



# Musculoskeletal Monthly

*An evidence-based newsletter related to the management of musculoskeletal disorders*

## Medication for Acute Low Back Pain: Evidence and Limitations

Last month we discussed a highly effective intervention for acute LBP, manipulation. This month we, we shifted direction a bit and decided to focus on the utilization of medication for treating this condition. Although commonly used, is it safe and effective? Those are the questions we must answer.

Acute low back pain (LBP) is a common and disabling condition and is the most common cause of activity limitation for persons under the age of 45.<sup>1,2</sup> Over 1/3 of those with acute LBP will seek help from a health care provider, the most common being a physician.<sup>3</sup> In fact, low back problems have been reported to be the second most common reason for visiting a primary care physician and the most common reason for an office visit to an orthopedic surgeon, neurosurgeon, and occupational medicine physician.<sup>4,5</sup> These visits accounted for 15 million visits at an estimated cost of 192 million dollars in 1990.<sup>4</sup> Although many people with LBP fully recover over 4 – 6 weeks, pain and disability often persist.<sup>6</sup> Surely with a problem this common and costly, initial treatment should be fairly well agreed upon and have some moderate level of effectiveness, in particular use of medication. Well, think again.

### **FREQUENTLY USED:**

People experiencing LBP commonly self-treat their condition with over-the-counter medication before visiting a health care provider. In one study, over half of patients reported using medication prior to their initial primary care visit, 90% of whom were taking some type of non-steroidal anti-inflammatory (NSAID).<sup>7</sup> However, the cause of LBP can rarely be identified (<10% of cases), with patients typically being given nonspecific diagnoses such as lumbago, lumbar sprain, or strain.<sup>5</sup> Therefore, most medication is typically prescribed for symptomatic relief without a specific diagnostic target. Ironically, the presumed presence of inflammation and reflex muscle tension forms the basis for prescribing NSAIDs and muscle relaxants, yet there is little evidence supporting these 2 pathophysiologic mechanisms as being the primary pain generators in patients with acute LBP.

The most frequently prescribed medications for treating acute LBP include NSAIDs (69%), followed by muscle relaxants (35%) and general analgesics such as acetaminophen/paracetamol (Tylenol) (4%).<sup>5,7</sup> Other medication such as narcotics, corticosteroids, and antidepressants may also be prescribed in certain cases. Despite the conditionally discouraged use of these latter classes of medications and muscle relaxants for uncomplicated acute LBP by most practice guidelines,<sup>8</sup> the use of muscle relaxants (91%), narcotics (62%) and oral corticosteroids (42%) by some physicians may be higher than expected.<sup>9</sup> More recent data from a large (n=23,839) longitudinal survey conducted by the Agency for Health Care Research and Quality and the National Center for Health Statistics found NSAIDs to comprise 26.3% of prescriptions (10% of these being COX-2 inhibitors) and muscle relaxants 18.5% of prescriptions.<sup>10</sup> These proportions indicate less prescription disparity between NSAIDs and muscle relaxants than reported in earlier studies. Ibuprofen and naproxen were the most commonly prescribed NSAIDs (36% and 23%, respectively). Interestingly enough, regional variations in the prescriptions were observed, with subjects in the south being more likely to be prescribed COX-2 inhibitors as were subjects with higher educational levels ( $\geq 12$  grade). In other words, it isn't your clinical presentation as much as it is where you live and education level that determines whether or not you would be prescribed a COX-2 inhibitor. In the case of muscle relaxants prescribed, 67% of these were attributable to only 3 drugs (cyclobenzaprine, carisoprodol, and methocarbamol).<sup>10</sup>

Although medication is frequently prescribed for acute LBP, obtaining a prescription for medication is usually not a patient's primary motivation for visiting their primary care physician.<sup>7</sup> For the majority of patients with LBP, their main concerns center on whether or not they have a serious illness, what is causing their LBP

## **MINIMALLY EFFECTIVE:**

Despite the frequent use of over-the-counter and prescription medication for acute LBP, medication is not very effective in reducing pain and disability associated with this condition. Although precise estimates vary, the effects are generally not much larger than the minimal clinically important difference. In nearly all cases, estimates of effectiveness have also been derived by comparing NSAIDs and muscle relaxants with a placebo (ie. sugar pill) as opposed to a competing intervention with known efficacy such as spinal manipulation<sup>11, 12</sup> or directional preference exercise,<sup>13</sup> making the effectiveness of medication use even less certain. The following is a summary of the effectiveness of these two commonly prescribed medications:

-NSAIDs: There is strong evidence (Oxford Level 1 studies, recommendation grade= A) that orally administered NSAIDs are more effective than placebo (ie. a sugar pill) for short-term pain relief and improving patients' global efficacy rating (1-week) and that the various types of NSAIDs are equally effective.<sup>14</sup> There is moderate evidence (Oxford Level 2 studies, recommendation grade= B) that NSAIDs are not more effective than other medication or other non-pharmaceutical interventions for acute LBP.<sup>14</sup>

-Muscle Relaxants: There is also strong evidence (Oxford Level 1 studies, recommendation grade= A) that orally administered or injected muscle relaxants (non-benzodiazepines) are more effective than placebo (ie. a sugar pill) for short-term pain relief and improving patients' global efficacy rating 1 week later. It is not known whether muscle relaxants alone are more or less effective than Tylenol or NSAIDs and there is no difference in effectiveness between the various types of non-benzodiazepine medications.<sup>15</sup> There is conflicting evidence whether or not a combination of muscle relaxants and NSAIDs are more effective than NSAIDs alone.<sup>14, 15</sup>

## **ADVERSE EFFECTS:**

Side-effects associated with NSAIDs and muscle relaxant use are not trivial and must be considered. In particular, recent press regarding increased cardiac complications in patients using COX-2 medications has increased the need for both clinicians and consumers to be aware of their potential risks.<sup>16, 17</sup> For NSAIDs, numerous side-effects have been reported. Most of these are mild to moderate and related to adverse events of the GI system, but others include dizziness, dry mouth, and edema.<sup>15</sup> Severe harm such as GI bleeds (1-3/100) and death from prolonged use of NSAIDs have been reported as well.<sup>18, 19</sup> Although these severe complications were reported in the elderly being treated for arthritis and not a younger population more characteristic of acute LBP, it is a cause for concern due to the some what

indiscriminate practice patterns frequently associated with NSAID prescription.<sup>18</sup>

Patients taking muscle relaxants alone or in combination with NSAIDs are at increased risk for side-effects (RR=1.5), in particular central nervous system side-effects of drowsiness and dizziness (RR=2.04),<sup>15</sup> which has implications for accidents and events that may occur due to sedation. Additional concern is the delayed recovery reported in patients treated with muscle relaxants and the implications it may have relative to developing a chronic condition.<sup>20</sup> While prescribing these medications for patients with acute LBP may be convenient for both patient and provider, the balance of effectiveness and risk (side-effects) may warrant considering whether more effective interventions are available.

## **ALTERNATIVES:**

The range of treatments for acute LBP suggests that there is no one uniquely successful form of therapy (pharmaceutical included); indeed, the "magic-bullet" approach to the treatment of LBP has proven to be a failure.<sup>23</sup> This really isn't surprising as most spine care specialists either agree or suspect that LBP is not a homogenous entity<sup>24</sup> and there is mounting evidence pertaining to physical therapy interventions that support this contention.<sup>11-13, 21</sup> The concern and need to classify which LBP patients respond best to medication use has been voiced,<sup>25</sup> but no data are currently available to help make that determination.

In the next issue, we will discuss the role of imaging (radiographs and magnetic resonance imaging (MRI)) in the management of LBP.



