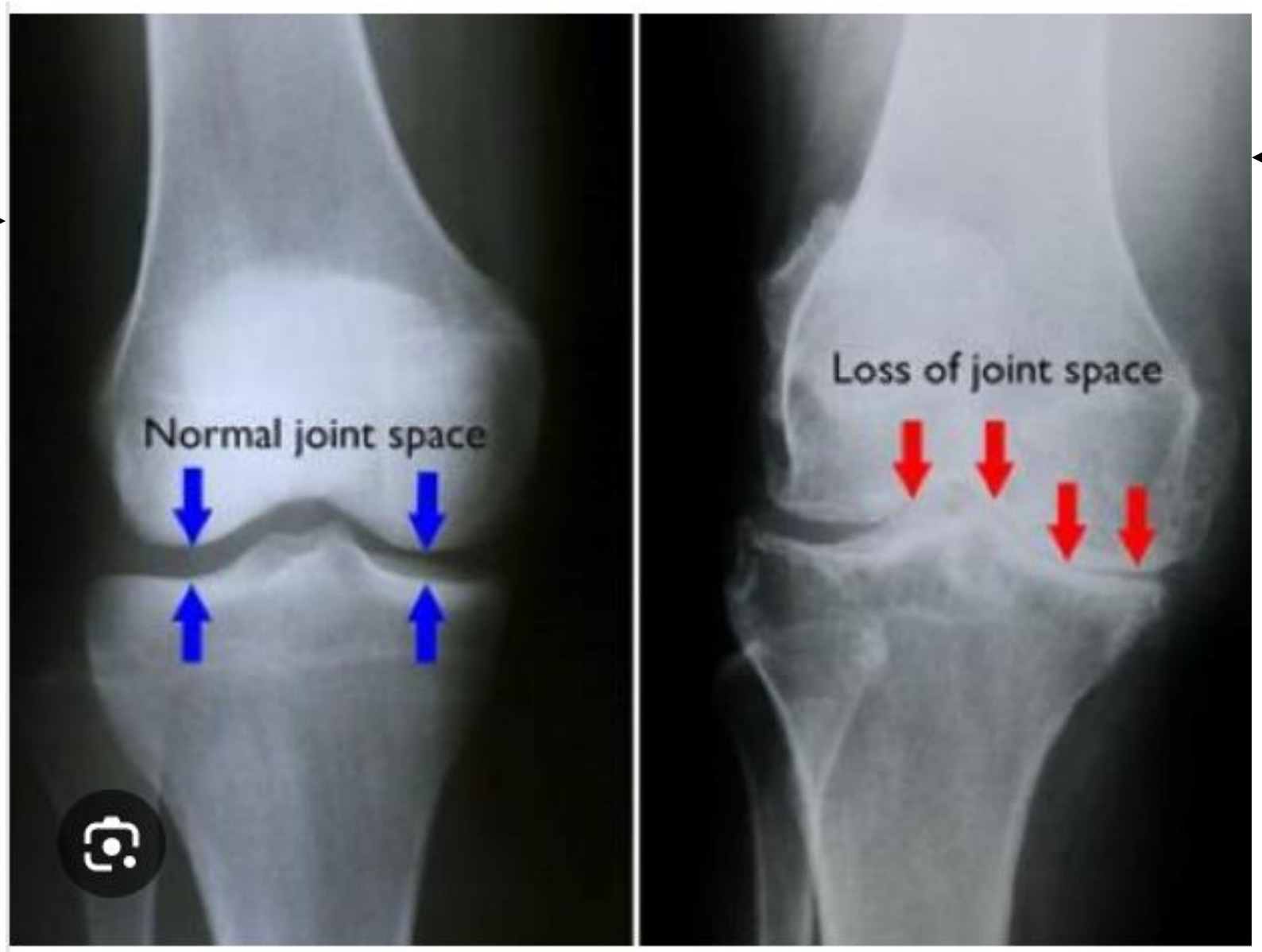
Clinical manifestations of osteoarthritis

