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# Treating Myofascial Pain

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C Chan Gunn

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## **Summary**

Neuropathic pain invariably affects the musculoskeletal system, causing muscle contracture and shortening: "Myofascial Pain". Spondylosis, the universal outcome of age, wear and tear, is probably the most common cause of neuropathic pain. By irritating nerve roots, spondylosis can lead to peripheral neuropathy and muscle shortening. Many myofascial syndromes (from Achilles Tendonitis to Tennis Elbow) caused by muscle shortening of spondylotic origin are customarily misconstrued as mundane local conditions. The spondylosis and muscle-shortening model can explain many musculoskeletal pain problems for which there is no alternative clinical diagnosis; it also enables these disparate syndromes to be grouped under one aetiological classification. Intramuscular stimulation effectively relieves pain by releasing muscle, which in turn relieves paraspinal muscle shortening and pressure on nerve roots, as well as stimulating the production of platelet-derived growth factor to promote healing.

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## **Key words**

Acupuncture, Chronic pain, Fibromyalgia, Myofascial pain syndromes, Neuropathic pain, Radiculopathy, Spondylosis, Trigger points.

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## **Introduction**

Most individuals heal quickly and become pain-free after injury, but chronic pain can result from:

- i. Ongoing nociception or inflammation;
- ii. Psychological factors;
- iii. Neuropathic pain, which is associated with abnormal nerve function and/or hyperactivity at some level in the pain sensory system. Neuropathic pain can arise and persist in the absence of tissue injury or inflammation. Probably the most common cause of neuropathy is spondylosis, as the spinal nerve root is exposed to injury from a number of mechanisms, such as pressure, stretch, angulation and friction.

## **Myofascial pain syndromes**

Neuropathic pain that affects the musculoskeletal

system is commonly referred to as myofascial pain. Myofascial pain can affect joints, muscles and their connective tissue attachments in any part of the body. Because the clinical presentations of these syndromes are remarkably diverse, they are customarily regarded as separate and unrelated conditions and generally labelled according to the location of the pain, e.g. lateral epicondylitis, or Achilles tendonitis.

However, all myofascial pain syndromes have identical sensorimotor and autonomic findings that indicate a functional disturbance in the segmental nerve. Myofascial pain and neuropathic manifestations typically appear together; and they also usually resolve together following specific treatment.

Myofascial pain is practically always accompanied by:

- i. Muscle shortening;
- ii. Tender and painful focal areas in muscles ('trigger points');
- iii. Autonomic manifestations of neuropathy.

## **Muscle shortening**

Muscle shortening, which can be due to spasm or contracture, is a fundamental feature of myofascial pain. Muscle shortening can be palpated as ropey bands within the muscle. These bands are seldom limited to a few individual muscles, but are present in groups of muscles according to the pattern of the neuropathy. In radioculopathy, bands are also present in paraspinal muscles.

Muscle shortening is the primary basis for myofascial pain: shortening mechanically stresses the muscle's attachments; e.g. bicipital tendonitis or lateral epicondylitis. Shortening of the muscles that act across a joint can increase joint pressure and cause arthralgia e.g. facet-joint syndrome. Shortening of paraspinal muscles across a disc space can compress the disc and cause narrowing of the intervertebral foramina. This can irritate the nerve root and lead to a vicious circle. Pressure on a nerve root causes neuropathy – neuropathy leads to pain and spasm in muscles (including paraspinal muscles) – spasm in paraspinal muscles further compresses the nerve root.

### **Painful focal areas in muscles**

Muscle bands are usually pain free, but they can become tender and painful. Focal areas of tenderness and pain are often referred to as trigger points. The discovery of tender points is an integral part of the diagnosis of myofascial pain syndrome, as laboratory and radiological tests are unhelpful.

