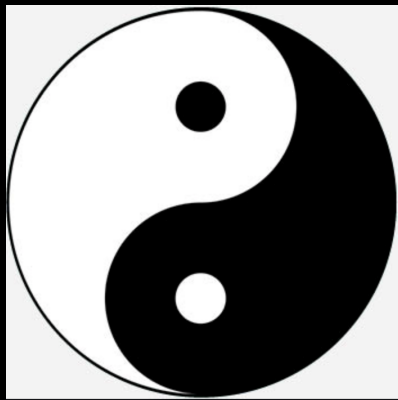


PainWeek®

Two Worlds > One: Applying Asian Medicine to Acute Pain Management

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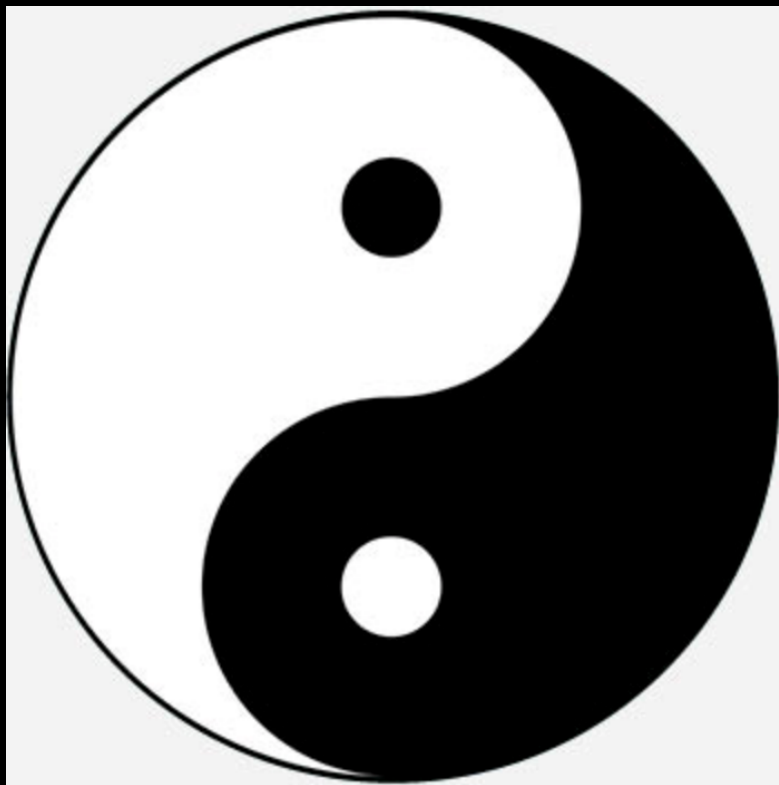


Disclosure

- Dr. Candiotti
 - Consultant/Independent Contractor: Baux Bio, Acacia, Takeda, Merck, AcetRx, Pfizer, Pacira, NEMA
 - ResearchGrant/Research Support: Acacia, Baux Bio, Takeda, AcetRx, Pacira, Pfizer-Grants are to the institution
 - Advisory Board: Takeda, Acacia
- Dr. Zeng-No relevant disclosures

Learning Objectives

- Describe the mechanism behind acupuncture
- Review the use of moxibustion in traditional Chinese medicine (TCM)
- Explain how TCM can be applied in a Western setting
- Discuss the uses of cold and hot therapy for the treatment of acute pain.

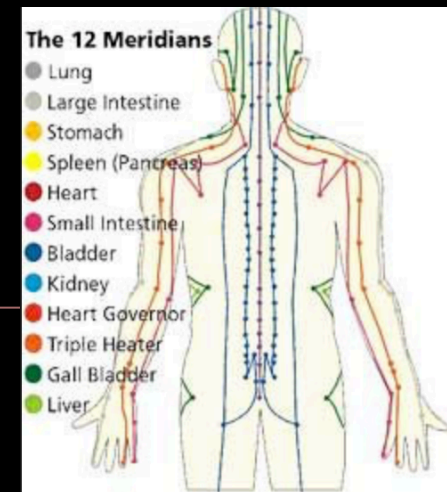


Dr. Keith Candiotti

Introduction to Traditional Chinese Medicine

Introduction to Asian Medicine

- 200 years, two different types of medicine in Asia to cure diseases and keep people healthy.
- Traditional Chinese medicine (TCM) — a variety of treatment methods have been developed through observation and experience over thousands of years.
 - The mechanisms of action usually remain unknown in Western terms.
- Western medicine consists of chemical compounds and medical techniques that have been discovered through scientific investigation and tested in controlled clinical trials.
- They differ in the composition of their medicines, the process of diagnosis, methods of proving a treatment's effectiveness, and even in their concept of 'health'. (Ting, 2011)



