

## Evidence Based Paper

### Acetaminophen, nonsteroidal anti-inflammatory and muscle relaxants in the treatment of acute lower lumbar pain

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#### Clinical Scenario

A 24-year-old obese female presents in the clinic today for lower back pain. She states that she awoke Sunday morning with pain in her lower lumbar region. She rates pain at 5/10 and describes as a constant nagging ache which increases with movement and lifting. She communicates that she works in the infant to Toddler room at a local daycare center and sitting and rocking babies makes her lower back “sore and spasm.” She articulates that she has taken aspirin, Tylenol, BenGay, and has used heat but has had little relief from it. She denies any heavy lifting or straining in past week. She reports that she started the “Biggest Loser” work out video along with Weight Watchers two months ago. She denies any changes in diet, constipation, frequency or urgency with urination, and nausea and vomiting, and unprotected sex.

#### Clinical Question

Is acetaminophen, nonsteroidal anti-inflammatory (NSAIDs), or muscle relaxant a superior treatment for lower lumbar back pain?

#### Articles

Chou, R., & Huffman, L. (2007). Medications for acute and chronic low back pain: a review of the evidence for an American Pain Society/American College of Physicians clinical practice guideline [corrected] [published erratum appears in ANN INTERN MED 2008 Feb 5;148(3):247]. *Annals of Internal Medicine*, 147(7), 505-514. Retrieved from EBSCOhost.

A systematic review of MEDLINE and the Cochrane Database of Systematic Reviews published from 2000-2006 by an expert panel from the American Pain Society and the American College of Physicians. The initial analysis consisted of 1292 of abstract and 1586 citations from randomized trials by the Cochrane Back Group.

Kinkade, S. (2007) Evaluation and treatment of acute low back pain. *American Family of Physicians*. 75 (8), 1181-1188 Retrieved from <http://www.aafp.org/afp/2007/0415/p1181.pdf>

A literature review of 69 references published between 1995-2007 on the evaluation and treatment of acute low back pain. Written by an assistant professor of family medicine and director of predoctoral education at the University of Texas Southwestern Medical School in Dallas.

Roelofs, P.D.D.M, Deuo, R.A, Koes, B.W., Scholten, R.J.P.M, & van Tulder M.W. (2011). Non-steroidal anti-inflammatory drugs for low back pain. *Cochrane Database of Systematic Reviews*, (2), Retrieved from EBSCOhost.

Cochrane systemic review of 65 published randomized and double blind controlled trials to include 11,237 patients between 1969-2007 evaluating NSAIDs in the treatment of low back pain.

## **Summary and Appraisal of Key Evidence:**

According to the Cochrane review by Roelofs, Deyo, Koes, Scholten, and van Tulder (2011) NSAIDs are the most prescribed medication worldwide and are commonly used for treating low back pain. They reviewed 65 studies to include over 11,000 patients of mixed methodology. The authors found that there is moderate evidence that NSAIDs are not more effective than acetaminophen for acute low back pain, but do provide some anti-inflammatory benefit leading to a shorter recovery period. Acetaminophen had fewer side effects when compared to NSAIDs. NSAIDs are effective for short-term symptomatic relief in patients with acute and chronic low back pain.

The APS/ACP guidelines recommend acetaminophen as first line treatment of low back pain of any duration. This recommendation is based on the safety considerations and therapeutic effects derived from studies of other musculoskeletal pain conditions associated with low back pain. When acetaminophen 4 g per day was compared to NSAIDs, acetaminophen was found to be less effective on relief of back pain in some studies; while in other studies there was no significant difference. Most clinicians choose to treat acute low back pain with NSAIDs due to their anti-inflammatory properties, analgesic properties, and blockage of COX-2 enzymes. Muscle relaxants or opioids are considered to be a third line of treatment according to APS/ACP guidelines. According to the APS/ACP guidelines, there is insufficient evidence to conclude that any specific muscle relaxant is superior to others for benefits or harms (Chuo & Huffman, 2007).

Kinkade (2007) states, that there are several studies that have shown no significant advantage of NSAIDs over acetaminophen when treating low back pain. Muscle relaxants should be considered the second line analgesic option and should be used for short periods of time by most patients. Furthermore, there is little evidence from well-designed studies regarding the benefits and harms of opiate use for acute low back pain, and there have been few comparisons with other pain relievers.

