Counterstrain in the Fibromyalgia Patient

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Learning Objectives

- Define and describe fibromyalgia
- Describe the history of counterstrain
- Define and describe counterstrain technique
- Discuss the safety and efficacy of counterstrain
- Apply the principles of diagnosis and treatment of the counterstrain technique in a patient with fibromyalgia

“Nature applies to you the switch of pain when her mandates are disregarded and when you feel the smarting of the switch, do not pour drugs into your stomaches, but let a skillful engineer adjust your human machine, so that every part works in accordance with nature’s requirements.”

AT Still

Case Presentation
LK

- 24 year old female fell down the stairs freshman year of college, landed on bottom
- Started having ischial tuberosity pain, coccygeal pain, urethral pain
- Went to Physical Therapy for pelvic floor issues
- Never felt like she fully recovered
- Patient describes widespread chronic body pain
- Feels like her “entire body is a bruise”
- Hypersensitive to fabrics and gentle pressure

An Overview of Fibromyalgia

- Fibromyalgia can be thought of as a *centralized* pain state that is a lifelong disorder which begins in adolescence or young adulthood
- Environmental factors most likely to trigger fibromyalgia include infections (EBV, Lyme disease, viral hepatitis), trauma or abuse
- It is the second most common “rheumatologic” disorder after osteoarthritis
- Fibromyalgia affects 2 to 8% of the population

Fibromyalgia Diagnostic Criteria

- The 1990 American College of Rheumatology fibro assessment required patients to have chronic widespread pain and tenderness in 11 out of 18 tender points.

- After reviewing literature from 1955 through the 2000's, the ACR modified the diagnostic criteria to include numerous somatic symptoms including pain, fatigue, cognitive issues, IBS, depression/anxiety and headaches.

Pathophysiology of Fibromyalgia

- Genetic factors may explain the strong familial predisposition to chronic pain
  - There are genes associated with breakdown or binding of pain sensitivity-modulating neurotransmitters and other inflammatory pathways.
  - Pain sensitivity is polygenic based on imbalances or altered activity of various neurotransmitters

Other Chronic Pain Conditions

- 10 to 30% of patients with chronic pain conditions have fibromyalgia.

These include:

- Osteoarthritis
- Rheumatoid arthritis
- Lupus

Epidemiology of Fibromyalgia

- Female to male ratio of 3:1
- Can develop at any age, including in childhood
- Prevalence is similar in different countries, cultures, and ethnic groups
- Genetic factors
- There is NO evidence that fibromyalgia has a higher prevalence in industrialized countries and cultures

Treatment of Fibromyalgia

- It is best to integrate both pharmacologic with nonpharmacologic treatment
- Refer to specialist(s) if the diagnosis is uncertain or if patient is refractory to therapy
  - Multidisciplinary pain clinic
  - Psychiatry or Psychology
  - Rheumatology or Neurology

Pharmacologic Therapies

- Tricyclics (amitryptaline, nortryptaline)
- SNRI medications (duloxetine, venlafaxine)
- Gabapentinoids (gabapentin, pregabalin)
- Low dose naltrexone (promising/upcoming)

- NOT EFFECTIVE
  - Opiates (pts have a hyperactive endogenous opioid system)
  - Corticosteroids
  - NSAIDS (works on peripheral pain)

Nonpharmacologic Therapies

- 3 BEST studied nonpharmacologic therapies (level 1A evidence):
  - Education
  - Cognitive Behavioral therapy
  - Exercise

- Other therapies with some evidence of efficacy:
  - Trigger point injections
  - Tai Chi, Yoga
  - Cannabinoids
  - Acupuncture
  - Myofascial release therapy
  - Chiropractic or Osteopathic Manipulation

Nutritional Support

- Complete vitamin including amino acids, vitamins and mineral
- B-complex
- Digestive enzymes
- Magnesium glycinate
- Zinc picolinate
- Vitamin C
- B12 IM
- N-acetyl cysteine
- Omega 3
- Mitochondrial energy treatments
- Acetyl L carnitine
- CoQ10

Additional Integrative Therapies

Sleep treatments

- Melatonin 1 mg qhs
- Doxylamine 25 mg qhs
- Trazadone 50 mg qhs
- Doxepin 5-10 mg qhs
- Cyclobenzaprine 5 to 10 mg qhs
- Zolpidem 5 to 10 mg qhs

Studies of OMT in Fibromyalgia

- In 2002 Gamber et.al. performed a study of 24 female patients all who met criteria for fibromyalgia were randomly assigned to receive 1 of 4 therapies:
  - OMT only
  - OMT and education
  - Moist heat
  - Control group (no change to current medications)
- Pain was assessed and measured on each visit by use of a 9 kg dolorimeter on tender points, Chronic Pain Experience Inventory and Present Pain Intensity Scale
- Depression was assessed using the Center for Epidemiology Studies Depression Scale
- The findings favored the use of OMT combined with education over standard medical care.

