Pharmacologic Therapies in Musculoskeletal Conditions

Melinda S. Loveless, MD*, Adrielle L. Fry, MD

KEYWORDS

• Musculoskeletal pain • Medications • Acute pain • Back pain • Osteoarthritis • Neuropathy • Tendinopathy

KEY POINTS

- There are a wide variety of pharmacologic options for musculoskeletal conditions from the traditional anti-inflammatories and analgesics to topical preparations and nutraceuticals.
- The research regarding effectiveness of medications for musculoskeletal conditions is mixed and limited. Many of the studies are of poor quality.
- Evaluation of an individual's medical comorbidities as well as chronicity and distribution of pain can assist in choosing the most appropriate pharmacologic therapies.
- Different medications are used for acute and chronic pain and for neuropathic versus musculoskeletal pain.

INTRODUCTION

Musculoskeletal (MSK) conditions are common complaints of individuals seeking medical care. Osteoarthritis and back problems are in the top 3 reasons for visits to health care providers.[1,2] The World Health Organization estimates that 25% of adults age 65 or older suffer from MSK conditions.[2] In addition, osteoarthritis affects approximately 9% of American adults by the age of 60.[3] In the population 20 to 89 years of age, back pain and sciatica are present in up to 27% of individuals.[2] Treatments for these conditions are often multimodal, including modification of activity, modalities such as ice or heat, physical therapy, and medications. This article reviews the pharmacologic therapy options for treatment of MSK conditions.

Disclosure Statement: The authors have nothing to disclose.
Department of Rehabilitation Medicine, University of Washington, 325 Ninth Avenue, Box 359721, Seattle, WA 98104, USA
* Corresponding author.
E-mail address: mlovel@uw.edu

Med Clin N Am 100 (2016) 869–890
http://dx.doi.org/10.1016/j.mcna.2016.03.015 **medical.theclinics.com**
0025-7125/16/$ – see front matter

ACUTE MUSCULOSKELETAL PAIN

Acute MSK pain is common, and there are many causes, including muscle strains, ligament sprains, tendonitis, bony injuries, and joint or cartilage injuries. By definition, acute pain does not require long-term treatment with analgesic medications,[4] but analgesic medications can be effective for relieving pain and improving function. The most commonly used analgesic medications are oral and topical nonsteroidal anti-inflammatory drugs (NSAIDs), acetaminophen, tramadol, and opioids. Oral NSAIDs and acetaminophen are available over the counter and are generally effective for most mild-to-moderate pain. Acetaminophen and NSAIDs have been found to be fairly equivalent for most MSK pain, but may be more effective in combination.[5] Tramadol can be useful in individuals in whom NSAIDs and acetaminophen are either not indicated or not effective and in whom opioids are not indicated. Opioid medications are more potent analgesics and appropriate in the setting of more severe pain. Combining opioids with acetaminophen or NSAIDs can also provide added benefit.[4]

Oral Nonsteroidal Anti-Inflammatory Drugs

NSAIDs are very effective medications with known anti-inflammatory, analgesic, antipyretic, and antiplatelet effects.[6,7] NSAIDs reversibly inhibit the cyclooxygenase (COX) -1 and -2 enzymes, which block prostaglandin synthesis.[7] Different NSAIDs have varying degrees of effect on COX-1 and COX-2. Traditional NSAIDs are nonselective, each with varying degrees of COX-1 and COX-2 activity, while newer NSAIDs have been formulated to be COX-2 selective. Although the different NSAIDs have proven equivalent in clinical studies, it is important to remember that individual treatment responses may vary, and different NSAIDs may need to be tried if the response to one NSAID is inadequate.[6,8] NSAIDs are effective in soft tissue impingement, tenosynovitis, sprains, and other soft tissue injuries.[7,9] **Table 1** lists appropriate doses for the most commonly used NSAIDs and considerations in prescribing. The lowest effective dose should be prescribed for the shortest duration necessary.[8]

NSAIDs are known to have many undesirable adverse effects from mild to severe and the adverse effects are generally dose-dependent. All NSAIDs have a black box warning regarding the possible gastrointestinal (GI) and cardiovascular (CV) risks.[10] GI adverse effects, caused by COX-1 inhibition, are most common and include dyspepsia, abdominal discomfort, and ulcer with risk of bleeding and perforation.[6,11] Coadministration of a proton pump inhibitor (PPI), H_2-receptor blocker, or misoprostol with nonselective NSAIDs can reduce the risk of duodenal ulcers, but does not necessarily prevent lower GI tract events.[4,6] There are also risks of renal impairment and increased blood pressure. Last, CV risks of myocardial infarction (MI) and cerebrovascular accident (CVA) increase with NSAIDs, and the risk is thought to be greatest with diclofenac. Naproxen has generally been considered the safest NSAID for those with CV risk, but it also has the potential to reduce the cardioprotective antiplatelet effects of aspirin.[6,12] For those with high CV risk taking aspirin and in whom NSAIDs are deemed necessary, low-dose celecoxib ($\leq$200 mg/d) may be the safest.[6] NSAIDs should be avoided in individuals with a history of MI, coronary artery bypass grafting, congestive heart failure, and CVA.[13] **Table 2** reviews a suggested prescribing algorithm based on CV and GI risk. As older individuals have a higher risk of adverse effects of NSAIDs, the American Geriatrics Society recommends lower doses or avoidance of NSAIDs in individuals over the age of 75.[14] In certain individuals, topical NSAIDs represent a safer and possibly equally efficacious option.