- Pain
- Joint stiffness
- Joint swelling
- Bony deformities
- Instability of the joint – knee buckling or giving out
- Limitation of motion and/or mobility
- As arthritis progresses, can have atrophy of muscles which leads to weakness. Example = muscles around the knee can become weaker

- Other sequelae of OA
  - Poor balance, which may lead to falls
  - Muscle weakness – described above
  - Mental health issues – depression – due to loss of independence as a result of loss of mobility

Radiographic (X-ray) manifestations of osteoarthritis

Normal right knee x-ray = normal joint space, no bone spurs



Abnormal right knee x-ray = severe loss of joint space (arrows) due to loss of cartilage, have bone on bone

Radiographic (X-ray) manifestations of osteoarthritis

Abnormal left knee x-ray = severe loss of joint space on medial side of joint due to loss of cartilage, small bone spur (osteophyte) on the medial side of knee joint

Diagnosis of osteoarthritis

- Typically age ≥ 40
- Joint pain, more pain with joint use
- Joint stiffness ≤ 30 minutes
- Joint swelling (perhaps) and/or joint deformity (perhaps)
- One or a few joints
- In more advanced cases, may see more pronounced joint deformity, muscle wasting

- With the typical symptoms/signs, may not need joint radiography

- If x-rays obtained, note that symptoms may not correlate well with radiographic findings. Patients may have substantial clinical symptoms of OA, but normal plain films. Example, in knee OA, radiographic changes may lag behind clinical symptoms by years

- Consider further evaluation if: (1) person ≤ 40 years old, (2) constitutional symptoms (e.g., fever, weight loss), (3) atypical signs/symptoms such as unusual sites of joint involvement, rest pain, (4) knee “locking”

Management of osteoarthritis

- Currently, there is no treatment that has been shown to stop the progression of joint disease in OA
- In rheumatoid arthritis, however, specific medications have been shown to slow down or stop the progression of existing joint damage
- Management of OA is a multifaceted process, complex, and individualized process
- Optimal if the physician and patient work together rather than driven by the clinician; some treatments may work for one person but not another

Management of osteoarthritis (continued)

- With osteoarthritis, many factors that should be addressed by the clinician:

  - Educate the patient about the illness
  - Impact of pain and functional impairment on activities of daily living and quality of life
  - Mental health issues such as depression
  - Sleep disturbances and fatigue – joint pain may interfere with sleep
  - Falls risk assessment
  - What is the patient's social support like
  - Other comorbid illnesses the patient has
  - Expectations of treatment
  - Modifiable risk factors, such as obesity/overweight

Management of osteoarthritis (continued)

- Three main categories of treatment
  - Nonpharmacologic
  - Pharmacologic
  - Surgical

- Nonpharmacologic therapies should be tried first; can use pain medication as an adjunct
  - Aerobic and strengthening exercises
    - Exercise reduces pain about as much as nonsteroidal anti-inflammatory drugs (NSAIDs)
    - Physical therapy and occupational therapy are helpful
    - **Water exercise**

  - Weight loss = goal is to lose about 10% of body weight through diet & exercise
    - This has been associated with about a 50% reduction in pain in patients with knee OA
    - Weight loss has also been shown to be beneficial for hand OA

Nonpharmacologic Management of Osteoarthritis

- Nonpharmacologic therapies (continued)
  - Walking aids and knee braces – assistive devices that can be helpful
    - Single point cane, quad cane – may help ease pain associated with walking
    - Canes and/or walkers may help improve stability; while not a guarantee that a patient will not fall, they are generally helpful; “fall insurance”
    - Knee braces can be useful if OA has caused malalignment of the joint – brace helps keep the joint in better alignment
    - Brace also provides some level of stability to the knee

Nonpharmacologic Management of Osteoarthritis (cont'd)