Not infrequently, myofascial pain can become generalised. A common clinical disorder is *Diffuse Myofascial Pain Syndrome*, also known as *Primary Fibromyalgia Syndrome*, *Fibromyositis* or *Fibrositis*, in which there is chronic, diffuse, musculoskeletal pain and stiffness of long duration (more than three months). The aetiology of the syndrome is unknown, as there is no obvious organic pathology. Some rheumatologists suggest a 'point count' for diagnosis and accept the diagnosis when there is local tenderness at 12-14 specified sites; but clinicians who use needle techniques easily detect many times that number of sites. Diffuse tenderness in the muscle is also commonly seen in myofascial pain of spondylotic origin, e.g. when there is concurrent cervical and lumbar back sprain, and it is frequently impossible to distinguish between the two conditions.

### **Autonomic manifestations of neuropathy**

Vasoconstriction differentiates neuropathic pain from inflammatory pain; affected parts are perceptibly colder. The sudomotor and pilomotor reflexes are often hyperactive, and there can be interaction between pain and autonomic phenomena. A stimulus which excites the pilomotor response, such as chilling, can precipitate pain. Vice versa, pressure upon a tender motor point can provoke the pilomotor and sudomotor reflexes. Increased tone in lymphatic vessels and smooth muscle, and increased permeability in blood vessels can lead to subcutaneous 'neurogenic oedema' or 'trophoedema'.

Neuropathy affects the quality of collagen in soft and skeletal tissues because replacement collagen has fewer cross-links and is markedly weaker than normal mature collagen. Since collagen provides the strength of ligaments, tendons, cartilage and bone, neuropathy can expedite the degeneration of weight-bearing and activity stressed parts of the body.

### **Intramuscular stimulation for musculoskeletal pain syndromes**

Neuropathic pain may present primarily in a muscle (e.g. spasm in the tibialis anterior muscle or 'shin splints'), or in a tendon (e.g. bicipital tendonitis), or in a joint, but the common perpetrator of pain in all these structures is muscle shortening. Pain is quickly alleviated when tender points in painful muscles are desensitised and shortened muscles released. Injection techniques with local anaesthetics, steroids or saline are commonly used, but 'dry needling' techniques, that do not inject medication, are just as effective and have fewer iatrogenic side effects. Intramuscular stimulation (IMS) is probably the most effective dry needling technique, but good results require a correct diagnosis, a knowledge of muscle anatomy, and the

skill to accurately reach deep muscle points.

IMS is also a unique investigative technique. The flexible and springy quality of the fine solid needle used, relays useful feed-back information; it transmits the nature and consistency of the tissues penetrated. When it enters normal muscle, the needle meets with little resistance, and the needle is grasped by the spasm; when it encounters fibrotic tissue there is grating resistance like cutting through a pear.

Penetration of a shortened muscle is usually followed by muscle relaxation. Ordinarily, when the several most painful muscles in a region have been treated, pain is alleviated in the treated region. Relaxation and relief in one region often spreads to the entire segment, to the contra lateral side, and to paraspinal muscles. These observations suggest that needling has produced more than local changes: a reflex neural mechanism involving spinal modulatory systems, opioid or non-opioid, may have been activated.

In conditions of recent onset, a few treatments separated by days may resolve the pain. But in long-standing disorders, e.g. chronic low back pain, shortened muscles have a high content of fibrotic tissue. Fibrotic muscle does not respond as well as normal muscle to needle stimulation. Response is less dramatic and parallels the extent of fibrosis.

### **Spasm in paraspinal muscles**

Significant paraspinal muscle shortening that compresses a nerve root also calls for treatment. Traction or manipulation may be tried, but they often fail. Again, IMS needling of the paraspinal muscles is the most effective technique available.

### **Conclusion**

Chronic myofascial pain of neuropathic origin represents a far greater problem than is generally realised. Relief requires the release of shortened muscles. Intramuscular stimulation generally succeeds, and should be used when analgesics, physical therapy, or the commonly used injection techniques fail.

**C Chan Gunn MA MD FICAE**

*Clinical Professor, Multidisciplinary Pain Center  
University of Washington, Seattle, Washington USA*

### **Address for correspondence**

*Gunn Pain Clinic, 828 West Broadway  
Vancouver, BC, Canada V5Z 1J8*

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