

INTRODUCTION

What is Intramuscular Stimulation (IMS)?

- Intramuscular Stimulation is a *total* system for the diagnosis and treatment of of myofascial pain syndromes (chronic pain conditions that occur in the musculoskeletal system when there is no obvious injury or inflammation).
- IMS explains this large category of pain in a new way. Instead of presuming pain to be signals of tissue injury, IMS blames pain on malfunctioning nerves and altered function in the peripheral nervous system -- "neuropathic pain".
- IMS applies Cannon and Rosenblueth's Law of Denervation to explain the supersensitivity that occurs with peripheral neuropathy. This physiologic law is fundamental but little known.
- IMS has introduced an examination technique that shows neuropathy to occur, almost invariably, at the nerve root - causing "radiculopathic pain". Because there is no satisfactory laboratory or imaging test for neuropathy, IMS' clinical examination is indispensable for diagnosis and is recommended in Bonica's textbook "Management of Pain".
- IMS's radiculopathy model explains many apparently different and unrelated pain syndromes -- from headache to low back pain, from tennis elbow to trigeminal neuralgia -- and places them all into one classification.
- IMS borrows its needle technique from Traditional Chinese Acupuncture, but updates and enhances it with anatomy and neurophysiology. IMS is simple to learn for doctors, nurses and therapists who have training in anatomy. Results are predictable and superior to acupuncture because treatment is based on physical signs.
- IMS should be taught in medical schools because it is more effective than any other physical therapy. Knowledge of IMS can provide an excellent bridge between Eastern and Western medicine. Indeed, not only does IMS bridge the gap between them, it transcends the limitations of both.

How Intramuscular Stimulation Developed

IMS and the radiculopathy model was developed from clinical observations and research carried out over a period of more than twenty years -- first, at the Workers' Compensation Board of British Columbia, and subsequently, at my pain clinic in Vancouver.

IMS began in 1973. Frustrated by the generally unsatisfactory results obtained when using conventional physical therapies for chronic pain patients, I needed to learn more about chronic pain. I therefore carefully examined 100 patients who had chronic back pain but who did not have obvious signs of injury, and 100 controls who did not have pain. The significant finding was that patients who were disabled for a long period had tenderness in muscles belonging to affected myotomes. Tender points are therefore sensitive indicators of radicular involvement and differentiate a simple mechanical low back strain (which usually heals quickly) from one with neural involvement which is slow to improve. (Appendix 5)

My next study of 50 patients with "tennis elbow" showed that tender points at the elbow were related to cervical spondylosis and radiculopathy. Treating the neck, but not the elbow provided relief (Appendix 6).

A study of pain in the shoulder similarly implicated radiculopathy in the cervical spine (Appendices 7, 8).

Further careful examination of patients with chronic pain revealed additional signs of radiculopathy (Appendix 9). A pattern began to emerge -- patients who have pain but no obvious signs of injury, generally have subtle but discernible signs of peripheral nerve involvement. This is an important observation because there is no satisfactory laboratory or imaging test for early neural dysfunction. IMS' method of examination is now recommended as part of the evaluation process in Bonica's textbook "The Management of Pain".

Medical diagnosis traditionally assumes that pain is a signal of injury or inflammation conveyed to the CNS via healthy nerves. However, our studies have led us to conclude that pain can arise, when there is no injury or inflammation, from radiculopathy that accompanies incipient spondylosis (Appendix 2 -- this paper was determined as a significant study by the 1979 Volvo Competition Awards Committee). The term "neuropathic pain" has been given to this category of pain, but because neuropathy is almost invariably at the nerve root, "rad" is an appropriate name.

I became interested in acupuncture in 1974. An early observation was that most acupuncture points correspond to known neuroanatomic entities, such as muscle motor points or musculotendinous junctions. (Appendices 10, 11,12).

Traditional acupuncturists emphasise the importance of producing the subjective sensation of Teh Ch'i or Deqi when the needle penetrates muscle and is grasped by a contracture (Appendices 13, 14). Failure of a needle to produce needle-grasp signifies that the muscle is not shortened and will not respond to needle treatment. Traditional Chinese Medicine has long recognised that this category of chronic pain is never present without associated muscle shortening from contracture.

We tested dryneedling in a randomized clinical trial, but unlike Traditional Chinese acupuncture, in our approach (which was the beginning of IMS) patients were needled at muscle motor points. The group that had been treated with needling was found to be significantly better than the control group. (Appendix 15). (This clinical trial was also determined as a significant study by the 1997 Volvo Competition Awards Committee).

A paper proposing that causalgia is a manifestation of denervation supersensitivity was read at the 1979 meeting of the international Association for the Study of Pain (IASP). (Appendix 16).

An interesting observation in patients with neuropathic pain was the finding of hair loss in affected dermatomes. If treated early and effectively, hair sometimes returns. We wondered whether a deficit of the trophic factor was to blame, and whether there is a similar deficit of the factor in male pattern hair loss. (Appendix 17).

IMS differs from Traditional Acupuncture in that it:

- Requires a medical examination using our early signs of radiculopathy.
- Requires a medical diagnosis that implicates spondylosis.
- IMS uses neuroanatomic points that are found in a radicular or segmental pattern, instead of using traditional acupuncture points.
- Determines the points to be treated; the effects of needling which can appear very quickly; as well as monitor progress through objective physical signs.

Our conclusion is that muscle shortening, autonomic changes, and occasionally pain, are natural manifestations and epiphenomena of radiculopathy: they all occur according to Cannon and Rosenblueth's Law of Denervation. Our radiculopathy model is able to explain many puzzling chronic pains that are not caused by injury or inflammation, such as low back pain, tennis elbow, whiplash and fibromyalgia.

Comparing Acupuncture to IMS

ACUPUNCTURE

Medical diagnosis is not relevant

Medical examination not applicable

Needle insertions according to Chinese philosophy into non-scientific meridians

Knowledge of anatomy not applicable

No immediate objective effects expected

IMS

Medical diagnosis is necessary

Medical examination imperative

Needle insertions as indicated by medical examination e.g., into muscle motor points

Knowledge of anatomy essential

Prompt subjective & objective effects anticipated