Treatment of Myofascial Pain Syndrome

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Patient Reports Skeletal Pain

• Local Injury
• Referred from Joint, Nerve, or Viscera
• Myofascial
• Part of Generalized Musculoskeletal Disorder (Fibromyalgia, Rheumatologic Disease)
Physical Examination

- Normal neurological examination
- Normal joint examination adjacent to area of pain
- Tenderness located at the muscle rather than the muscle-tendon or tendon-bone junction
- Presence of Trigger Point
What is a Trigger Point?

• Hyperirritable focus in muscle
• Associated taut band
• Pressure causes local and referred pain
• Pressure causes local twitch response
• May be latent as it causes no pain at rest
What Causes a Trigger Point?

• Acute Trauma
• Repetitive Trauma: Injury or Postural Stress
• Role of Fitness in Prevention
Pathophysiologica l Theories on Trigger Points

• Injury results in encapsulation of intrafusal fibers resulting in increased afferent activity inducing spasm
• Local muscle injury with calcium release resulting in sustained muscle contraction compromising blood supply
EMG of Trigger Points

- No abnormal spontaneous activity
- Sustained motor unit activity: intrafusal muscle fiber?
- Similar activity as seen in endplate zones
Distinction from Tender Points

- Painful areas with 4 kg pressure
- No taut bands or referred pain
- Distinct location in association with fibromyalgia
- Association with widespread pain rather than focal
- Normal EMG, MRI and metabolic studies
- May point to central nociceptive defect
Are Trigger Points Acupuncture Points?

• Classic 1977 Melzack review article claims a 71% concordance

• Travell and Simons refute in their 1983 Trigger Point Manual: “derived from vastly different concepts”
Uniqueness of Trigger Points

- Acupuncture points have distinct anatomical locations: channel and extra points
- Trigger points are defined by pressure pain, not distinct location
- Acupuncture points for pain are proximate to trigger points in 16% of cases
Examination

- Palpation of nodule in muscle
- Pressure causes local and referred pain pattern (at least 2 kg less than other side pressure-pain threshold)
- Pressure perpendicular to the line of taut muscle elicits a muscle contraction
- Pressure reproduces the pain complaint
- Local, not diffuse
Treatment

• Identify and treat causative factors: postural abnormalities, conditioning, overuse
• NSAID’s, muscle relaxants, sleep
• Spray and Stretch, myofascial release, stretch, strengthening, conditioning, acupuncture
• Trigger Point Injection
Conservative Treatment
Gam, Pain, 1998.

• 58 patients with cervical myofascial pain of greater than three months duration with at least ten trigger points
• 8 treatments over four weeks with a six month follow-up.
• Group one: Ultrasound, massage and exercise
• Group two: Sham ultrasound, massage and exercise
• Group three was a control group
• Visual analogue scale, number of trigger points, and analgesia use
Results

• Both treatment groups had a significantly decreased number of trigger points compared to the control group.
• No statistically significant difference in pain visual analogue score, activity related pain visual analogue score, or analgesia use
• No clinical benefit in the use of ultrasound and massage therapy in patients with myofascial trigger points.
TENS

- Four modes of TENS and a no-stimulation control with 60 subjects
- Significant pain reductions with 100 Hz, 250 msec stimulation followed by 100 Hz, 50 msec and then pain suppressor TENS
- No pain reductions were found in the 2 Hz, 250 msec TENS or the control group
- No significant change in myofascial trigger point sensitivity assessed with the pressure algometer
Magnetic Stimulation for Trigger Points


- Randomized control study of 18 patients
- Group 1: Ten magnetic stimulation treatments over 2 weeks
- Group 2: Ten sham ultrasound treatments over 2 weeks
- VAS, ROM, Trigger points measured at end of treatment, 1 week, 1 month
Magnetic Treatment Protocol

- 5 s trains at 20 Hz with 5 s pauses for 20 minutes
- 15% maximal output increased by 2% increments until patient noted local sensation but no discomfort
Summed VAS Scores

- Pre
- Post
- 1 week
- 2 week

Categories: rMS, Sham
Result of Magnetic Stimulation

- Mirrored reduction in VAS and Trigger Point number and sensitivity
- ROM did not significantly change
Contraindications to Trigger Point Injection