- Other assistive devices and items that may be helpful
  - Grabbing devices for people with shoulder OA
  - Items to help with opening jars
  - Request non-child proof medication bottles with easy open cap from pharmacy
  - If splitting tablets, see if pharmacy will do this
  - Have a home OT assessment to look for areas where falls might occur
    - Install grab bars in shower; put seat in shower
    - Consider grab bars near toilet
    - Declutter home = fewer things to trip on (papers, power cords, rugs, etc.)
  - Consider purchasing a wearable personal alert monitor or watch with a phone = for people who fall and don't have strength to get back up
  - If applicable, speak with physician about handicapped parking permit
    - Note: Virginia has specific requirements that must be met in order for a healthcare provider to authorize a handicapped permit for a person

Pharmacologic Management of Osteoarthritis

- Generally used for people in whom nonpharmacologic measures have not been adequate or for people with more severe disease

  - Drugs used for osteoarthritis are NOT disease modifying – they do not change the underlying course of the illness. Unlike drugs for rheumatoid arthritis which can be disease modifying.

  - Nonsteroidal anti-inflammatory drugs (NSAIDs) – many, if not all, generically available
    - Oral and topical NSAIDs
    - Generally, preference for topical NSAIDs due to limited systemic absorption
    - Oral NSAIDs must be used with caution due to potential gastrointestinal (ulcers, bleeding), renal, and liver toxicity
    - All NSAIDs, including topicals, carry black box warnings about possible cardiovascular and gastrointestinal toxicity

  - Duloxetine = a serotonin-norepinephrine reuptake inhibitor (SNRI) used for depression and anxiety disorders that also has FDA approval for chronic musculoskeletal pain

Pharmacologic Management of Osteoarthritis (cont'd)

- Medications (continued)
  - Steroid injections into affected joints = limited value; variable effectiveness
  - Tylenol (acetaminophen) – in the past, this was the "go to" medication for pain, but is no longer considered a first-line pain medication for OA – has a limited analgesic effect
  - Topical capsaicin = a component of chili peppers = available OTC as a cream or gel, topically applied to knee joint several times daily, limited effectiveness and side effects with usage
  - Injectable hyaluronic acid (Synvisc-One, others) = a component of cartilage = a viscous solution injected into the knee or hip joints that helps lubricate and cushion the joint = variable effectiveness
  - Opioids = generally not used for long-term management of arthritis pain; may be used for short-term pain relief for patients with severe arthritis
    - With older patients, concern about side effects that may lead to falls
  - Glucosamine, chondroitin, vitamin D supplements = not used due to lack of effectiveness compared to placebo

Surgical Management of Osteoarthritis

- Surgery = total joint replacement (arthroplasty) is the mainstay of therapy
- For patients who have not done well with conservative therapy, surgery can be considered

- For more severe arthritis, total joint replacement typically provides pain relief and improves mobility = hips and knees are most commonly replaced
  - Surgery comes with inherent potential risks = anesthesia, infection, bleeding, other complications
  - For hip and knee arthroplasty, patients will be immobile for a period of time which can lead to blood clots in legs; anticoagulation used to reduce this risk, but carries risk of major bleeding
  - In a subset of patients (about 10%-ish), pain may return after surgery – not entirely clear why this occurs as long as surgery goes well
  - An artificial joint has a limited lifespan and can wear out or break – patient may need another joint replacement or revision of existing prosthesis

- Arthroscopic debridement or lavage of joint = not effective
- Estimated that about $^{1}/_{3}$ to ½ of patients with knee OA will go on to surgery

Management of Osteoarthritis – Additional Items

- Core Recommendations for Osteoarthritis Care: A Systematic Review of Clinical Practice Guidelines, 2023

- Review of 11 clinical practice guidelines that were assessed as providing high quality data
- Consistent recommendations:
  - Patient centered care
  - Education
  - Exercise as treatment
  - Weight loss (as appropriate)
  - Medications (NSAIDs) and surgery for more severe or disabling OA that is not responsive to other measures

- Uptake of clinical practice guidelines into day-to-day patient care is variable = gap between evidence and practice

Management of Osteoarthritis – Education

- Five clinical practice guidelines from the Core Recommendations strongly recommended patient education for managing hip, knee, hand, and polyarticular OA

