

DUE Quarterly

DRUG USE IN THE ELDERLY

April 2012

PROMOTING MORE EFFECTIVE MEDICATION USE BY SENIORS

Treatment of Osteoarthritis in the Elderly

Osteoarthritis (OA) is a progressive, incurable joint disease resulting in the breakdown of cartilage and bone. Although OA increases with age, it is not considered a normal part of aging. 4.4 million Canadians have OA and almost everyone over the age of 65 has OA in at least one joint. This disease has a tremendous economic and personal cost. In 2010, the direct costs (e.g., medications, health care provider visits, hospitalizations) and indirect costs (e.g., loss to the economy) of OA were \$27.5 billion. It is the most common reason patients seek disability. These costs will increase substantially in the future because of the aging population and increasing obesity rates – the two major risk factors for OA.

Although osteoarthritis increases with age, it is not considered a normal part of aging.

OA most commonly affects the weight-bearing joints and the hands. Diagnosis and treatment of OA in the senior population may be challenging because of the wide variety of presentations and also the presence of co-morbidities that can mimic or coexist with OA.

Treatment

Although there is no cure for OA, treatment can have a meaningful impact on pain levels, function and quality of life. There are no disease-modifying agents currently available for OA. Challenges treating OA include:

- Lack of access or availability to treatments.
- Limited effectiveness of existing therapies.
- Contraindications to treatment because of medical co-morbidities.
- Difficulties with patients adhering to treatments.

Non-pharmacologic treatment

Non-pharmacologic treatments are the cornerstone of OA treatment:

- Obesity is a major risk factor for developing OA and weight loss has been shown to improve OA symptoms in weight-bearing joints. A recent report suggests that \$17 billion in indirect and direct costs could be saved over the next 10 years if obesity rates could be reduced by 50%.
- Regular exercise improves muscle strength, tone and balance, and will help with weight loss.
- Physiotherapy, including strengthening of specific muscles, may reduce the progression of OA. Improvements in joint range of movement, and ultimately function, may occur. Local modalities such as ultrasound

(deep heat) provide temporary pain relief.

- Occupational therapy to assess for splints, foot orthotics, braces and assistive devices (e.g., canes, long-handled shoe horns, etc.) will help to improve function.
- Patient self-management programs employing education on symptom control, diet, stretching and exercise empower patients with greater confidence to control their disease.
- “Mind/body” interventions such as yoga and tai chi may prove helpful for some individuals.

Pharmacologic treatment

Goals of pharmacologic treatment are pain relief and improved function, not reversal of the disease.

Acetaminophen

- First line choice in elderly due to safety, efficacy.



DUE Quarterly offers expert opinions – not ACP-AMA guidelines or evaluations of drug use.

- *Mechanism of action:* Works centrally by decreasing prostaglandin activity and peripherally by decreasing pain transmission. No anti-inflammatory activity.
- Regularly scheduled dosing beneficial.
- Concern with use of multiple products containing acetaminophen (e.g., cough/cold preparations) resulting in unintentional overdose.
- *Side effects:* Minimal, generally well tolerated.
- *Drug interactions:* Minimal, rarely warfarin.
- *Geriatric dosing:* No change needed; use cautiously in patients with liver disease or alcoholism.

NSAIDs (Non steroidal anti-inflammatories)

- Includes acetylsalicylic acid, ibuprofen, naproxen, diclofenac, indomethacin, celecoxib.
- Not recommended as first line in elderly due to side effects.
- *Mechanism of action:* Decreases COX-1 and COX-2 enzyme activity, thus blocking prostaglandin synthesis cascade involved in pain. Also has anti-inflammatory activity.
- *Side effects:* Gastrointestinal (GI) bleeding, renal impairment, fluid retention (worsening edema, hypertension, congestive heart failure), GI upset/nausea, platelet inhibition.
- *Drug interactions:* Warfarin, prednisone (increased bleed risk); angiotensin-converting-enzyme (ACE) inhibitors (increased risk of renal dysfunction); lithium.
- *Geriatric dosing:* Use minimal doses possible for shortest time possible; take with food.
- Concern with patient self-treatment with non-prescription NSAIDs.
- May be prescribed with proton-pump inhibitor, H2 blocker, or misoprostol to decrease GI bleed risk.

- Celecoxib (COX-2 specific inhibitor) may have less GI side effects, but still has similar cardiovascular risks.

