Pharmacologic treatment of OA

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ACR 2012 : Nonpharmacologic recommendations for the management of hand OA*

- Evaluate Actvities of daily living(ADLs)
- Instruct joint protection techniques
- Provide assistive devices, as needed, to help patients perform ADLs
- Instruct use of thermal modalities
- Provide splints for patients with trapeziometacarpaljoint OA

ACR 2012 : Pharmacologic recommendations for the initial management of hand OA*

- should use one or more of the following:
  - Topical capsaicin
  - Topical NSAIDs, including trolamine salicylate
  - Oral NSAIDs, including COX-2 selective inhibitors
  - Tramadol
- should not use the following:
  - Intraarticular therapies
  - Opioid analgesics
- persons age 75 years should use topical > oral NSAIDs.

ACR 2012 : Nonpharmacologic recommendations for the management of knee OA

- strongly recommend
  - Participate in aerobic and/or resistance land-based exercise
  - Participate in aquatic exercise
  - Lose weight (for persons who are overweight)
- no recommendations
  - Balance exercises, either alone or in comb. with strengthening exercises
  - Wearing laterally wedged insoles
  - Receiving manual therapy alone
  - Wearing knee braces
  - Using laterally directed patellar taping

ACR 2012 : Nonpharmacologic recommendations for the management of knee OA

- conditionally recommend , should do
  - self-management programs,
  - manual therapy in combination with supervised exercise
  - psychosocial interventions
  - medially directed patellar taping
  - medially wedged insoles if they have lateral compartment OA
  - laterally wedged subtalar strapped insoles if medial comp. OA
  - thermal agents, walking aids
  - tai chi, traditional Chinese acupuncture,
  - transcutaneous electrical stimulation

ACR 2012 : Pharmacologic recommendations for the initial management of knee OA

- conditionally recommend
  - Acetaminophen/ Oral NSAIDs
  - Topical NSAIDs
  - Tramadol
  - Intraarticular corticosteroid injections
- should not
  - Chondroitin sulfate/Glucosamine/Topical capsaicin
- no recommendations
  - **intraarticular hyaluronates**, duloxetine, and opioid analgesics

ACR 2012 : Nonpharmacologic recommendations for the management of hip osteoarthritis (OA)

- strongly recommend
  - cardiovascular and/or resistance landbased exercise
  - aquatic exercise
  - Lose weight (for persons who are overweight)
- conditionally recommend
  - Participate in self-management programs
  - Receive manual therapy in combination with supervised exercise
  - Receive psychosocial interventions

ACR 2012 : Nonpharmacologic recommendations for the management of hip osteoarthritis (OA)

- conditionally recommend
  - Be instructed in the use of thermal agents
  - Receive walking aids, as needed
- no recommendations
  - Participation in balance exercises, either alone or in combination with strengthening exercises
  - Participation in tai chi
  - Receiving manual therapy alone

ACR 2012 : Pharmacologic recommendations for the initial management of hip OA

- recommend
  - Acetaminophen/Oral NSAIDs/Tramadol
  - Intraarticular corticosteroid injections
- should not
  - Chondroitin sulfate/Glucosamine
- no recommendation
  - Topical NSAIDs/Intraarticular hyaluronate injections
  - Duloxetine/Opioid analgesics

AAOS 2013 G/L for Knee OA

- self-management programs, strengthening, low-impact aerobic exercises, and neuromuscular education; and engage in physical activity (strong)
- weight loss for patients with symptomatic osteoarthritis of the knee and a BMI ≥ 25.(mod.)
- C/I : **acupuncture** in patients with symptomatic osteoarthritis of the knee (strong)
- C/I : lateral wedge insoles (mod) glucosamine, chondroitin(strong)
- Inconclusive : **PT, manual Tx.**, valgus directing force brase(medial comp. unloader)

AAOS Recom. for Knee OA

- For : NSAIDs(oral or topical) or Tramadol (strong) valgus producing proximal tibial osteotomy (limited)
- Inconclusive : **acetaminophen,** opioids, or pain patches, **intraarticular (IA) corticosteroids**, growth factor injections and/or platelet rich plasma, arthroscopic partial meniscectomy
- Against : **hyaluronic acid (strong)** needle lavage (mod) arthroscopy with lavage and/or debridement (strong) free-floating (un-fixed) interpositional device (consensus)