- Chronic Disease Self-Management Program
- This CDC program is not specific to osteoarthritis, but can be used for a number of chronic diseases including arthritis, heart disease, diabetes, etc.
- Key activities as part of the program
  - Educational activities including discussions, problem-solving techniques, decision making, and more
  - Symptom management activities such as exercise, relaxation, healthy eating, medication management, and more

- Helpful because the patient is involved and participates in the treatment process, plus benefits of activities above

Management of Osteoarthritis - Exercise

- Exercise is a treatment for osteoarthritis
- In general, not accurate that exercise makes OA worse
- According to the 2023 Core Recommendations for Osteoarthritis Care, 8 of 11 clinical practice guidelines strongly recommended strengthening, aerobic exercise, and tai chi exercise for management of knee, hip, polyarticular, and/or hand OA.
- However, currently no consensus on the type of exercise that brings the greatest benefit
- Patient should consider seeing a physical therapist for an individualized exercise regimen
- Walk With Ease is a community-based physical activity and self-management education program – an Arthritis Foundation program – walking is the central exercise

Management of Osteoarthritis – Weight loss

- Four clinical practice guidelines strongly recommended weight loss for people with hip and knee OA who are overweight or obese
- Minimum weight loss target of 5% to 7.5% of body weight, with more weight loss leading to more symptomatic benefits
- There is evidence that weight loss has positive benefits for hand OA

Management of Osteoarthritis – NSAIDs

- Five clinical practice guidelines (CPGs) strongly and 2 CPGs conditionally recommended the use of oral NSAIDs for people with knee, hip, hand, and/or polyarticular OA unless contraindicated.

- CPGs recommended that clinicians prescribe a low dose for a short period of time and discontinue if not effective, monitoring for side effects or adverse events

- Four CPGs strongly recommended the use of topical NSAIDS for knee, hip, and/or hand OA

Important Arthritis-Related Complications - Falls

- Symptomatic lower limb arthritis (hip and knee) are known risk factors for falls
- In general, about 20-30% of community dwelling older adults will have at least one fall per year at their home.
- For older adults in LTCF, about 50% will have at least one fall per year.
- In older adults, falls are a notable cause of both morbidity and mortality

- Dore et al. Lower Limb Osteoarthritis and the Risk of Falls in a Community-Based Longitudinal Study of Adults with and without Osteoarthritis, 2015.

- Odds of falling increased with more lower limb symptomatic OA joints
- After adjusting for covariates, people with symptomatic hip or knee OA had an increased risk for falling:
  - One joint involved = adjusted odds ratio = 1.39
  - Two joints involved = adjusted odds ratio = 1.6
  - Three to four joints involved = adjusted odds ratio = 2.24
- There are evidence-based fall reduction programs = another talk

Important Arthritis-Related Complications – Mental Health

- CDC has webpage = The Arthritis – Mental Health Connection
- About 1 in 5 adults in the U.S. with arthritis has symptoms of anxiety or depression
- Symptoms have been noted to be more common in the following groups with arthritis:
  - Women
  - Younger adults
  - People who identify as LGBT+
  - People with chronic pain or have other chronic conditions
  - People who are disabled, unemployed, or unable to work

- Anxiety may be due to worry about overall health, fear of falling with walking, many other reasons
- Depression may be due to loss of independence, ongoing anxiety, other reasons
- Important for healthcare providers to ask about these symptoms, evaluate them, and treat or refer for treatment if present.
- Patients are also encouraged to discuss these issue with their healthcare provider

Arthritis Take Home Messages

- Arthritis is very common condition with important public health and clinical ramifications
- Osteoarthritis is a most common form of arthritis
- Knee is most common site of osteoarthritis
- Common for people with arthritis to have other comorbid medical conditions
- Arthritis is most common cause of disability in the U.S.
- Arthritis has typical symptoms = pain, joint stiffness, limited mobility, possible joint instability
- Treatment is available for arthritis, but no “cure” for osteoarthritis
- Exercise and weight loss, if applicable, are core treatments for OA
- Arthritis can lead to falls and mental health issues – these need to be addressed

Thank you for your attention

Questions?

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