Studies of OMT in Fibromyalgia

- A pilot study conducted by Marske, et al in the Journal of Alternative and Complementary Medicine published Jan 3, 2018 compared the safety and efficacy of 3 treatment regimens in 29 patients with fibromyalgia
  - 8 pts received Gabapentin only (900 mg/day)
  - 11 pts received OMM only (30 minutes weekly for 8 weeks)
  - 10 pts received combined treatment of OMM and gabapentin

- Outcomes were measured using Wong-Baker FACES Pain Rating Scale, Clinical Global Impression of Health (CGI), Fibromyalgia Impact Questionnaire (FIQ), and number of tender points

Results of the Study

- Patients receiving OMT alone and the patients who received the combined treatment of OMT and gabapentin displayed clinical improvement based on WBF ($p < 0.01$ and $p = 0.03$). The change among the gabapentin only group was not significant.

- The OMT only group was the only group to experience a significant decline in CGI scale ($P < 0.01$).

- No statistically significant changes were observed with the FIQ or number of tender points which is not unusual given the small sample size

OMT Techniques and Fibromyalgia

- Goals of treatment include
  - Normalizing nerve function
  - Balancing sympathetic and parasympathetic tone
  - Alleviate pain
  - Improve lymphatic function and circulation
- Patients may respond best to gentle, INDIRECT OMT techniques
- Pts with fibromyalgia are sensitive and it is very important to NOT over treat which can cause a flare of symptoms

Counterstrain Definition

- Counterstrain is:
  - 1) An osteopathic system of diagnosis and INDIRECT treatment in which the patient's somatic dysfunction contains an associated myofascial tender point which is treated by using a position of spontaneous tissue release while simultaneously monitoring the tender point
  - 2) Counterstrain tenderpoints are discrete, nonradiating, hyperalgesic areas in the myofascial tissues

History

- Developed in 1955 by Lawrence H. Jones, DO after he produced the spontaneous release of a somatic dysfunction in a patient by placing them in specific positioning for comfort.

- Initially Dr. Lawrence Jones referred to this treatment approach as *spontaneous release by positioning* but found the term to be cumbersome and then decided to use a shorter term, *strain-counterstrain*.

- Initially, only posterior tender points were identified. Anterior tender points were identified later and by treating both, Dr. Lawrence noted an improvement in efficacy

Sustained Abnormal Metabolism Theory Regarding the Effectiveness of Counterstrain

- Suggests that the tissue injury alters local body position, affecting local microcirculation and tissue metabolism.
- Due to the creation of localized ischemia, the nutrient supply and metabolic waste removal are reduced.
- Pro-inflammatory cytokine production is then increased
- All of the above create edema and tenderness
- Treatment of the tenderpoint restores blood flow, reduces cytokine production and improves removal of metabolic waste

Mechanism of Action

- Shortening myofascial tissues associated with the tender point reduces the somatic dysfunctions nociceptive (nerve pain) which then normalizes the neurophysiological activity, myofascial tone and length and improves local circulation.

- Research shows there is also a down regulation of pro-inflammatory mediators

Indications for Counterstrain

- Acute or chronic somatic dysfunctions associated with a tender point

Contraindications

ABSOLUTE

- Lack of patient consent/cooperation
- Inability to tolerate the treatment position(s)
- Neurologic symptoms brought on by treatment positioning
- Exacerbation of potentially life-threatening symptomatology by treatment position (heart rate or rhythm changes, oxygen saturation) in a monitored patient.

Contraindications

RELATIVE

- Patient is severely ill or unable to relax
- Avoid cervical hyperrotation/hyperextension in patients with known cervical ligamentous instability or vertebral artery disease
- Inability to effectively communicate
- Severe Rheumatological flare

Controversy over Counterstrain

- Janet Travell, MD considered her trigger points the cause of the pathology
- Lawrence Jones, DO considered his trigger points a manifestation of somatic dysfunction elsewhere
- Jones then changed his terminology to tender points to avoid any confusion

