High Impact Rheumatology

Evaluation and Management of Osteoarthritis

Osteoarthritis: Case 1

- A 65-year-old man comes to your office complaining of knee pain that began insidiously about a year ago. He has no other rheumatic symptoms
  - What further questions should you ask?
  - What are the pertinent physical findings?
  - Which diagnostic studies are appropriate?

OA: Symptoms and Signs

- Pain is related to use
- Pain gets worse during the day
- Minimal morning stiffness (<20 min) and after inactivity (gelling)
- Range of motion decreases
- Joint instability
- Bony enlargement
- Restricted movement
- Crepitus
- Variable swelling and/or instability
OA Case 1: Radiographic Features

- Joint space narrowing
- Marginal osteophytes
- Subchondral cysts
- Bony sclerosis
- Malalignment
- NAILS THE DIAGNOSIS

OA: Laboratory Tests

- No specific tests
- No associated laboratory abnormalities; eg, sedimentation rate
- Investigational: Cartilage degradation products in serum and joint fluid

OA: Risk Factors

- Why did this patient develop osteoarthritis?
OA: Risk Factors (cont’d)

- Age: 75% of persons over age 70 have OA
- Female sex
- Obesity
- Hereditary
- Trauma
- Neuromuscular dysfunction
- Metabolic disorders

Case 1: Cause of Knee OA

- On further questioning, patient recalls fairly serious knee injury during sport event many years ago
- Therefore, posttraumatic OA is most likely diagnosis

Case 1: Prognosis

- Natural history of OA: Progressive cartilage loss, subchondral thickening, marginal osteophytes
OA: Case 2

- A 75-year-old woman presents to your office with complaints of pain and stiffness in both knees, hips, and thumbs. She also has occasional back pain.
- Family history reveals that her mother had similar problems.
- On exam she has bony enlargement of both knees, restricted ROM of both hips, squaring at base of both thumbs, and multiple Heberden’s and Bouchard’s nodes.

Distribution of Primary OA

- Primary OA typically involves variable number of joints in characteristic locations, as shown.
- Exceptions may occur, but should trigger consideration of secondary causes of OA.

Age-Related Prevalence of OA: Changes on X-Ray

[Graph showing age-related prevalence of OA for men and women, with prevalence plotted against age (years) for different joints such as DIP, Knee, and Hip.]
Case 2: Distal and Proximal Interphalangeal Joints

Radiograph shows severe changes
Most common location in hand
May cause significant loss of function

Case 2: Carpometacarpal Joint

- Radiograph shows severe changes
- Most common location in hand
- May cause significant loss of function

Case 2: Hip Joint

- X-ray shows osteophytes, subchondral sclerosis, and complete loss of joint space
- Patients often present with deep groin pain that radiates into the medial thigh
What If Case 2 Had OA in the “Wrong” Joint, eg, the Ankle?

- Then you must consider secondary causes of OA
- Ask about previous trauma and/or overuse
- Consider neuromuscular disease, especially diabetic or other neuropathies
- Consider metabolic disorders, especially CPPD (calcium pyrophosphate deposition disease—aka pseudogout)

Secondary OA: Diabetic Neuropathy

- MTPs 2 to 5 involved in addition to the 1st bilaterally
- Destructive changes on x-ray far in excess of those seen in primary OA
- Midfoot involvement also common

Underlying Disease Associations of OA and CPPD Disease (pseudogout)

- Hemochromatosis
- Hyperparathyroidism
- Hypothyroidism
- Hypophosphatasia
- Hypomagnesemia
- Neuropathic joints
- Trauma
- Aging, hereditary
Management of OA

- Establish the diagnosis of OA on the basis of history and physical and x-ray examinations
- Decrease pain to increase function
- Prescribe progressive exercise to
  - Increase function
  - Increase endurance and strength
  - Reduce fall risk
- Patient education: Self-Help Course
  - Weight loss
  - Heat/cold modalities

Pharmacologic Management of OA

- Nonopioid analgesics
- Topical agents
- Intra-articular agents
- Opioid analgesics
- NSAIDs
- Unconventional therapies

