Update on Myofascial Pain
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2/26/2011

“I’m afraid it’s your body Mr. Haskins”
Myofascial Trigger Point Pain is Common

• 30% of 172 patients presenting with pain to a university primary care internal medicine group practice had MFPS

• 55% of 164 patients referred to a dental clinic for chronic head and neck pain were found to have active myofascial trigger points as the cause of their pain

• Trigger points were the primary source of pain in 74% of 96 patients with musculoskeletal pain seen by a neurologist in a community pain medical center


Prevalence of Myofascial Pain in General Internal Medicine Practice.

• 54/172 (>30%) Patients @ Primary Care: PAIN
• 16/54 (30%)=Clinical Criteria for MFPS
• >10% OF ALL PATIENTS HAVE MFPS!
• Intensity by VAS HIGH > or = other PAIN
• Physicians RARELY Dx, Rx Provides Substantial, Abrupt RELIEF

Myofascial Pain Common and Commonly Overlooked, Untreated, Severe yet Rxable!!

<table>
<thead>
<tr>
<th>TABLE 1-7.</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Symptoms Reported in Myofascial Pain Syndrome of the Head and Neck (N = 366)*</td>
<td>Percent</td>
</tr>
<tr>
<td>Symptom</td>
<td></td>
</tr>
<tr>
<td>Muscle/tendinitis</td>
<td>30</td>
</tr>
<tr>
<td>Triggering</td>
<td>12</td>
</tr>
<tr>
<td>Headache/migraine</td>
<td>42</td>
</tr>
<tr>
<td>Pain, sleep</td>
<td>42</td>
</tr>
<tr>
<td>Tension</td>
<td>42</td>
</tr>
<tr>
<td>Fatigue</td>
<td>40</td>
</tr>
<tr>
<td>Paresthesia</td>
<td>27</td>
</tr>
<tr>
<td>Nausea</td>
<td>25</td>
</tr>
<tr>
<td>Dizziness</td>
<td>23</td>
</tr>
<tr>
<td>Constipation</td>
<td>15</td>
</tr>
<tr>
<td>Psychological (by self-report)</td>
<td></td>
</tr>
<tr>
<td>Global depression</td>
<td>21</td>
</tr>
<tr>
<td>Global anxiety</td>
<td>18</td>
</tr>
</tbody>
</table>
| *Data from Prinos R, Kroening R, Haller D, et al. Oth Dong One And Owl Pactor, March 422, 1985. Regional myofascial tendinitis pain was present in 18%.

3/8/2011
### Percent of patients with another diagnosis who also had Myofascial TPs which contributed to their problem.

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>N</th>
<th>% with MF TPs</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fibromyalgia</td>
<td>60</td>
<td>68</td>
<td>Granges, et al. 1993 (9)</td>
</tr>
<tr>
<td>Fibromyalgia</td>
<td>19</td>
<td>100</td>
<td>Finestone, et al. 1995 (30)</td>
</tr>
<tr>
<td>Fibromyalgia</td>
<td>25</td>
<td>72</td>
<td>Gerwin, 1995 (26)</td>
</tr>
<tr>
<td>Cumulative Trauma Disorder</td>
<td>33</td>
<td>100</td>
<td>Lin, et al. 1995 (74)</td>
</tr>
<tr>
<td>Reflex Sympathetic Dystrophy</td>
<td>84</td>
<td>82</td>
<td>Lin, et al. 1995 (75)</td>
</tr>
<tr>
<td>Cervicogenic Headache</td>
<td>80</td>
<td>100</td>
<td>Lin, et al. 1995 (76)</td>
</tr>
</tbody>
</table>

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**Travell & Simons**

*Myofascial Trigger Points*

- Myotomal NOT = Dermatomal
- Referred Pain Experienced Remotely From Source
- Multiple Trigger Point Can Refer to Same Location:

**VARIABLE & ENIGMATIC = New ‘Great Imitator’**

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**TABLE 1 Prevalence of musculoskeletal disorders in patients with suspected lumbosacral radiculopathy**

