Acupuncture and Dry Needling’s Role in Pain Management

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Objectives

1. Acupuncture and Dry Needling are viable options to relieve back pain and improve activities of daily living.

2. Acupuncture and Dry Needling can be used in complement to traditional therapies including Physical Therapy, Surgery and Pain Management to improve Patient outcomes.
Low back pain is very common!

- It actually is one of the major reasons someone visits their doctor or the ED
- Low back pain is responsible for more than 2.5 million visits to U.S. emergency departments annually. Nearly 30% of patients who present to an ED with acute LBP report functional impairment or pain 3 months later.
- Who’s had low back pain before?

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Besides the common cold, low back pain results in more lost work days than any other physical affliction in persons under the age of 45.

Who’s Had Acupuncture Before?
Who’s Had Dry Needling Before?
What’s the difference??

- They both use acupuncture needles
- There are acupuncture points that are Myofascial Trigger Points (dry needling points)
- There are dry needling points that are not acupuncture points
- Different theories and applications
It’s how you needle the point and the theory that makes the difference!
How does Acupuncture Work?
Acupuncture is part of the Chinese system of healthcare discovered 3500 or 5000 or 7000 years ago...??
It is based on the concept the body needs the proper flow of energy to the organs and the tissues to be well.

If something is hot – cool it.  
If something is cold – warm it.  
If is deficient – strengthen it.  
If it has too much – move it.

Muscle spasm –  
Ligament laxity –  
Dysfunctional Psoas -  
Elderly Patient
If you tried to water a garden with a hose that had a kink or blockage that prevented water from getting through, then the plants in that garden would die. That vital flow of water could not reach the plants.
In the same way, if there is a block in the flow of blood to areas of injury in your body, removing the block would allow the blood to return and help healing to occur.
Scientific Basis of Acupuncture

• **Neurohumoral** – Epinephrine, GABA, Serotonin, dopamine, acetylcholine, histamine; impulse form nerve to effector organ

• **Morphogenetic – growth control** The neurophysiology model on the long-term effects of acupuncture emphasizes the trophic and anti-inflammatory effects of acupuncture

• **Nerve Reflex Theory** – Autonomic Reflex Arc, Somatic Reflex Arc

• **The gate control theory of pain**: how non-painful sensations can override and reduce painful sensations that are allowed to brain

• **Endorphin / Enkephalin**: mu, delta, kappa, dynorphin

[https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2644274/](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2644274/)
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Effects of Acupuncture on the Brain

- UCI - Use functional MRI to investigate the mechanisms of acupuncture analgesia
- Stimulates Li 4 revealed activation of visual cortex. Auditory Cortex
Research on Auricular points

- WHO found 43 points have proven therapeutic value
- Therapeutic effect can be achieved by needling, temperature variation, laser, ultrasound, and pressure.
- NADA / PTSD
- Able to decrease severe pain very well (press tacs)
Auricular Acupuncture Effective and Easy to use

• Prior to surgery – Ease anxiety improve pain
• Post Op – Ease anxiety, improve pain, decrease rebound pain or headaches
• During or pre PT appointment for improved performance and pain relief (press tacs)
• Opiate / Alcohol – detox
• Weight loss
Increase in stem cells and decrease Inflammation

• EA activated sensory ganglia and SNS centers to mediate the release of MSC that can enhance tissue repair, increase anti-inflammatory cytokine production and provide pronounced analgesic relief.

• Increases in IL-10

• https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5530374/
EA can help to remodel tissue

- Electrical acupuncture treatment has been shown to suppress myostatin expression, leading to satellite cell proliferation and skeletal muscle repair. Acupuncture plus low-frequency electrical stimulation (Acu-LFES) could enhance muscle regeneration and prevent muscle loss by replicating the benefits of exercise through stimulation of muscle contraction.

- Acu-LFES was shown to counteract diabetes-induced skeletal muscle atrophy by increasing IGF-1 resulting in stimulation of muscle regeneration.

Acupuncture Mechanisms of Action

- Conduction of electromagnetic signals
- Stem cell and growth factor release; NGF, BDNF
- Activation of opioid systems
- Changes in brain chemistry-release of neurotransmitters and neurohormones.
- Decrease in Substance P (neuropeptide px and inflammation)
- 2hz/mu, delta CNS
- 100hz/kappa Dynorphin Spinal Cord

**Quadratus lumborum** – Extends lumbar spine, laterally flexes lumbar spine to same side, elevates pelvis

**Huatuojiaji Points**
Spinal segments L1-L3. Perpendicular needle insertion 0.5-1.5 inches.

**Motor Point Location**
- **N:** Lumbar plexus
- **L:** Slightly lateral to UB 52 (Zhishi). Oblique needle insertion threaded 1.5 inches starting 3.5-4 cun lateral from the spine, directed toward UB 52 (Zhishi). This point is approximately 1.5-2 inches deep from the surface of the skin when measuring posterior to anterior.