Acetaminophen

- Max 4 g/d
- not as effective as NSAIDs
- lower risk of adverse events, GI
- Caution : Overdose(OTC), Hepatotoxicity<pre-existing liver disease, chronic alcohol use, or those who take higher than recommended doses>, prolong the half life of warfarin
- Adequate dosage, take regularly

Oral NSAIDs

- short term treatment
- If simple analgesia & non-pharmacological measures are ineffective.
- caution in elderly, renal, cardiovascular ds, aspirin induced asthma.
- Traditional NSAIDs : GIT (eg. perforation, ulcer, bleeding)
- COX-2 NSAIDs : lower GIT, but MI, stroke, heart failure, HT risks

Oral NSAIDs

- lowest dose, shortest duration esp in elderly pt.
- AAP + NSAID : lower NSAID dose
- intermittent dose taken before aggravating activities
- Analysis of 127 trials (40rofecoxib, 37 celecoxib, 29 valedecoxib/parecoxib, 15 etericoxib and six lumiracoxib) found that **celecoxib** was associated with lower risk of both renal dysfunction (RR 0.61, 95% CI: 0.40–0.94) and hypertension(RR 0.83, 95% CI: 0.71–0.97) compared to rofecoxib.

NSAID UGI S/E

- Age > 65
- Oral glucocorticoids
- Ulcer history
- UGI bleeding history
- Anticoagulant

NSAID reversible renal problem

- Age > 65
- HT
- Heart failure
- Diuretics
- ACEI

Oral NSAIDs : ACR 2012

- If ulcer + no bleeding in the past year → COX-2 inhibitor or 'nonselective NSAID + PPI'
- If ulcer + bleeding in the past year → COX-2 inhibitor + PPI
- **PPI + either a nonselective or COX-2 selective NSAID : cost effective ?**

Oral NSAIDs : ACR 2012

- OA pt with ASA → nonselective NSAID other than ibuprofen +PPI
  - render aspirin less effective d/t pharmacodynamic interaction
  - Not with diclofenac or celecoxib(but COX-2 inh. should not be used)
- C/I of oral NSAIDs : CKD stage IV or V (eGFR < 30 cc/minute)
- CKD III (eGFR : 30~59 cc/min.) on an individual basis

Weak and strong opioids

- at least moderate or severe pain
- After other analgesics or NSAIDS, and in whom joint replacement surgery is contraindicated or delayed.
- start low, slow titration, esp. elderly
- A/E : resp. depression, dry mouth, N/V, dizziness, somnolence, constipation
- Addiction esp., drug/alcohol abuse, psychiatric problems, psychosis or suicidal tendency
- No driving under the influence of opioids
- Withdrawal effects (eg. insomnia, muscle contractions)

Weak and strong opioids

- weak : codeine, propoxyphene, tramadol
- Strong : oxycodone, oxymorphone, fentanyl, morphine sulphate
- adverse effects
  - nausea (30%), constipation (23%), dizziness (20%), somnolence (18%), vomiting (13%)
- Discont. of Tx : in 25% strong, 19% weak opioids, 7% placebo
- Tramadol + Serotonergic drugs : C/I d/t the risk of serotonin syndrome

Intra-articular corticosteroid injection : good RACGP

- for short term treatment : knee, hip OA - acutely painful, swollen joint.
- Rarely, Cx. :
  - fluid retention, hyperglycaemia (particularly in DM pts), HT
  - allergic reaction, postinj. swelling due to increased fluid within the joint, haematoma, and (rarely) infection.
- Synovial fluid is aspirated → corticosteroid into the joint