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1. Verbrugge LM, Patrick DL. Seven chronic conditions: their impact on US adults' activity levels and use of medical services. *Am J Public Health* 1995;85(2):173-82.
2. Luo X, Pietrobon R, Sun SX, Liu GG, Hey L. Estimates and patterns of direct health care expenditures among individuals with back pain in the United States. *Spine* 2004;29(1):79-86.
3. Carey TS, Garrett J, Jackman A, McLaughlin C, Fryer J, Smucker DR. The outcomes and costs of care for acute low back pain among patients seen by primary care practitioners, chiropractors, and orthopedic surgeons. The North Carolina Back Pain Project. *N Engl J Med* 1995;333(14):913-7.
4. Andersson GB. Epidemiological features of chronic low-back pain. *Lancet* 1999;354(9178):581-5.
5. Hart LG, Deyo RA, Cherkin DC. Physician office visits for low back pain. Frequency, clinical evaluation, and treatment patterns from a U.S. national survey. *Spine* 1995;20(1):11-9.
6. Croft PR, Macfarlane GJ, Papageorgiou AC, Thomas E, Silman AJ. Outcome of low back pain in general practice: a prospective study. *Bmj* 1998;316(7141):1356-9.
7. Cherkin DC, Wheeler KJ, Barlow W, Deyo RA. Medication use for low back pain in primary care. *Spine* 1998;23(5):607-14.
8. Koes BW, van Tulder MW, Ostelo R, Kim Burton A, Waddell G. Clinical guidelines for the management of low back pain in primary care: an international comparison. *Spine* 2001;26(22):2504-13; discussion 13-4.
9. Di Iorio D, Henley E, Doughty A. A survey of primary care physician practice patterns and adherence to acute low back problem guidelines. *Arch Fam Med* 2000;9(10):1015-21.
10. Luo X, Pietrobon R, Curtis LH, Hey LA. Prescription of Nonsteroidal Anti-inflammatory Drugs and Muscle Relaxants for Back Pain in the United States. *Spine* 2004;29(23):E531-E7.
11. Childs JD, Fritz JM, Flynn T, Irrgang JJ, Delitto A, Johnson KK. Validation of a clinical prediction rule to identify patients with low back pain likely to benefit from spinal manipulation: A validation study. *Ann Intern Med* 2004;141(12):920-8.
12. Fritz J, Delitto A, Erhard RE. Comparison of classification-based physical therapy with therapy based on clinical practice guidelines for patients with acute low back pain: a randomized clinical trial. *Spine* 2003;28(13):1363-71.
13. Long A, Donelson R, Fung T. Does it Matter Which Exercise? A Randomized Control Trial of Exercise for Low Back Pain. *Spine* 2004;29(23):2593-602.
14. van Tulder MW, Scholten RJ, Koes BW, Deyo RA. Nonsteroidal anti-inflammatory drugs for low back pain: a systematic review within the framework of the Cochrane Collaboration Back Review Group. *Spine* 2000;25(19):2501-13.
15. van Tulder MW, Touray T, Furlan AD, Solway S, Bouter LM. Muscle relaxants for nonspecific low back pain: a systematic review within the framework of the cochrane collaboration. *Spine* 2003;28(17):1978-92.
16. Solomon SD, McMurray JJ, Pfeffer MA, et al. Cardiovascular risk associated with celecoxib in a clinical trial for colorectal adenoma prevention. *N Engl J Med* 2005;352(11):1071-80.
17. Bresalier RS, Sandler RS, Quan H, et al. Cardiovascular events associated with rofecoxib in a colorectal adenoma chemoprevention trial. *N Engl J Med* 2005;352(11):1092-102.
18. Smalley WE, Ray WA, Daugherty JR, Griffin MR. Nonsteroidal anti-inflammatory drugs and the incidence of hospitalizations for peptic ulcer disease in elderly persons. *Am J Epidemiol* 1995;141(6):539-45.
19. Tamblyn R, Berkson L, Dauphinee WD, et al. Unnecessary prescribing of NSAIDs and the management of NSAID-related gastropathy in medical practice. *Ann Intern Med* 1997;127(6):429-38.
20. Bernstein E, Carey TS, Garrett JM. The use of muscle relaxant medications in acute low back pain. *Spine* 2004;29(12):1346-51.
21. OSullivan PB, Twomey LT, Allison GT. Evaluation of specific stabilizing exercise in the treatment of chronic low back pain with radiologic diagnosis of spondylolysis or spondylolisthesis. *Spine* 1997;22:2959-67.
22. Hides JA, Jull GA, Richardson CA. Long-term effects of specific stabilizing exercises for first-episode low back pain. *Spine* 2001;26(11):E243-8.
23. Delitto A. Research in low back pain: time to stop seeking the elusive "magic bullet". *Phys Ther* 2005;85(3):206-8.
24. Borkan JM, Koes B, Reis S, Cherkin DC. A report from the Second International Forum for Primary Care Research on Low Back Pain. Reexamining priorities. *Spine* 1998;23(18):1992-6.
25. Deyo RA. Drug therapy for back pain. Which drugs help which patients? *Spine* 1996;21(24):2840-9; discussion 9-50.