**Antagonist Muscles**
Oblique abdominis internal and external, rectus abdominis and psoas major.

**Indications**
Low back pain, quadratus lumborum spasm or strain, constipation and adrenal insufficiency.

UB 52 (Zhishi) is traditionally used to strengthen the Kidneys (Shen), regulate urination and support the low back region.
Spinal points for disc herniations and spondylosis
Multifidus
Much more crazy evidence..
How does Dry Needling Work?

"Exactly which school of acupuncture are you from?"
Dry Needling

- DN of MTrP – allows sarcomere to resume its resting length and activate inhibitory dorsal horn interneurons. Implies DN causes opioid-mediated pain suppression and also blocks any incoming noxious stimulus into the dorsal horn by activating the serotonergic and noradrenergic descending inhibitory systems. (what does this sound like? Hint-NH or GCT)

- decrease in local concentrations of substance P and calcitonin gene–related peptide; which decreases px

Dry Needling

• The first, peer-reviewed journal article on dry needling published by a medical physician did not limit needle insertion to MTrP’s rather, the 241-patient study reported that only 2 of the 14 target structures were muscular TrPs. The other structures needled included ligaments, scar tissue, tendons, bones, and tendo-osseus insertion sites, all of which are types of connective tissue. In addition, ‘a high density of neurovascular structures’ has been found at dry needling target sites. Good evidence on types of DN – Contralateral Trap twitch

• https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4117383/
In a study reported in the Annals of Internal Medicine researchers studying low back pain problems concluded...

“Acupuncture effectively relieves chronic low back pain.”
How to Integrate or BE Integrative 😊

- Refer out for Epidural, TPI’s, Ablations when necessary or other Pain Management
- Refer for Spinal/Ortho Consult: if needed surgery, Acu/DN/ PT post op to promote healing, aid in recovery
- Refer for PT to restore fx and improve px
- All work WELL together to help our patients HEAL!
Nora

- CC: back pain radiating into both glutes, insomnia, low energy.
- 55yr old female with a 3 year hx of multiple level disc herniations at L3,4,5. Spondylolisthesis anterior. Not sleeping more than 2 – 4 hours per night interrupted
- Px before surgery 10/10.
- Surgery helped for about 1 year, then px returned to 7/10 – 9/10.
- Chronic use of opioid medications such as Norco 10/325 tid, Oxycontin ER 10mg, NSAIDS, Gabapentin
Treatment

• Acupuncture with Electrical Stimulation at Huato Jia Ji points at L2-L5, Motor and Trigger points at QL, Piriformis, 2 x week for 4 weeks.

• Nora reports – px reduction to 4/10, able to move around much easier and has more energy, till not sleeping as well as she would like.

• Add in Synaptamine 1 cap bid and herbal Rx

• Add in stretching exercises and myofascial release (restart PT)
• Continued electroacupuncture 1 x 4 weeks
• Nora comes in at week 2 crying, reporting that she has not felt this good in years. She is sleeping 6 hours a night and her px level never goes above a 4/10.
• Nora’s current px level staying around a 3/10.
• Current medications 5mg oxycontin ER
• Refer back to Pain Management for further consult and plan.
The Mind / Body Connection
Tai Chi and Qi Gong
What You Eat will cause Disease or Health
Individualized Treatments

Treatments designed to treat each individual’s differences.
Thank You!
Nerve Reflex Theory
- Ishikawa and Fujita et al, Japan, 1950s

- Autonomic nervous system extending thru the internal organs
- Viscera-mutinous reflex
- Cutaneous – Viscera reflex
- Acupuncture utilizes these reflexes for restoring the homeostasis of the body and accelerates the healing process.
The Gate Control Theory
Dr’s Melzack and Wall, 1965

- Model for acupuncture pain relief
- Specific nerve fibers that transmit pain to the spinal cord (substantia gelatinous)
- Balance between Stimulation & inhibitory fibers
- Short term block pain by acupuncture
Endorphin Theory
Dr. Pomeranz, Canada, 1996

- Increases the endogenous endorphins and enkephalins
- Decreases Substance P and increases neurohormones locally
Therapeutic Mechanisms of Acupuncture
1. Inserting a needle provokes an acute defensive inflammatory response, immune modulation.
2. Afferent nociceptive (pain) neurons distribute to the dorsal horn of the spinal cord.
3. Trigger the gamma loop efferent in the ventral horn and activate neurons that cross over the spinal cord to the brain.
4. Activate somatic motor nerves.
5. To muscles, and autonomic motor nerves to peripheral blood vessels and to the internal organs.