Trigger Point	Tender point
-Pt presents with characteristic pain pattern	-Typically no characteristic pain pattern
-Located in muscle tissue	-Located in muscles, tendons, ligaments, fascia
-Locally tender	-Locally tender
-Elicits jump sign when pressed	-Elicits jump sign when pressed
Elicits a radiating pain pattern when pressed	-No radiating pattern when pressed
-Present within a taut band of tissue	-Taut band not present
-Dermographia of skin over point	-No dermographia
-Twitch response with snapping palpation	-Twitch response not present

Safety and Efficacy

- Post-treatment reactions may include myalgias, arthralgias, fatigue
- Avoid positions that do not relieve pain
- Avoid positions that cause discomfort, dizziness, panic or neurologic symptoms
- Use caution when treating a patient with severe osteoporosis or rheumatoid arthritis

Location of Tender Points

- Can be found in the tendinous attachments, the belly of the muscle and in ligaments

Principles of Treatment

1) Diagnose somatic dysfunction as part of a physical examination
2) Find a significant tender point
3) Establish tenderness scale
4) Monitor tissue texture and tenderness
5) Place the patient PASSIVELY in a position that results in the greatest reduction of tenderness and tissue texture abnormality and fine-tune positioning
6) Maintain positioning for at least 90 seconds
7) SLOWLY return the patient passively to the pre-treatment position while maintaining contact with the TP
8) Re-assess

Special Considerations

- The tissues being treated may/may not be located directly beneath the tender point being treated
- The exact position of ease will vary based on the tissue response
- Scan for both anterior and posterior TP's to find the most significant TP
- The most significant TP should be treated FIRST

Special Considerations

- ANTERIOR tender points typically require FLEXION
- POSTERIOR tender points typically require EXTENSION
- MIDLINE points typically require primarily FLEXION or EXTENSION
- The more LATERAL the TP, the more SIDEBENDING and ROTATION are required

Goals of Counterstrain

- The goal is complete reduction of tenderness, or as close to 100% as possible
- Use both tenderness and tissue texture changes to find the best treatment position
- The presence of a therapeutic pulse indicates good myofascial relaxation and improved local circulation

Clinical Pearls

- A single somatic dysfunction may have more than one associated tenderpoint
- Test for tenderness using the same amount of pressure each time
- An experienced DO's palpatory abilities can be more reliable than a pts report of tenderness
- Spend a little time to fine tune to completely eliminate the tenderness of the tenderpoint
- Monitor the point the entire time and consider adjusting the position to optimize treatment

Overview of Counterstrain Lab

We will practice treating tenderpoints on our lab partner:

- Cervical
- Thoracic
- Lumbar
- Upper Extremity
- Lower Extremity

Cervical Spine

Anterior Cervical Tenderpoints :

- C1: ROTATE AWAY (RA)
- C2-C6, C8: FLEX to level of dysfunction, SIDEBEND AWAY, ROTATE AWAY (F SARA)
- C7: FLEX to C7, SIDEBEND TOWARD, ROTATE AWAY (F STRA)

Cervical Spine

Posterior Cervical Spine:

- Inion: FLEXION
- Almost all posterior cervical TP are EXTEND, SIDEBEND AWAY, ROTATE AWAY (E SARA)

C4-8 Posterior

Extend
SARA

Anterior Thoracic

T1-T2:
The patient is seated on the treatment table with hands behind the head

Physician stands behind patient and wraps arms under patient's axillae and around the manubrium causing marked flexion of the cervical and thoracic region, then fine-tunes

T1-6:
Similar to T1-2 but patients arms are down

Anterior T1-2

Marked flexion of the cervical and thoracic spine

Lower Anterior Thoracic

- Anterior T9-12 tenderpoints are treated with the patient supine, the patient's hips and knees are flexed and supported by the physicians knee

Posterior Lumbar

Pt PRONE: EXTEND, SIDEBEND AWAY, ROTATE AWAY (E SARA)

Exception: lower pole of L5 is treated with the affected side leg flexed at hip and knee off the table

Supraspinatus Tenderpoint

- Dysfunction may coexist with subdeltoid bursitis
- Patient may be side-lying or supine
- Treatment position is moderate flexion, abduction and external rotation

Plantar Fasciitis

- Patient seated
- Tender point is located in the medial heel
- Treatment position: Plantar flexion and inversion of the foot

Resources:

- RG Gamber, JH Shores, DP Russo, C Jimenez, BR Rubin (June 2002). **Osteopathic manipulative treatment in conjunction with medication relieves pain associated with fibromyalgia syndrome: results of a randomized clinical pilot project.** The Journal of the American Osteopathic Association, June 2002, Vol. 102, 321-325. doi:10.7556/jaoa.2002.102.6.321
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