Narcotics

- Second line choice in elderly (safer than NSAIDs for geriatrics).
- Include codeine, morphine, oxycodone, hydromorphone, fentanyl, tramadol, meperidine.
- *Mechanism of action:* Work on opioid receptor in central nervous system to decrease pain sensation. No anti-inflammatory activity.
- *Side effects:* Sedation, drowsiness (increased fall risk, decreased cognition), constipation, nausea, respiratory depression.
- *Drug interactions:* CNS depressants (additive effect); tramadol with selective serotonin reuptake inhibitors (SSRIs) (serotonin syndrome possible).
- Low-dose codeine (+acetaminophen) is available without a prescription.
- *Geriatric dosing:* Renal dysfunction and dehydration increases risk of toxicity due to accumulation of metabolites (especially with morphine, meperidine – thus oxycodone, hydromorphone are better choices in elderly); start low and taper up slowly.
- Narcotic patches not recommended in elderly due to risk of respiratory depression.
- Titrate using immediate release formulation, can change to extended release once dose stable.
- Avoid sudden discontinuation to prevent withdrawal symptoms.
- Development of tolerance or toxicities may require opioid rotation.
- Stigma to narcotics for patients; reluctance of prescribers to use due to dependence, addiction concerns.
- May be prescribed with laxatives prophylactically to prevent constipation.

Injectables

Corticosteroids (methylprednisolone, triamcinolone)

- Effective and safe option in elderly.
- For OA in hands, feet, knees, hips, shoulders (some may need to be done under fluoroscopy).
- Limit number of injections per joint to three to four per year to avoid damaging joint.
- Analgesia onset in days, can last for months.
- *Side effects:* Injection site reaction, infection risk.

Hyaluronate

- *Mechanism of action:* Replaces synovial fluid components in joint.
- Usually for knee joint OA.
- Usually three consecutive weekly injections, but may be a single injection.
- *Side effects:* Injection site reaction, expensive cost.
- Duration of benefit up to six months.

Topicals

Diclofenac

- Effective and safe option in elderly.
- Formulated in vehicles such as pluronic lecithin organogel (PLO) or dimethyl sulfoxide (DMSO).
- Low dose available without prescription.
- Minimal systemic absorption, but possible concern if applied to large areas.
- Massage effect of application also beneficial.

Capasaicin

- Depletes substance P, thus decreasing pain.
- Regular dosing required, two to four times daily in order to be effective.
- Onset takes a number of weeks .
- May sting skin initially – caution with sensitive skin.

Practically speaking . . .

DIAGNOSIS OF OSTEOARTHRITIS

HISTORY

- Joint pain aggravated by weight bearing or use.
- Stiffness in the morning or after sitting typically lasting less than 30 minutes.
- Night pain (if present) is often positional.
- Fatigue especially if sleep is disturbed.
- Absence of fever, weight loss or rashes.
- Muscle weakness, reduced mobility and ultimately loss of function may occur.

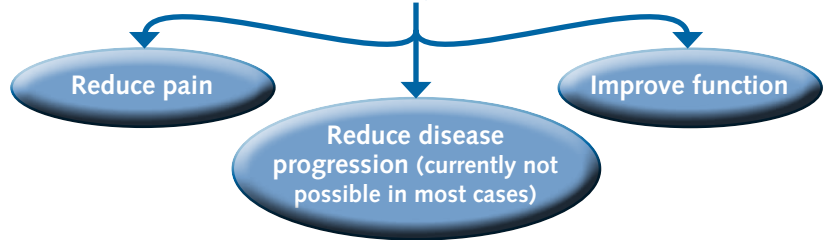
PHYSICAL EXAM

- Joint tenderness.
- Joint effusion may or may not be present.
- Joint is usually cool (or slightly warm) with no erythema.
- Crepitus and decreased range of movement with atrophy of surrounding muscles.
- Palpable bony enlargement of the joint due to the presence of osteophytes.

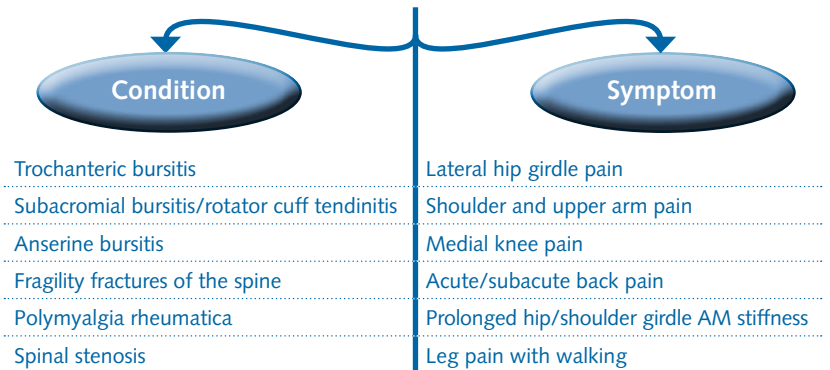
INVESTIGATIONS

- Laboratory tests are normal unless there are medical co-morbidities.
- Radiographs will typically show joint space narrowing, sclerosis and osteophytes.
- It is not necessary to order an X-ray to establish the diagnosis.