<table>
<thead>
<tr>
<th>Musculoskeletal Disorder</th>
<th>Normal Study, %</th>
<th>Lumbosacral Radiculopathy, %</th>
<th>Other EPD Diagnosis, %</th>
<th>Total Sample, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>N = 51</td>
<td>N = 822</td>
<td>N = 876</td>
<td>N = 171</td>
<td>N = 176</td>
</tr>
<tr>
<td>Medical pain syndrome</td>
<td>20</td>
<td>12*</td>
<td>12*</td>
<td>20</td>
</tr>
<tr>
<td>Pelvic pain/hip/buttock</td>
<td>20</td>
<td>12*</td>
<td>10</td>
<td>18</td>
</tr>
<tr>
<td>Pelvic pain/inguinal</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>One or more of the above</td>
<td>50</td>
<td>23*</td>
<td>19*</td>
<td>29</td>
</tr>
</tbody>
</table>

* Significant at P < 0.05 compared with normal study.
† Significant at P < 0.05 compared with lumbosacral radiculopathy.
‡ Other diagnoses included sciatica/myopathy, central myopathy, radiculopathy, peripheral myopathy, mononeuropathy, and Mononeuropathies.

Prevalence of Musculoskeletal Disorders in Patients With Suspected Cervical Radiculopathy

<table>
<thead>
<tr>
<th>Musculoskeletal Disorder</th>
<th>Normal Study (n=45)</th>
<th>Cervical Radiculopathy (n=99)</th>
<th>Other Electro-Diagnosis (n=47)</th>
<th>Total Sample (N=191)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Myofascial pain syndrome</td>
<td>53%</td>
<td>17</td>
<td>19</td>
<td>26</td>
</tr>
<tr>
<td>Shoulder impingement</td>
<td>31</td>
<td>9</td>
<td>30</td>
<td>19</td>
</tr>
<tr>
<td>Lateral epicondylitis</td>
<td>9</td>
<td>9</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>De Quervain’s tenosynovitis</td>
<td>7</td>
<td>2</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>One or more of the above</td>
<td>69</td>
<td>29</td>
<td>45</td>
<td>42</td>
</tr>
</tbody>
</table>


TABLE 7–1. Epidemiology of Trigger Points

Higher in women than men
Most common in 30- to 50-year age range
Most commonly found in the following muscles: trapezius, levator scapulae, and posterior muscles
Chronic pain clinics study reported incidence of 65% of patients having myofascial pain syndrome
Asymptomatic shoulder girdle trigger points are found in 54% of females and 43% of males


The Trend is NOT Our Friend

The Growth in the Social Security Disability Rolls: A Fiscal Crisis Unfolding


Wall Street Journal
NOVEMBER 30, 2010

Social Security Disability Benefits Unsustainable

“I have the results of your X-rays”
NEJM 1994
Jensen, MC. Jul 14;331(2):69-73.

MRI of Lumbar Spine in People Without Back Pain

98 people NO h/o LBP:

36% Normal discs all levels
52% 'bulge' @ one level
27% 'protrusion'
1% 'extrusion'

CONCLUSION: Discovery by MRI of bulges or protrusions in people with low back pain may frequently be coincidental

The relationship between the magnetic resonance imaging appearance of the lumbar spine and low back pain, age and occupation in males
European Spine Journal March 1997

• No relationship between LBP and disc degeneration.
• No differences in the MRI appearance of the lumbar spine were observed between five occupational groups.
• No clear relationship between the MRI appearance of the lumbar spine and LBP
• 32% of asymptomatic subjects had abnormal lumbar spines
• 47% of all the subjects h/o LBP had normal lumbar spines.
• No change in the MRI appearances of their lumbar spines that could account for the onset of LBP.

"Your test results were negative – get lost!"
"When all else fails, examine the patient."
Dean Naughton


Figure 1. Probability of work disability after musculoskeletal injury in workers who had not returned to work by 91-97 days.

“Toto, I have a feeling we’re not in Kansas anymore”

The Wizard of Oz 1939 film

The Trigger Point

Baldry, PE. Myofascial Pain and Fibromyalgia – A Clinical Guide to Diagnosis and Management. Churchill Livingstone

TRIGGER POINT SNAP PALPATION & DRY NEEDLING → Local Twitch Response
The Neurophysiology of Myofascial Trigger Points

Local Twitch Response is characteristic of this condition; it is activated by snapping palpation, pressure, or needle insertion at the trigger point. It is manifested by a burst of activity in the muscle band that contains the activated trigger point. No activity is seen at other muscle bands.

Data from experiments with the rabbit indicate that this is a spinal reflex, as it is abolished by transection of the motor nerve innervating the trigger point and infusion of lidocaine.

Transection of the spinal cord above the level of the trigger point fails to permanently alter the trigger point response.


