

Diagnosis & Nonoperative Treatment of the Osteoarthritic Knee

Randall R Wroble MD

Orthopedic One

Columbus OH

“There are 2 things a good doctor does”

- First Step:

- Finds out what's wrong

- Second step

- Makes the patient feel better

A Case Of A Painful Knee

60 year old male with unilateral
medial knee pain

- This is most likely OA.
- But how do we establish the diagnosis?

History

- Mild twisting injury working at home in his yard 2 months ago
 - Chronic vs acute
- Pain is on the medial side of the knee. There is moderate diffuse swelling but no warmth, redness, or fever.
 - Soft tissue injury?
 - Infection unlikely
 - Should we consider arthrocentesis?
- There is no catching, locking or giving way
 - Mechanical symptoms suggest diagnoses like meniscal tear
 - MRI? – note that we won't be discussing MRI anywhere else!
 - Orthopedic referral?

History

- One previous episode of knee pain 18 months ago. Resolved with OTC medication
 - Recurrent - flare-up?
- No previous surgery on this knee
- No other joints hurt or swell
 - Inflammatory arthritis or rheumatoid arthritis most often polyarticular

Medical History

- HTN – Losartan/HCTZ
- Mild GERD – PPI PRN
- No cardiac meds
- No renal or liver disease
- NKDA

- NSAID risk is moderate
- Acetaminophen should be ok

Social History

- Works as an auto mechanic
 - Physical job – discuss as part of plan
- Wants to bike and jog
 - Understand activity goals and need to modify

Physical Exam

- Afebrile
 - Systemic symptoms are a late finding in peri-articular or joint infection
- BMI = 40
 - Need to discuss optimization of body weight
- Gait – antalgic
- Reduced quad muscle size and poor tone
 - Fall risk?
 - Needs an exercise program

Knee Exam

- Moderate effusion
 - Arthrocentesis criteria
 - Tense and painful
 - Significant quad inhibition
 - Diagnostic – infection, hemarthrosis, RA/IA
- ROM nearly full. Pain at extremes

Knee exam

- Tenderness medially including medial femoral condyle, joint line and medial tibial plateau
 - MCL, meniscus injury?
- No pain with valgus stress. Rest of ligament exam WNL
 - MCL injury painful with valgus
 - Detailed ligament requires experience
- Patellar exam – mild peri-patellar tenderness and crepitus

Physical exam

- Standing alignment – mild but obvious varus.
Increased on affected side
 - Fracture/bony deformity?
 - Joint space narrowing?
 - Brace candidate?
- Hip ROM full and pain-free. Lumbar spine is stiff but SLR is negative
 - Hip OA and sciatica are 2 conditions that can cause pain referred to the knee

X-rays

- To confirm the diagnosis, must have X-rays
 - Order the optimal series – always weight-bearing
 - Prefer:
 - AP in slight flexion
 - Lateral
 - Tangential patella (Merchant view, e.g.)

Typical X-ray findings in OA

- Joint space narrowing
- Peripheral osteophytes
- Subchondral sclerosis
- Single or multiple compartments (medial, lateral, patellofemoral)

X-ray results

- Mild medial joint space narrowing
 - Not “bone on bone”
- Small medial peripheral osteophytes
- Mild subchondral sclerosis
- No significant abnormalities lateral or PF
- No fractures, bony deformity, or other joint or soft tissue abnormality

Arthrocentesis

- Obtained 30cc clear, yellow fluid
 - No hemarthrosis
 - Unlikely infectious – C & S
 - Unlikely IA/RA
 - Crystal analysis
 - Cell count

Blood tests

- None performed – minimal suspicion
 - Consider ESR, CRP, ANA, anti-CCP, RhF when appropriate based on H&P
 - Rheumatology referral

Diagnosis - Mild to moderate medial compartment osteoarthritis

Additional scans?