Strengthening Exercise for OA

- Decreases pain and increases function
- Physical training rather than passive therapy
- General program for muscle strengthening
  - Warm-up with ROM stretching
  - Step 1: Lift the body part against gravity, begin with 6 to 10 repetitions
  - Step 2: Progressively increase resistance with free weights or elastic bands
  - Cool-down with ROM stretching

Reconditioning Exercise Program for OA

• Low-impact, continuous movement exercise for 15 to 30 minutes 3 times per week
• Fitness walking: Increases endurance, gait speed, balance, and safety
• Aquatics exercise programs—group support
• Exercycle with minimal or no tension
• Treadmill with minimal or no elevation

Nonopioid Analgesic Therapy

• First-line—Acetaminophen
  • Pain relief comparable to NSAIDs, less toxicity
  • Beware of toxicity from use of multiple acetaminophen-containing products
  • Maximum safe dose = 4 grams/day

Nonopioid Analgesic Therapy (cont’d)

• NSAIDs
  • Use generic NSAIDs first
  • If no response to one may respond to another
  • Lower doses may be effective
  • Do not retard disease progression
  • Gastroprotection increases expense
  • Side effects: GI, renal, worsening CHF, edema
  • Antiplatelet effects may be hazardous
Nonopioid Analgesics in OA

- Cyclooxygenase-2 (COX-2) inhibitors
  - Pain relief equivalent to older NSAIDs
  - Probably less GI toxicity
  - No effect on platelet aggregation or bleeding time
  - Side effects: Renal, edema
- Older populations with multiple medical problems not tested
- Cost similar to generic NSAIDs plus proton pump inhibitor or misoprostol

Medical Letter. 1999;41:11–12.

Nonopioid Analgesics in OA (cont’d)

- Tramadol
  - Affects opioid and serotonin pathways
  - Nonulcerogenic
  - May be added to NSAIDs, acetaminophen
  - Side effects: Nausea, vomiting, lowered seizure threshold, rash, constipation, drowsiness, dizziness

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Opioid Analgesics for OA

- Codeine, oxycodone
  - Anticipate and prevent constipation
  - Long-acting oxycodone may have fewer CNS side effects
- Propoxyphene
  - Morphine and fentanyl patches for severe pain interfering with daily activity and sleep

Topical Agents for Analgesia in OA

- Local cold or heat: Hot packs, hydrotherapy
- Capsaicin-containing topicals
  - Use well supported by evidence
  - Use daily for up to 2 weeks before benefit
  - Compliance poor without full instruction
  - Avoid contact with eyes
- Liniments = methyl salicylates
  - Temporary benefit

OA: Intra-articular Therapy

- Intra-articular steroids
  - Good pain relief
  - Most often used in knees, up to q 3 mo
  - With frequent injections, risk infection, worsening diabetes, or CHF
- Joint lavage
  - Significant symptomatic benefit demonstrated
- Hyaluronate injections*
  - Symptomatic relief
  - Improved function
  - Expensive
  - Require series of injections
  - No evidence of long-term benefit
  - Limited to knees

OA: Unconventional Therapies
• Polysulfated glycosaminoglycans—nutriceuticals
• Glucosamine +/- chondroitin sulfate: Symptomatic benefit, no known side effects, long-term controlled trials pending
• Tetracyclines as protease/cytokine inhibitors
  • Under study
  • Have disease-modifying potential

OA: Unconventional Therapies (cont’d)
• Keep in touch with current information. The unconventional may become conventional
  • www.quackwatch.com
  • ACR Website (http://www.rheumatology.org)
  • Arthritis Foundation Website (www.arthritis.org)

Surgical Therapy for OA
• Arthroscopy
  • May reveal unsuspected focal abnormalities
  • Results in tidal lavage
  • Expensive, complications possible
• Osteotomy: May delay need for TKR for 2 to 3 years
• Total joint replacement: When pain severe and function significantly limited
OA: Management Summary

• First: Be sure the pain is joint related (not a tendonitis or bursitis adjacent to joint)
• Initial treatment
  • Muscle strengthening exercises and reconditioning walking program
  • Weight loss
  • Acetaminophen first
  • Local heat/cold and topical agents

OA: Management Summary (cont’d)

• Second-line approach
  • NSAIDs if acetaminophen fails
  • Intra-articular agents or lavage
  • Opioids
• Third-line
  • Arthroscopy
  • Osteotomy
  • Total joint replacement