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Editorial

Therapeutic Cervical Medial Branch Blocks: A Changing Paradigm In Interventional Pain Management

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Evidence continues to accumulate regarding the effectiveness of interventional pain management procedures for the diagnosis and treatment of chronic painful conditions (1, 2). Although clinical studies that support the value of interventional procedures for pain management are of importance to the clinician, they often reveal little about the pathophysiology of pain. On occasion, however, results from clinical studies suggest underlying mechanisms that may explain the common pain syndromes that we treat.

In this issue of *Pain Physician*, Manchikanti and colleagues (3) present preliminary results from an ongoing randomized, double-blind, controlled trial evaluating the effectiveness of therapeutic medial branch blocks for cervical zygapophysial (facet) joint pain. Their observations may have important clinical and basic science implications. The authors noted significant pain relief, defined as more than 50% pain relief and improvement in functional status with cervical medial branch blocks at 3, 6 and 12 months in patients with proven cervical facet joint pain, diagnosed by comparative, controlled diagnostic blocks (4-6). Injections were repeated at intervals of about 3 months and provided predictable, ongoing pain relief. The average number of treatments per year was 3 to 4 injections and the proportion of patients with at least 50% relief was 80% or greater. Moreover, pain relief with the blocks did not require the use of corticosteroids. It is notable that ongoing pain relief also did not require radiofrequency neurolysis.

Although one could argue that appropriate treatment for cervical facet joint pain after diagnostic blocks should be radiofrequency neurolysis, available evidence regarding the therapeutic benefit of radiofrequency is only moderate to strong for pain relief lasting longer than 3 months (1, 2, 7-12). This is in sharp contrast to long lasting pain relief noted in scientific studies (6), which may not reflect real-world clinical practice. Given the apparent clinical limitations of radiofrequency as a long-term solution for management of cervical facet joint pain, it was reasonable for the authors to evaluate the potential therapeutic benefit of nondestructive medial branch blocks for cervical facet pain. The positive findings of this study support the impression that local anesthetic blocks, often considered to be only of diagnostic value, can be therapeutic when repeated at appropriate intervals (13-18). Although this concept is not new (19), it is gaining ground amongst interventional pain physicians.

A key observation of the study by Manchikanti et al (3) was the apparent lack of benefit of corticosteroids used in the cervical medial branch blocks. As many interventional pain management physicians will probably acknowledge, corticosteroids are often considered an indispensable component of therapeutic injections, particularly with transforaminal epidural injections, but also for facet joint nerve blocks. The lack of effectiveness of corticosteroids in this study is an important finding that may change the practice of many interventionalists, particularly given the ongoing controversy about the potential complications of unintentional intravascular injections of particulate steroid.

What is not answered by the present study, however, is the question: "If corticosteroids do not account for the pain relief, how does the local anesthetic provide therapeutic benefit?" This refocuses the discussion on the potential ability of local anesthetic nerve blocks to provide long-term pain relief. Although many anesthesiologists are aware that relief of chronic pain after nerve blocks may outlast the expected duration of local anesthetic effect, there is not extensive clinical evidence to support the concept of "therapeutic" local anesthetic blocks. Some clinicians would perceive the therapeutic value of nerve blocks as simply a means of providing a pain-free window of opportunity for the patient to have physical therapy.

There is, however, emerging basic science and preclinical evidence that membrane ion channels (e.g., voltage gated sodium channels) play a role in sustained neuropathic pain conditions, a concept that is recognized by clinicians and basic scientists alike (20). A recent study (21) with local anesthetics and tetrodotoxin in an animal mod-

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el of neuropathic pain showed that following nerve injury, bupivacaine nerve blockade for 3-5 days prevented subsequent development of spontaneous afferent activity. This correlated with reduced pain behaviors in the animals. Moreover, local anesthetics blockade of abnormal afferent activity permanently inhibited the subsequent development of thermal hyperalgesia and mechanical allodynia. Laboratory results such as these support the clinical observations of Manchikanti et al (3) that local anesthetic blocks can have durable therapeutic effects, particularly if the underlying process is neuropathic in nature. Although ongoing pain relief requires repeat local anesthetic injections, this approach may reduce the need for oral medications and avoid potential side effects associated with systemic sodium channel blockers (e.g., amitriptyline, mexiletine, carbamazepine, etc).

Regardless of the mechanism of pain relief afforded by the local anesthetic injections in the present study, the fact that nerve blocks provided pain relief that outlasted the typical duration of action of local anesthetics forces one to consider the possibility that facet joint pain has a neuropathic component. Although a neurolytic block would be expected to alleviate the pain of a pathologic joint for weeks to months, a local anesthetic block should not be beneficial for more than a few hours. The present study provides further support for the contention that facet joint pain arises from structures innervated by the medial branch nerve (joint capsule, fascia, muscle, etc), in addition to the facet joint, or perhaps from the facet joint nerve itself. It is also interesting to note that corticosteroids do not appear to provide significant additional benefit to that obtained by the local anesthetic alone, which argues against a strictly peripheral inflammatory mechanism of pain.

Some may argue that the relief noted in the study by Manchikanti, et al (3) could be due to a placebo effect, despite the fact that significant improvement in pain and functional status was noted in more than 80% of patients. In a recent systematic review, Vernon and colleagues (22) examined the magnitude of the placebo effect in RCTs evaluating conservative treatments for chronic mechanical neck pain. The review was conducted to evaluate the hypothesis proposed by others (23, 24) that the magnitude of positive outcomes in placebo groups would exceed those of non-treatment control groups. In fact, they noted that positive effects in non-treatment groups was small, even up to 12 months and was not significantly different from placebo groups. Thus, it would appear that there is little evidence to support the notion that a placebo effect could account for the robust therapeutic response obtained with repeated local anesthetic nerve blocks in the study by Manchikanti and colleagues.

From a more practical clinical standpoint, based on the findings of the present study, several useful conclusions can be suggested. The first concerns the use of radiofrequency neurolysis to provide long lasting relief of cervical facet joint pain. Based on the results of the current study, repeated local anesthetic injections at 3 to 4 month intervals may be a safe, effective, less expensive alternative to radiofrequency thermocoagulation. The second conclusion concerns the use of corticosteroids for cervical medial branch blocks. Based on the preliminary results presented here, it may not be helpful or necessary to include corticosteroids with the local anesthetic blocks. This could have immediate benefits in terms of improving the safety of cervical facet joint nerve injections.

In summary, a new paradigm of treatment of cervical facet joint pain is evolving, in contradiction to traditional thinking regarding interventional pain management, which has focused on the concept that nerve blocks are useful only for diagnostic purposes and perhaps to facilitate physical therapy. Although some would argue that once the diagnosis is made, the proper course of action would be an invasive or destructive procedure (e.g., radiofrequency neurolysis, spinal fusion, etc), the work of Manchikanti et al (3) challenges this assertion and supports the concept that nerve blocks can be therapeutic. It also provides additional clinical evidence that cervical facet joint pain may have a neuropathic component, which is not the usual way that most clinicians think about facet pain. As a result, clinicians may wish to appraise the value of local anesthetic cervical medial branch blocks, repeated at appropriate intervals with or without steroid, as a reasonable treatment option for providing durable relief of cervical facet joint pain.

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