Nonoperative treatment - goals

- Optimize Nonoperative treatment
- Optimize Quality of Life
- Minimize risk
- Monitor appropriately

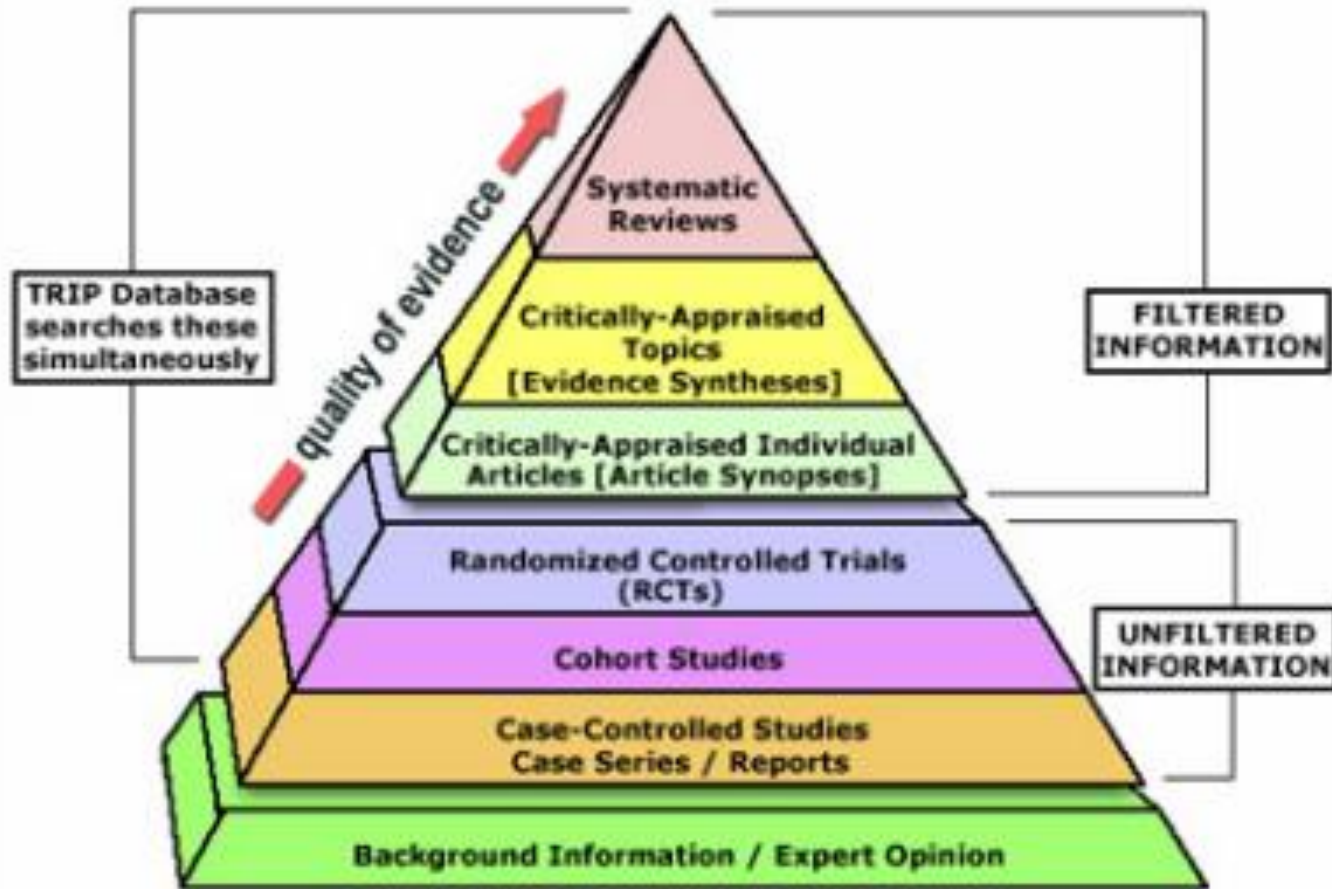
Nonoperative treatment – general aspects of the treatment plan