Myotatic Spinal Reflex

The Reflex Hammer Stimulates Brief Muscle Contraction, Then Release

Dry Needling Stimulates LTR thru Spinal Reflexes

The Pin Causes Shortened Muscle Fibers To Contract Briefly, Then Relax
Myofascial Pain Syndrome: Electromyographic Changes Associated with Local Twitch Response

Electromyographic (EMG) recordings of the local twitch response in sixteen subjects with pain from active myofascial trigger points in the upper trapezius muscle were examined and compared with recordings from the contralateral normal muscle bands in the same individual.

The motor unit electrical activity of the bands with trigger points was found to be significantly higher (p less than or equal to 0.001) than that of the normal muscle.


Does EMG (Dry Needling) Reduce Myofascial Pain Symptoms Due to Cervical Root Irritation? 

Grp 1 82/122: avg 52% decr Pain, 14% > 75%
Grp 2 23/42: avg 39%, 0 > 75%

One ‘Treatment’ Only
Clinical Research on T.P.I. & Dry Needling for MFPS

- Lewitt K: The Needle Effect (NE) in Relief of Myofascial Pain
  *Pain* 1979
  NE: Immediate (Hyperstimulation) Analgesia Without Hypasthesia
  241 Pros./312 Painful Structures = 86.8% Immediate Analgesia
  288/312 sites: 92 ‘Permanent’, 58 Several Months
  63 Weeks, 32 Days, 43 NO Relief
  75/244 pts. most effective c/w manipulation, traction, exercise, Rx

- Garvey TA: Prospective, randomized, dbl-blind eval of t.p.i. therapy for LBP
  *Spine* 1989
  Injectate NOT critical – dry needling is ly effective

- Jaeger B: Dbl-blind controlled study of different myofascial injection tech.
  *Pain* 1987
  Reduction lp. tenderness dependent only on needle
  Reduction in referred sx greater with solution but indep. of kind
Dry Needling of Muscle Motor Points for Chronic LBP

- 56 Men w/ C-LBP
- 12 – 28.6 wks. duration
- 29 Study / 27 Ctrl Pts.
- IMS avg 7.9 Rx
- D/C, 12 wks., 27.3 wks.
- Ctrl. 4 RTW, 14 LD, 9 DISABLED
- 18/29 RTW, 10 LD 0 DISABLED!!!
REVIEW ARTICLE
Needling Therapies in the Management of Myofascial Trigger Point Pain: A Systematic Review

Conclusions: Direct needling of myofascial trigger points appears to be an effective treatment, but the hypothesis that needling therapies have efficacy beyond placebo is neither supported nor refuted by the evidence from clinical trials. Any effect of these therapies is likely because of the needle or placebo rather than the injection of either saline or active drug. Controlled trials are needed to investigate whether needling has an effect beyond placebo on myofascial trigger point pain.

Arch Phys Med Rehabil Vol 82, July 2001
Cummings, T.

Trigger Point Dry Needling

Considering the invasive nature of TrP-DN, it is very difficult to develop and implement double blind and randomized placebo-controlled studies.

When researchers use minimal, sham, superficial, or placebo needling, there is growing evidence that even light touch of the skin can stimulate mechanoreceptors coupled to slow conducting afferents, which causes activity in the insular region and subsequent increased feelings of well-being and decreased feelings of unpleasantness.


Cochrane Reviews

Highly regarded, rigorous reviews of the available evidence of clinical treatments.

2005: “To assess the effects of dry needling for myofascial pain in the low back region”

Thirty-five RCTs covering 2861 patients were included in this systematic review.

“Dry-needling appears to be a useful adjunct to other therapies for chronic low-back pain.”

“There is none so blind as the double-blind.”

A Novel Microanalytical Technique for Assaying Soft Tissue
Demonstrates Significant Quantitative
Biochemical Differences in 3 Clinically Distinct Groups:
Normal, Latent, and Active.
Jay P. Shah, MD National Institutes of Health 2003

This technique recovered extremely small
quantities (0.5L) of very small substances
(molecular weight, 100kd) directly from soft
tissue.

There were significant differences in the levels of
pH, substance P, CGRP, bradykinin,
norepinephrine, TNF, and IL-1 in those subjects
with an active MTrP (symptoms, MTrP present)
compared with subjects with a latent MTrP (no
symptoms, MTrP present) and normal subjects
(no symptoms, no MTrP).