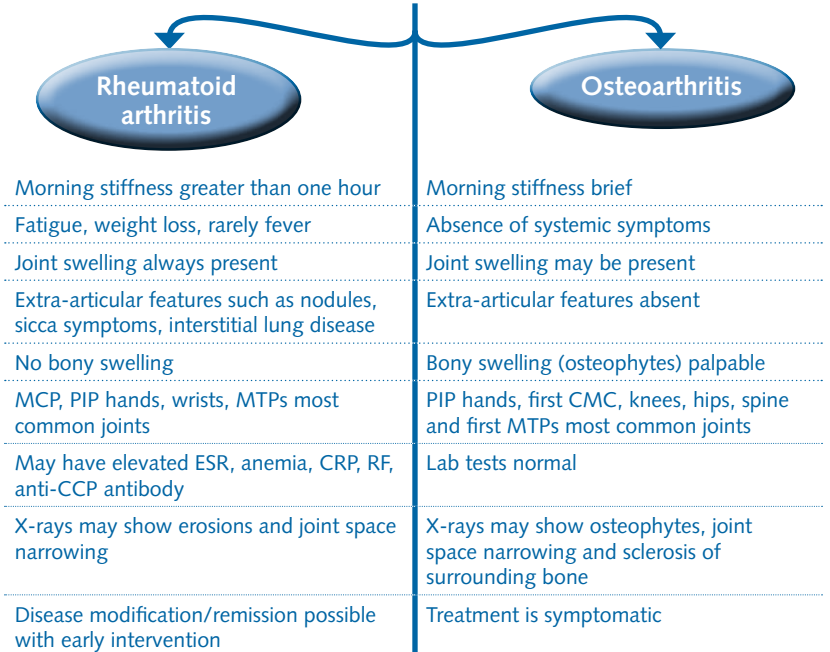
Goals of treating osteoarthritis



Musculoskeletal conditions that may co-exist with osteoarthritis



Rheumatoid arthritis vs. osteoarthritis



- MCP – metacarpophalangeal
- PIP – proximal interphalangeal
- MTP – metatarsophalangeal
- CMC – carpometacarpal

- ESR – erythrocyte sedimentation rate
- CRP – C reactive protein
- RF – rheumatoid factor
- CCP – cyclic citrullinated peptide

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- Wash hands after application to avoid eye and mucous membrane contact.

Counterirritants (Menthol, methylsalicylate, camphor)

- Cause local irritation, leading to generalized pain relief in joint.
- Warming or cooling sensation.
- Option for mild OA.
- Massage effect of application also beneficial.
- Caution with sensitive skin.
- Avoid applying heat sources simultaneously to avoid burns.

Herbals

Glucosamine +/- Chondroitin

- Component of glycosaminoglycans in joint, thus replaces building blocks of cartilage.
- Some clinical evidence of benefit.
- Onset takes about one month.
- Side effect minimal, possible GI upset.
- Glucosamine caution in patients with shell fish allergy and in diabetics (may increase glucose levels).
- Possible interaction with warfarin (increased INR).

Surgery

The advent of hip and knee replacement surgery has been a major advance in improving the lives of many patients:

- There are no strict guidelines as to who would best benefit from surgery.
- Surgery is typically considered for those individuals who fail to have adequate symptom control despite conservative means.
- The surgical risk of the patient weighs heavily in the decision.

The role of the pharmacist

Due to their accessibility, pharmacists may often be an initial point of contact for patients seeking treatment for painful arthritic conditions including OA.

Pharmacists may thus play a part in:

- Educating patients on OA, and referring them to appropriate resources.
- Recommending and encouraging use of non-drug measures.
- Referring patients with warning features (red/swollen joints, etc.) to primary care providers for further assessment.
- Assisting in selection of safe non-prescription medication options and dosing, based on patient's history, age, concurrent medications, co-morbid medical conditions, allergies.

When to refer

It is not feasible or necessary for rheumatologists or orthopedic surgeons to see all patients with OA. Some factors to consider in referring a patient would include:

- Cases where the diagnosis is unclear.
- Where suspicion exists regarding a concomitant inflammatory condition such as polymyalgia rheumatica or rheumatoid arthritis.
- Patients that are having inadequate symptom control despite treatment.
- Patients with complicated medical co-morbidities precluding standard treatments.
- Cases that might benefit from injection-type therapies and the primary care provider is not comfortable providing these therapies.
- Those patients where surgery is indicated.

Resources

Arthritis Society - www.arthritis.ca
The Arthritis Society is a not-for-profit organization dedicated to providing and promoting arthritis education, community support and research-based solutions.

Joint Health - www.jointhehealth.org
Owned and operated by Arthritis Consumer Experts (ACE). ACE provides free education and information programs to people with arthritis.

Rheuminfo - www.rheuminfo.com
This website contains a wealth of educational resources and tools for both patients and physicians.

Edmonton Rheumatology - www.edmontonrheumatology.com
Edmonton Rheumatology was started as a resource for patients, medical students, residents and physicians on all aspects related to rheumatology in Edmonton. However, the website provided excellent general information on arthritis.

References available online
www.albertadoctors.org/DUEQuarterly/index

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We'd like your feedback . . .

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