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Diagnosis and Treatment of Chronic Neck Pain from Cervical Facet Joints

Steven Barna, M.D.

The prevalence of chronic neck pain approaches 14%. Chronic pain has many definitions: pain which persists a month beyond the usual course of an acute disease or injury, persistent pain that does not respond to routine treatment, or pain that persists for greater than 3-6 months. Structural causes of neck pain may include intervertebral discs, facet joints, ligaments, fascia, muscles, and nerve root dura. To be a pain generator, the structure must have a nerve supply, be susceptible to disease or injury, and be shown to block pain sensations in patients using diagnostic techniques with known reliability and validity.

Facet joint pain has been proven to be a common cause of pain with a proven diagnostic technique. Facet joints have been shown to be a cause of neck pain and referred pain to the head and upper extremities, as well as upper back. The facet joints are innervated by the medial branches of the dorsal rami (see Figure 1), and contain free and encapsulated nerve endings, nociceptors, and mechanoreceptors. Facet joints have been shown to be the cause in neck pain, based on controlled diagnostic blocks in 54-67% of patients with neck pain.

The mechanism of action of neural blockade is likely the alteration of nociceptive input. Local anesthetics interrupt the pain-spasm cycle and

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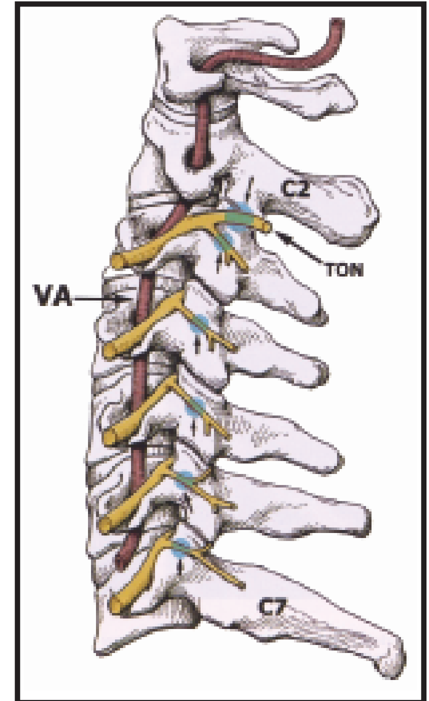

Figure 1. Medial branch nerves (dorsal rami of segmental spinal nerves, which supply sensory innervation to the facet joints of the spine. (VA=Vertebral Artery, TON=Third Occipital Nerve)

Our Recent Publications:

Singla AK, **Stojanovic M, Barna S**, Meyer MA, Carragee EJ. Persistent Low Back Pain. N Engl J Med 2005;353(9):956-7.

Cohen S, Larkin T, **Stojanovic MP** The Effects of Discogenic Low Back Pain and Radiculopathy on the Specificity of Lumbar Medial Branch and L5 Dorsal Ramus Blocks. Mil Med. 2004;169(10):781-6.

S Cohen, J Narvaez, A Lebovits, **Stojanovic MP**. Steroid Injections for Trochanteric Bursitis: Is Fluoroscopy Necessary? A Pilot Study. Br J Anaesth. 2005; 94(1):100-6.

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Cohen S, Larkin T, **Barna SA**, Palmer W, Hecht A, **Stojanovic M**. Lumbar Discography: A Comprehensive Review of Outcome Studies, Diagnostic Accuracy and Principles. Regional Anesthesia and Pain Medicine 2005; 30(2): 169-183.

Barna SA, Hu M, Buxo C, Trella J, Cosgrove GR. Spinal cord stimulation for treatment of meralgia paresthetica. Pain Physician 2005 July; 8(3): 315-318.

nociceptor transmission, while corticosteroids decrease inflammation by inhibiting the synthesis or release of pro-inflammatory substances. Corticosteroids may also block phospholipase A2 and suppress neuronal discharge and dorsal horn neurons. Controlled diagnostic blocks with two local anesthetics are the only means of confirming the diagnosis of facet joint pain. A small volume of local anesthetic injected at the location of the supplying nerve (medial branches, see Figures 2 and 3) can have a dramatic effect on the perception of pain from facet joints.

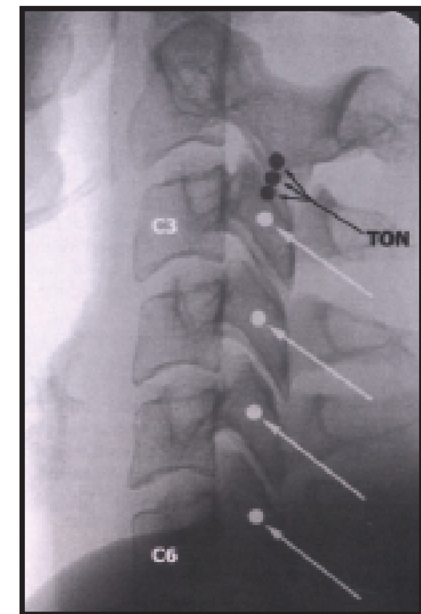

Figure 2. Lateral fluoroscopic view of facet joints in cervical spine. (TON=Third Occipital Nerve)

Based on two positive blocks, therapeutic intervention may include either intraarticular block or neurolysis of the medial branches (radiofrequency lesioning, or RFL). Unfortunately, intraarticular injection of local anesthetic and steroid as a therapy typically does not provide long-lasting relief, rarely lasting more than a month.

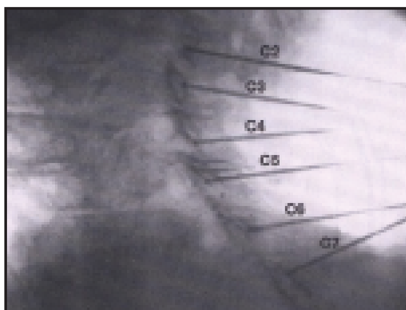

Figure 3. Fluroscopically guided needle placements for cervical medial branch blockade.

A far more successful means of providing long lasting relief is with medial branch neurolysis through Radio Frequency Lesioning (RFL). This technique uses radiofrequency waves delivered through an insulated needle to generate a temperature of 80-90° Celsius at the medial branch nerve. Studies have shown that RFL can provide relief lasting an average of 10 months, with a range of three months to a few years.

References:

Boswell et al. Interventional techniques in the management of chronic spinal pain: eveidence-based practice guidelines. 2005; 8:1-47.

INTERVENTIONAL PROCEDURES

- Diagnostic and therapeutic injections
- Spinal cord stimulators
- Radiofrequency lesioning
- Percutaneous disc decompression
- Discography
- Botox injections for pain
- IDET
- Epidural steroid injections
- Facet joint injections
- Vertebroplasty
- Epidural lysis of adhesions
- Sacroiliac joint injection
- Sympathetic nerve blocks
- Selective nerve injections