• Bleeding disorder
• Anticoagulation
• Local or systemic infection
Possible Complications to Trigger Point Injection

• Vasovagal response
• Skin infection
• Hematoma
• Needle breakage
Injection Technique

- 20 or 22 g needle
- Clean skin with alcohol
- Use Lidocaine/Bupivacaine for immediate pain relief. May use saline or dry needling.
- Apply tension or a pinch between two fingers to prevent rolling and hematoma
Injection Technique

• Dry needle until muscle twitch
• Withdraw before injecting solution
• Withdraw needle to SQ, then redirect medial, lateral, superior, inferior, repeating process until trigger is abolished and taut band reduced
What Happens in a Trigger Point Injection?

- Interrupt peripheral nociceptive input: break the vicious cycle of pain
- Break up fibrous encapsulation of intra-fusal fiber, decrease afferent input
- Induce local stretch of taut band, decreasing sensitivity
Botox A for Chronic Neck Pain

• 50 patients with neck pain of greater than 3 months duration: 38W, 12M
• Exclusions: other cause of pain identified, litigation, pending surgery, psychological history (SF-36, Beck)
• 36% insidious, 4% work, 40% auto, 14% personal injury
• Neck Pain and Disability Scale, Algometry
NPAD Results

![Bar graph showing NPAD results for Botox and Saline at different time points (0, 4 weeks, 8 weeks, 12 weeks, 16 weeks).]
Algometer Scores

![Chart showing Algometer Scores over time for Botox and Saline treatments.]

- **Botox**
  - 0 weeks: 4.0
  - 4 weeks: 2.5
  - 8 weeks: 2.0
  - 12 weeks: 1.5
  - 16 weeks: 1.0

- **Saline**
  - 0 weeks: 3.5
  - 4 weeks: 2.0
  - 8 weeks: 1.5
  - 12 weeks: 1.0
  - 16 weeks: 0.5

**Weeks:** 0, 4, 8, 12, 16
Patient Self Assessment

![Graph showing self-assessment scores over time for Botox and Saline treatments.](image-url)
Botox for Cervicogenic Headache
Freund and Schwartz, Headache, 2000,

- 26 patients with cervical whiplash with cervicogenic headache
- Half treated with 1 cc saline, half with 100 units Botox A in 1 cc saline
- Outcome measures: VAS, ROM over 4 weeks
- Pre-treatment VAS: 6 for Botox group, 3 for Saline group
- Result: Botox group better than pre-treatment
Botox for Myofascial Pain

Ferrante, Anesthesiology, 2005.

• A 12-week, randomized, double-blind, placebo-controlled trial in 132 patients with cervical myofascial pain
• Injected with either saline or 10, 25, or 50 units of botulinum toxin A into up to five active trigger points
• Patients received myofascial release physical therapy and amitriptyline, ibuprofen, and propoxyphene with acetaminophen
• Visual analog pain scores, pressure algometry, and analgesia medication use at baseline and one, two, four, six, eight and twelve weeks post-injection
• No significant differences
Trigger Point Therapy for Interstitial Cystitis


- 52 patients for 1-2 visits over 8-12 weeks
- 83% with 50% or better reduction of symptoms
- 65% reduction in mean pelvic floor tension by EMG
Trigger Point Injections in Fibromyalgia
Hong, Archives PMR, 1996.

- Nine patients with myofascial pain syndrome and nine patients with fibromyalgia with trigger points
- Statistically significant improvements in pain intensity, pain threshold and range of motion two weeks after injection
- Similar for range of motion and pain threshold
- Myofascial pain syndrome group (VAS 7.67 pre-treatment vs. 1.33 two weeks post-treatment) had significantly better pain intensity improvement than the fibromyalgia group (VAS 8.11 pre-treatment vs. 5.89 post-treatment)
- Myofascial pain syndrome group noted their improvements starting immediately post-injection while the fibromyalgia group had more post-injection soreness and did not experience improvement until nearly two weeks post-injection
Results of Prospective Studies

• Massage decreases trigger point number and sensitivity but not VAS
• Trigger Point Injection decreases VAS and trigger point score
• Botox A decreases VAS and trigger point score no better than saline with increased side effects and cost
• Magnetic stimulation results in sustained benefit compared to controls but has not been compared to traditional therapy
Questions?