- Includes a combination of modalities including pharmacological (oral, topical, injectable) and non-pharmacological (lifestyle modifying, bracing, or complementary/alternative)
- Progresses in a stepwise fashion if the patient does not respond and symptoms persist

Treatment Guidelines

- Many medical organizations have published guidelines that are very similar in the big picture
- But, vary substantially in the details
- Our discussion today is based on a synthesis of the literature, the guidelines, and experience
- Won't discuss PRP and MSC in OA treatment – too new, not enough known at this time

Current State of the Evidence



Current Reality



Initial treatment plan

1. Education

- Arthritis is:
 - Progressive
 - Incurable
 - And is in large part treated symptomatically

2. Lifestyle/Activity Modification

- Low impact – no running
- Discuss job options

Initial treatment plan

3. Optimize weight – lower BMI

- Dietician consultation
- This is difficult – don't make patient feel successful treatment hinges on this

4. Exercise

- Titrate by comfort. Post exercise swelling and pain means too strenuous
- Goals
 1. Strength – quads are the shock absorbers of the knee
 2. Help with weight management
 3. Balance – mitigates fall risk
 4. Range of motion

How to achieve exercise goals

- Self/Home exercise
 - Huge compliance issue unless habitual exerciser
- Physical therapy
 - The habitual exerciser may benefit from 2 or 3 sessions for instruction in a home/gym program
 - Most patients, BIW x 6 weeks
 - Land – conventional PT
 - Aqua – good for highly symptomatic, obese or limited mobility
 - Barriers – acceptance, availability

Initial treatment plan

5. Acetaminophen

- No more than 4 grams daily
- Caution in any patient with renal impairment

6. Glucosamine/Chondroitin

- Research studies and meta-analyses mixed but overall the combination appears better than placebo
- Disease modifying?
 - Structural effects on articular cartilage

Nonpharmacological/Complementary options to consider at treatment onset or later

- Knee sleeve
 - Patellar taping
 - Wedge insoles
 - Acupuncture
 - TENS
-
- Not a lot of research support or positive guideline recommendations!

After 6 weeks of treatment, the patient reports essentially no change in his symptoms

Next step - NSAIDs

- Oral
 - Low dose, short course
 - Use with PPI?
 - Naproxen safer?
 - Response variable – try two from different classes
 - Disadvantages – Renal/BP/GI/Cardiac

Next step - NSAIDs

- Topical
 - Consider in older patients and those with higher medication risk
 - Diclofenac, e.g.
 - Lidocaine patches
- Role of opioids – discussed, but not for me in current climate

The patient tried Naproxen and Etodolac for 3 weeks each. He continued to exercise regularly, but still experienced no substantial relief

Next steps

- Viscosupplementation
 - Varying recommendations
 - Mechanism of action
 - Lubrication
 - Analgesic
 - Anti-inflammatory –PGE2
 - Modification of HA synthesis
 - Excellent safety profile
 - Injection technique important – must be intra-articular
 - NOT for severe OA

My preference

- Bio-engineered – no avian contaminants
- Long chain, high molecular weight – closer to native hyaluronan
- Orthovisc, Euflexxa
- Synvisc – higher rate of local reaction compared to other products

Bracing

- Unloader
 - Good research studies
 - Optimal candidate: developed musculature, small soft tissue envelope, males - better aesthetic acceptance
 - Work best with active job or for recreation
- Sleeves – modest benefit and not a covered service

The patient did a lot of yardwork and pain and swelling have increased substantially. He and his family have a vacation coming up where they will do a lot of walking.

Intra-articular corticosteroid injection

- Great choice for a flare-up and when short-term relief is important
- Acts quickly
- Duration of effect 4 weeks or less
- Low risk – mild systemic effect - blood sugar, e.g.
- Contraindication – infection
- Anecdotal reports and animal models suggest “joint damage” with multiple injections BUT all guidelines recommend and 95% of rheumatologists use them

The patient responds to the injection and has a great vacation, but after several weeks his pain returns to previous level and he is dissatisfied

The obvious next step:

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