EDITORIAL

The Role of Spinal Manipulation in the Treatment of Low Back Pain

Richard A. Deyo, MD, MPH

Although approximately 200 treatment options are available to treat low back pain,[1] no single treatment is clearly superior. Furthermore, the etiology of back pain is often unclear, possibly contributing to treatment strategies for low back pain often being determined by preferences of the clinical care practitioner.

Spinal manipulative therapy (SMT) is a controversial treatment option for low back pain, perhaps in part because it is most frequently administered by chiropractors. Chiropractic therapy is not widely accepted by some traditional health care practitioners. This may be, at least in part, because some early practitioners of chiropractic care rejected the germ theory, immunizations, and other scientific advances.

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However, chiropractic care is popular today with the US public. According to a 2012 report, among patients with back or neck pain, approximately 30% sought care from a chiropractor.[2] In a 2013 survey by *Consumer Reports* magazine involving 14 000 subscribers with low back pain, chiropractic care had the largest proportion of "highly satisfied" patients.[3] Among approximately 4000 respondents who had seen a chiropractor, 59% were highly satisfied compared with 55% who saw a physical therapist and 34% who saw a primary care physician. In addition to chiropractors, some physical therapists and osteopathic physicians provide SMT.

A 1983 systematic review on treatments for low back pain included 2 fair-quality randomized trials and concluded that "some types of spinal manipulation seem to have short-term, but not long-term benefits."[4] In this issue of *JAMA*, Paige and colleagues present a sophisticated systematic review and meta-analysis, including 26 eligible randomized trials of manipulation for acute back pain (≤6 weeks).[5] Their analysis was based on a thorough search of the literature, excluding studies of patients with sciatica or chronic back pain. Each trial was evaluated for risk of bias, and studies with similar outcome measures and follow-up intervals were pooled for meta-analysis. Based on 15 clinical trials (1711 patients) that provided moderate-quality evidence, the authors concluded that for patients with acute low back pain, SMT was associated with modest improvement in pain (pooled mean improvement in 100-mm visual analog pain scale, −9.95 mm [95% CI, −15.6 to −4.3]), and based on 12 trials (1381 patients) that provided moderate-quality evidence, that SMT was associated with modest improvements in function (pooled mean effect size, −0.39 [95% CI, −0.71 to −0.07]) in the short-term in comparison with sham manipulation, usual care, or other treatments.

As the authors point out, there have been conflicting findings from previous systematic reviews on SMT for low back pain. The review by Paige et al includes heterogeneity in manipulative techniques, clinician training, patient selection, and results. The magnitude of benefit appears small on average, although overall results typically combine patients with substantial benefit, those with a small amount of benefit, and those with none. In addition, the review by Paige et al includes no information about important outcomes like minimizing medication use or faster return to work. Unlike medication trials that include administration of placebo, blinding of physical treatments is difficult, and was not used in most clinical trials included in the systematic review.

The lack of blinding in many of the clinical trials can limit the validity of the results. Most volunteers for clinical trials probably anticipate that they will benefit from SMT, and generally view the treatment favorably. These patients may be disappointed if they are randomly assigned to a control group, and this may affect their perceived improvement, essentially, a nocebo effect (a *nocebo* is a detrimental effect arising from negative treatment expectations). If this is true, little is known about the results among patients who may view SMT less favorably.

Nonetheless, the conclusions of the systematic review by Paige et al are generally consistent with another recently completed systematic review and clinical guideline from the American College of Physicians.[6,7] The guideline concluded that most patients with acute low back pain improve with time, regardless of treatment. Thus, therapy is often directed simply at symptom relief while natural healing occurs. The guideline also concluded that patients with acute or subacute low back pain should consider nonpharmacological treatment with heat, massage, acupuncture, or SMT. None of the trials in the study by Paige et al or the American College of Physicians systematic review suggested that SMT was less effective than conventional care.

Nonetheless, physicians infrequently recommend SMT. Part of the hesitation, despite a growing clinical trial literature, may involve uncertainty about its biological rationale. It remains unclear how SMT relieves low back pain, although hypothetical biological pathways suggest repositioning of the facet joints, repositioning of disc material, reducing muscle tension or stiffness, freeing adhesions around a prolapsed disc, or mechanical stimulation of large nerve fibers that might inhibit transmission of nociceptive impulses.[8] The hands-on, high-touch nature of treatment; an ongoing patient-clinician relationship through repeated visits; an

expectation of change; a feeling of empowerment; and clinician enthusiasm,reassurance, and conviction may all be therapeutic.[8] Even though this mechanistic uncertainty is disconcerting, it is important to acknowledge that for many patients with acute back pain without radiculopathy, a precise pathoanatomical cause of the pain cannot be identified.[9] It is not surprising that the mechanism of action for some treatments remains ambiguous.

Another concern is the safety of SMT. Although there are case reports of serious complications, such as the cauda equina syndrome, these are extremely rare in the lumbar spine. None of the randomized trials or large observational studies reviewed by Paige et al identified any serious complications. In contrast, renal and gastrointestinal adverse effects of nonsteroidal anti-inflammatory drugs are common. For example, among patients taking nonsteroidal anti-inflammatory drugs, renal function abnormalities occur in approximately 1% of patients,[10] and superficial gastric erosions or asymptomatic ulcers may occur in up to 5% to 20% of users.[11] Furthermore, low back pain is among the most common reasons for prescribing opioids in the United States. Among patients initiating opioid therapy, about 5% become long-term opioid users, with associated risks of dependency, addiction, and overdose.[12,13]

The duration of effects from SMT is also unclear. The systematic review by Paige et al was limited to 6 weeks of follow-up, a relatively short follow-up period. Fewer studies have addressed long-term outcomes, and some suggest that benefits of SMT are less in trials with longer-term follow-up.[14] Nonetheless, most patients with acute back pain desire rapid short-term improvement and early return to normal activities. Exercise therapy and mind-body interventions may have an important role for more durable relief.[15,16]

Costs of care are also important. Because SMT typically involves multiple visits, this therapy is likely to be more expensive than medication such as nonsteroidal anti-inflammatory drugs. However, the cost of caring for complications from pharmacologic therapies may exceed the costs of SMT. For example, the US societal cost of prescription opioid abuse in 2007 was estimated at $55.7 billion, with health care costs and workplace costs each contributing almost half.[17] In a previous report, patients who sought alternative treatments such as chiropractic care for back pain did not incur higher overall treatment costs compared with those who received only conventional care.[2]

Concerns also exist about claims of exceptional benefit from some chiropractors. For example, there is no biological evidence to support spinal manipulation as an effective therapy for diabetes, heart failure, or thyroid disease.

However, it appears that SMT is a reasonable treatment option for some patients with low back pain. The systematic review by Paige et al suggests a treatment effect similar in magnitude to nonsteroidal anti-inflammatory drugs. Further research will better identify which patients are most likely to benefit, and what manipulation techniques are most effective. In the meantime, if manipulation is at least as effective and as safe as conventional care, it may be an appropriate choice for some patients with uncomplicated acute low back pain. This is an area in which a well-informed patient's decisions should count as much as a practitioner's preference.

ARTICLE INFORMATION

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