An In Vivo Microanalytical Technique for
Measuring the Local Biochemical Milieu of
Human Skeletal Muscle

The Milieu Level of Analytes is different
in those with/out pain, those with active
vs. latent or no tps, and that it changes
and can be tracked before, during and
after a LTR

Evidence of Neuroaxonal Degeneration in MFPS
Chang, CW, 2008, Europ Jurnal of Pain

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Values of mean consecutive difference (MCID) obtained in patients with myofascial pain syndrome (MPS) and normal controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Muscles</td>
<td>Subgroup numbers</td>
</tr>
<tr>
<td>Normal controls</td>
<td>16</td>
</tr>
<tr>
<td>Trigeminal</td>
<td>8</td>
</tr>
<tr>
<td>Levator scapulae</td>
<td>8</td>
</tr>
</tbody>
</table>

Values are mean ± SD, HNL, highest normal limit.
For comparison of values with the same letter: **p < 0.01 by Student's t-tests.

<table>
<thead>
<tr>
<th>Needle Effect</th>
<th>Clinical Response</th>
<th>Neurophysiological Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Twitch Response</td>
<td>Increased ROM</td>
<td>Reversal of Muscle Contracture</td>
</tr>
<tr>
<td>Stimulation of Spinal Reflexes</td>
<td>? Normalization of Spindle Mechanism/Sensitivity</td>
<td></td>
</tr>
<tr>
<td>Hyperstimulation Analgesia</td>
<td>Decreased Pain</td>
<td>Melzack and Wall Gate Theory</td>
</tr>
<tr>
<td>Direct and Reflex Stimulation &amp; Normalization of Therapeutic Target</td>
<td>Decreased Myalgic Hyperalgesia</td>
<td>Reversal of Neuropathic Supersensitivity</td>
</tr>
<tr>
<td>? (Decreased Spontaneous Endplate Activity)</td>
<td>?</td>
<td>Cannon's Law</td>
</tr>
<tr>
<td>Direct Stimulation</td>
<td>Lewis Triple Flare Response</td>
<td>Axon Reflex</td>
</tr>
<tr>
<td>Direct &amp; Reflex Stimulation</td>
<td>Normalization of Local Biochemical Milieu</td>
<td></td>
</tr>
<tr>
<td>Minor Tissue Trauma</td>
<td>Current of Injury Release of PDGF</td>
<td>Inflammatory Response</td>
</tr>
</tbody>
</table>
Treatment of tendon and muscle using platelet-rich plasma.

PRP is a fraction of whole blood containing concentrated growth factors and proteins. These cytokines direct tissue healing through autocrine and paracrine effects.

In this paper, the value of PRP as a treatment for acute or chronic tendon and muscle disorders is explored.


UNNECESSARY?

Are MRI-defined fat infiltrations in the multifidus muscles associated with low back pain?


Paraspinal/Multifidi Dystrophy secondary to radiculo-neuropathy i.e. SEGMENTAL

- Fatty Infiltration
- Dystrophic Contractile Elements
- Fibrosis
- Neurogenic edema
Lumbar Trophic Edema

Gunn, C.C. The Gunn Approach to the Treatment of Chronic Pain
Intramuscular Stimulation for Myofascial Pain of Radiculopathic Origin
Churchill Livingstone 1996

The Future of Myofascial Rx

www.eToims.com

http://www.youtube.com/watch?v=DCtzdeLLc08

TREATMENT OF MYOFASCIAL PAIN

MANUAL SOFT TISSUE THERAPY: Massage, Myofascial Release, Strain Counterstrain, A.R.T., Shiatsu, Rolfing
MYOFASCIAL MUSCLE = SHORTENED MUSCLE

Independent Therapeutic Aides

What to Do, What to Do?
- Manual soft tissue: Myofascial Release, trigger point massage, strain-counterstrain, A.R.T./Active Release Therapy, acupressure, shiatsu, Rolfing
- Stretch NOT Strengthen
- E-stim, TENS
- No/Low Impact CV for LIMBERING
- Address Ergonomic & other Postural Habits
- Biofeedback for postural, breathing & psychophysiological contributions to muscle tension
- Therapeutic Aides for self-Rx
- Dry Needling/Gunn-Intramuscular Stimulation: Best in resistant MTrP = mild dystrophy
- Muscle relaxants: Orphenadrine/Flexeril/Baclofen
- Treat ANXIETY, sleep disturbance, Depression
What Not To Do: Intramuscular Steroid Injection = Muscle Atrophy

The End?

The marijuana is covered, but there's a co-payment for the Grateful Dead music.