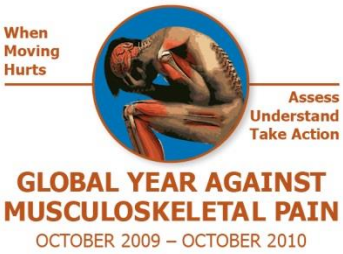

• **FACT SHEET No. 20**

Osteoarthritis-Related Pain

Epidemiology

Osteoarthritis (OA) is the most common joint disorder and the leading cause of disability in older adults. Symptomatic knee OA occurs in approximately 37% of persons aged 60 years or older. From 1995 to 2005, the number affected with clinical OA grew from 21 million to nearly 27 million in the United States, reflecting the aging of the U.S. population. Pain from knee OA is a key symptom in the decision to seek medical care and an important antecedent to disability. Currently, no therapeutic strategies have been proven to alter structural progression. The rapid increase in the prevalence of this already common disease suggests that OA will have a growing impact on health care and public health systems in the future.

Pathophysiology

- Osteoarthritis is a disorder involving movable joints characterized by cell stress and extracellular matrix degradation initiated by micro- and macro-injury that activates maladaptive repair responses including pro-inflammatory pathways of innate immunity. The disease manifests first as a molecular derangement (abnormal joint tissue metabolism) followed by anatomic, and/or physiologic derangements (characterized by cartilage degradation, bone remodeling, osteophyte formation, joint inflammation and loss of normal joint function), that can culminate in illness.
- The joint's intra-articular and periarticular structures, including menisci, adipose tissue, synovium, and periosteum, are innervated with nociceptors, while cartilage is aneural.
- The pathological structural changes of OA and inflammation with the related increase in cytokines lead to peripheral sensitization, manifesting as primary hyperalgesia, spontaneous pain, and pain with normally innocuous movement.
- The specific pathological features related to pain in OA are likely to be related to bone marrow lesions, synovitis, effusions, and possibly meniscal abnormalities.
- Changes in the peripheral and central nervous systems contribute to enhanced sensitivity to mechanical stimuli, with increased responsiveness to peripheral input or central sensitization, manifested by clinical features such as referred or radiating pain and reduced

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pain thresholds. Sensitization may be induced by inflammatory features such as synovitis and effusions.

- Genetic contributions to pain sensitivity may play a role in OA.
- Psychological factors are an important component of the experience of OA pain.

Clinical Features and Classification Criteria

- OA is generally localized to the hand, knee, or hip, and much less commonly to other joints such as the shoulder, elbow, wrist, or ankle
- Osteophytes noted on radiograph are diagnostic for OA
- Classification criteria for knee OA, which is used primarily for research purposes rather than diagnosis, provide some useful insights into key features of knee OA:
    - For clinical and laboratory parameters, an individual must meet 5 of 9 of the following criteria:
        - age >50 years
        - stiffness <30 minutes
        - crepitus
        - bony tenderness
        - bony enlargement
        - no palpable warmth
        - erythrocyte sedimentation rate <40 mm/h
        - rheumatoid factor <1:40
        - synovial fluid suggestive of OA (viscous, clear, and/or white blood cell count <2000 cell/mm3)

Treatment

- Nonpharmacological, nonsurgical core treatments for all individuals with knee OA include land-based exercise, weight management, strength training (e.g., through physical therapy), water-based exercise, and self-management and education. Biomechanical interventions can also be considered.
- Local treatment with intra-articular injection of corticosteroids can improve pain and function, though there is also a high placebo effect for intra-articular injections. Topical NSAIDs and topical capsaicin are additional local treatment options.
- Oral COX-2 inhibitors, oral non-selective NSAIDs, acetaminophen, and duloxetine are the primary pharmacologic treatments recommended, with opioid therapy having uncertain benefit:risk profile in OA
- Psychological management using cognitive-behavioral therapy reduces pain.
- Total joint replacement is considered when pain and functional limitations result in a diminished quality of life, and when there is moderate to severe pain that is thought to be related to imaging evidence of joint damage, and which is not adequately relieved by nonsurgical approaches. Total joint replacement, generally of the hip or knee, is the primary surgical approach; it clearly reduces pain and improves function and quality of life in people with osteoarthritis.

REFERENCES

1. Glyn-Jones S, Palmer AJ, Agricola R, Price AJ, Vincent TL, Weinans H, et al. Osteoarthritis. Lancet. 2015;386(9991):376-87.
2. Hunter DJ, Felson DT. Osteoarthritis. BMJ. 2006;332(7542):639-42.
3. Neogi T. The epidemiology and impact of pain in osteoarthritis. Osteoarthritis Cartilage. 2013;21(9):1145-53.
4. Lawrence RC, Felson DT, Helmick CG, Arnold LM, Choi H, Deyo RA, et al. Estimates of the prevalence of arthritis and other rheumatic conditions in the United States. Part II. Arthritis Rheum. 2008;58(1):26-35.
5. McAlindon TE, Bannuru RR, Sullivan MC, Arden NK, Berenbaum F, Bierma-Zeinstra SM, et al. OARSI guidelines for the non-surgical management of knee osteoarthritis. Osteoarthritis Cartilage. 2014;22(3):363-88.
6. Bannuru RR, McAlindon TE, Sullivan MC, Wong JB, Kent DM, Schmid CH. Effectiveness and Implications of Alternative Placebo Treatments: A Systematic Review and Network Meta-analysis of Osteoarthritis Trials. Ann Intern Med. 2015;163(5):365-72.
7. Bannuru RR, Schmid CH, Kent DM, Vaysbrot EE, Wong JB, McAlindon TE. Comparative effectiveness of pharmacologic interventions for knee osteoarthritis: a systematic review and network meta-analysis. Ann Intern Med. 2015;162(1):46-54.
8. Neogi T, Guermazi A, Roemer F, Nevitt M, Scholz J, Arendt-Nielsen L, et al. Joint inflammation is associated with pain sensitization in knee osteoarthritis: The Multicenter Osteoarthritis Study. Arthritis Rheumatol. 2015.

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