## **The Results**

Randomized controlled trials have shown that acetaminophen, NSAIDs, and skeletal muscle relaxants are effective in relieving acute low back pain.

Specific exercises do not help acute low back pain but do help prevent recurrent back pain. The best approach for treatments of lower lumbar pain, is NSAIDs and heat during the acute phase, exercise as tolerated until pain resolves, followed by specific daily back exercises.

A two-week treatment with muscle relaxant drug therapy on a as needed basis may be beneficial in the initial treatment for lower lumbar pain. No medications seem to alter the natural cycle of low back pain episodes.

Bed rest does not help acute pain and only prolongs duration of pain. Patients should be advised to continue ordinary activities within the limits permitted by pain.

## **Areas of Conflict**

The Cochrane review conducted by Roelofs et al (2011) examined studies only of NSAIDs versus acetaminophen. The author's conclusions were that NSAIDs may be slightly more beneficial than acetaminophen due to their anti-inflammatory effects. The authors note that no measures were taken in the clinical trials to prevent co-interventions of alternative treatment therefore it remains unclear if the

reported differences were a result of NSAIDs or a co-treatment. Furthermore, the clinical trials lack long-term follow-up or comparison of other drugs commonly used in the treatment of low back pain.

Chuo and Hoffman (2007) systemic review assessed the harms and benefits of acetaminophen, NSAIDs, skeletal muscle relaxants, antidepressants, benzodiazepines, antiepileptics, opioid analgesics, tramadol, and systemic corticosteroids. The authors explain Tizanidine was found to be superior for treatment of acute low back pain in 8 of 36 trials upon Cochrane review. They state that there is little data regarding the efficacy of opioids and tramadol when treating acute low back pain. Furthermore, opioids can be used in patients whose pain is not controlled with acetaminophen, NSAIDs, and muscle relaxants. Corticosteroids and dual drug therapy, such as acetaminophen with NSAIDs, were found to have no greater benefit over monotherapy; but were associated with higher risk for adverse events. Antidepressants and benzodiazepines were found to be more beneficial in the treatment of chronic back pain. The authors' state, that tricyclic antidepressants such as peroxetine, trazodone, and carisoprodol (a benzodiazepine) were the most effective drugs in this class in treating lower lumbar pain. However, these later treatment choices are accompanied with greater adverse effects.

Kinkade (2007) recommends NSAIDs as a first-line treatment in acute low back pain. He does address that there is conflicting evidence whether NSAIDs are superior to acetaminophen. Moreover, he includes that skeletal muscle relaxants lead to additional pain relief when used with NSAIDs and does not know one particular drug to be superior the others. He goes on write "Two meta-analysis provide strong evidence that muscle relaxants are helpful in the treatment of nonspecific acute low back pain and are most beneficial in the first one to two weeks of treatment" (1183). The author believes that cortical steroid injections have some benefit in short-term use of pain relief. He further discusses the importance of patient education and alternative treatments not otherwise discussed in previous articles. These interventions include massage, acupuncture, heat or ice, manipulation, and physical therapy. He highlighted that prevention is the key intervention and treatment of acute low back pain.

### **Clinical Bottom Line**

Most low back pain is caused by conditions that are troublesome but not progressive or life threatening. The classic presentation is non-radiating pain and stiffness in the lower back, often precipitated by heavy lifting. Randomized control trials showed that acetaminophen, NSAIDs, and skeletal muscle relaxants are effective in relieving acute low back pain. The best approach is acetaminophen or NSAIDs, heat, activity has tolerated, and daily back exercises. The clinician must evaluate the patient's entire clinical picture to include current drug regimens, comorbidities, contraindications, risk to benefit of pharmacotherapy, and quality light for patient when choosing a treatment plan

In the clinical scenario, a focused assessment of abdomen, cardiovascular, lungs and psycho-social was done and showed to be unremarkable. Additionally a urine pregnancy test and urine analysis were done to rule out urinary tract infection and pregnancy. I discussed with the patient the importance of maintaining her normal exercise routine over the next 4-6 weeks while her back heals. She was provided with prescription for Flexeril once a day at night and naproxen twice a day. The Flexeril was dosed at night only, prior to going to sleep due to side effects. Further instructions were given to take Tylenol between naproxen doses as needed for pain relief. She was to return to the clinic if pain worsens or if no relief is provide by medication within 4 weeks.