Topical NSAIDs

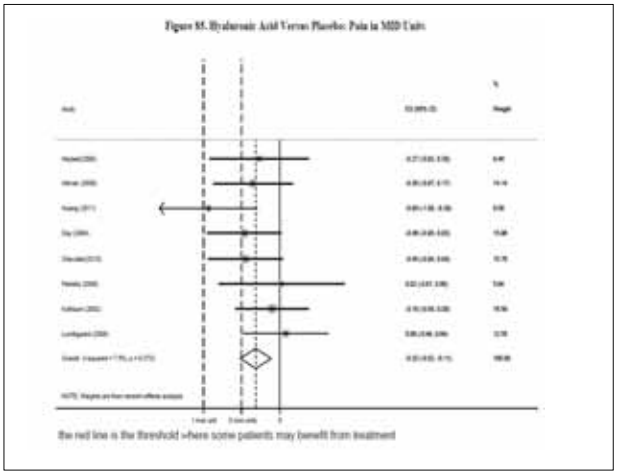
- some evidence : short term, knee, topical NSAIDs. (G3 RACGP)
- By suppression of local prostaglandin synthesis
- local A/E : skin dryness, pruritus and/or rash
- GIT : may be. significantly lower than for oral NSAIDs

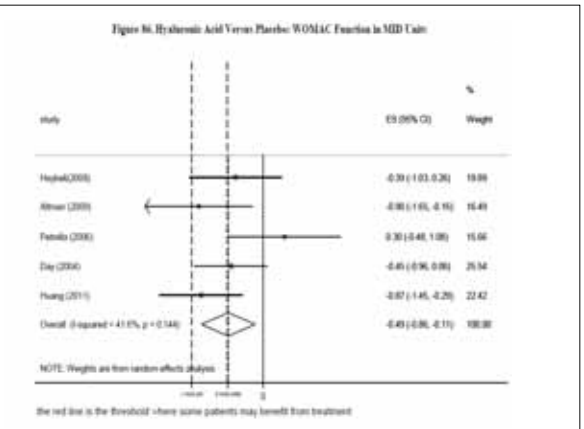
Topical capsaicin

- **weak** evidence, short term, hip and knee(Grade D RACGP)
- **C/I by ACR**
- Local A/E : stinging, burning and erythema are common. diminish with repeated use.
- Apply with a glove : No to eyes and other mucous membranes.
- from chillies
- reduction in sensation - depleting a chemical (substance P. neuropeptide) associated with sensory nerve transmissions.
- only one low quality study

Viscosupplementation (hyaluronan and hylan derivatives) for knee OA

- some evidence (Grade C RACGP) C/I by ACR, AAOS
- Hyaluronic acid :elasticity and lubrication of synovial and cartilage within the joints
- some risks : allergic reaction, postinjection swelling due to increased fluid within the joint, haematoma, and (rarely) infection.
- 1 SR of 76 RCTs : varying levels of benefit for pain, function and global assessment - 5–13 weeks for viscosuppl. vs placebo in knee OA. equivalent to NSAIDs and superior to placebo. Heterogeneity in clinical impact





Viscosupplementation (hyaluronan and hylan derivatives) for hip OA

- no benefit for OA of the hip (Grade C)

growth factor injections and/or platelet rich plasma

- Inconclusive : unable to recommend for or against for patients with symptomatic osteoarthritis of the knee.

Glucosamine hydrochloride and glucosamine sulphate

- remains uncertain(Grade C, RACGP) **C/I ACR, AAOS**
- Caution : contain shellfish extracts-shellfish allergy.
- may elevate blood glucose. GI upsets, sleepiness, headaches and skin reactions
- Insufficient evidence on the safety during pregnancy
- been used as an analgesic and for restorative properties,
- varied results

Chondroitin sulphate

- no benefit in OA of the knee (Grade C) **C/I ACR, AAOS**
- May : bleeding, used cautiously in pts taking anticoagulants
- prevent degradation of articular cartilage by body enzymes
- adverse effects : minor GIT upset
- no benefit over placebo for patients with OA of the knee or hip

JOINS® (200 mg/tab)

- dried roots from C. mandshurica (위령선)& T. kirilowii (괄루근)
  dried flower & stem from P. vulgaris (하고초)
- 연골세포파괴 억제작용
  - 1. free radical에 의한 연골파괴 억제작용 : collagen 및 proteoglycan의 용출을 억제
  - 2. collagenase와 같은 관절분해효소 억제작용 : collagenase-induced osteoarthritis-like change(연골파괴)의 진행 차단
- 용법; 200 mg po tid
- 적응증; 퇴행성관절염, 류마치스관절염
- 부작용; 속쓰림, 소화불량, 위장장애, 부종등