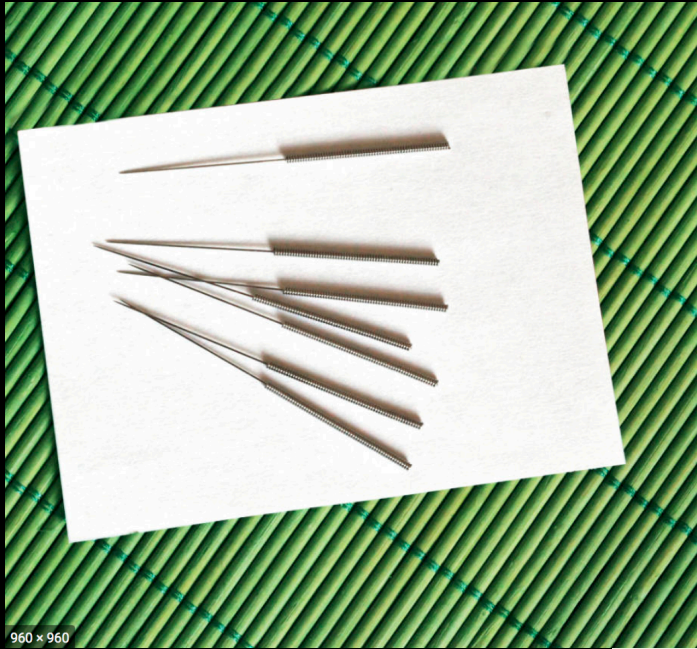
Introduction to Asian Medicine

- TCM includes many elements from Taoism, Confucianism and ancient Indian philosophies that describe the natural world, life, and the human body.
- Ideas such as *yin* and *yang*, which represent opposing yet complementary essences of nature; *wuxing*, which covers the five basic elements of the universe (wood, fire, earth, metal and water); *qi* or energy; and *xue*, the blood.
- These terms are related to disease and human health, but cannot be defined in terms of biochemical or biological facts — or indeed often measured.
- The literal translation of these tenets into other languages is often misleading. (Ting, 2011)



Introduction to Asian Medicine

- Acupuncture is a form of alternative medicine. It is used most commonly for pain relief.
- It is believed to have originated in China around the period of 100 BC. (White, 2004)
- Acupuncture is practiced through out Asia and much of the Western world.
- Acupuncture has been studied extensively.
- Western studies on the efficacy of acupuncture have varied. Some showing benefits (Lian, 2014) while other studies have failed to demonstrate a benefit.(Ernst, 2009)

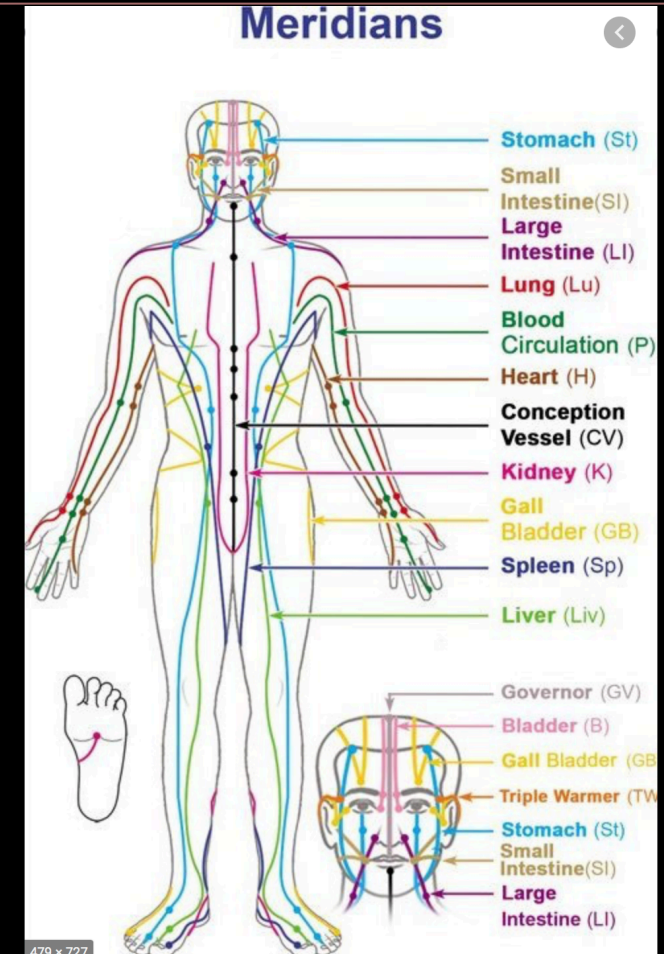


Dr. Xiaoling Zeng

Two Worlds > One: Applying Asian Medicine to Acute Pain Management

Acupuncture

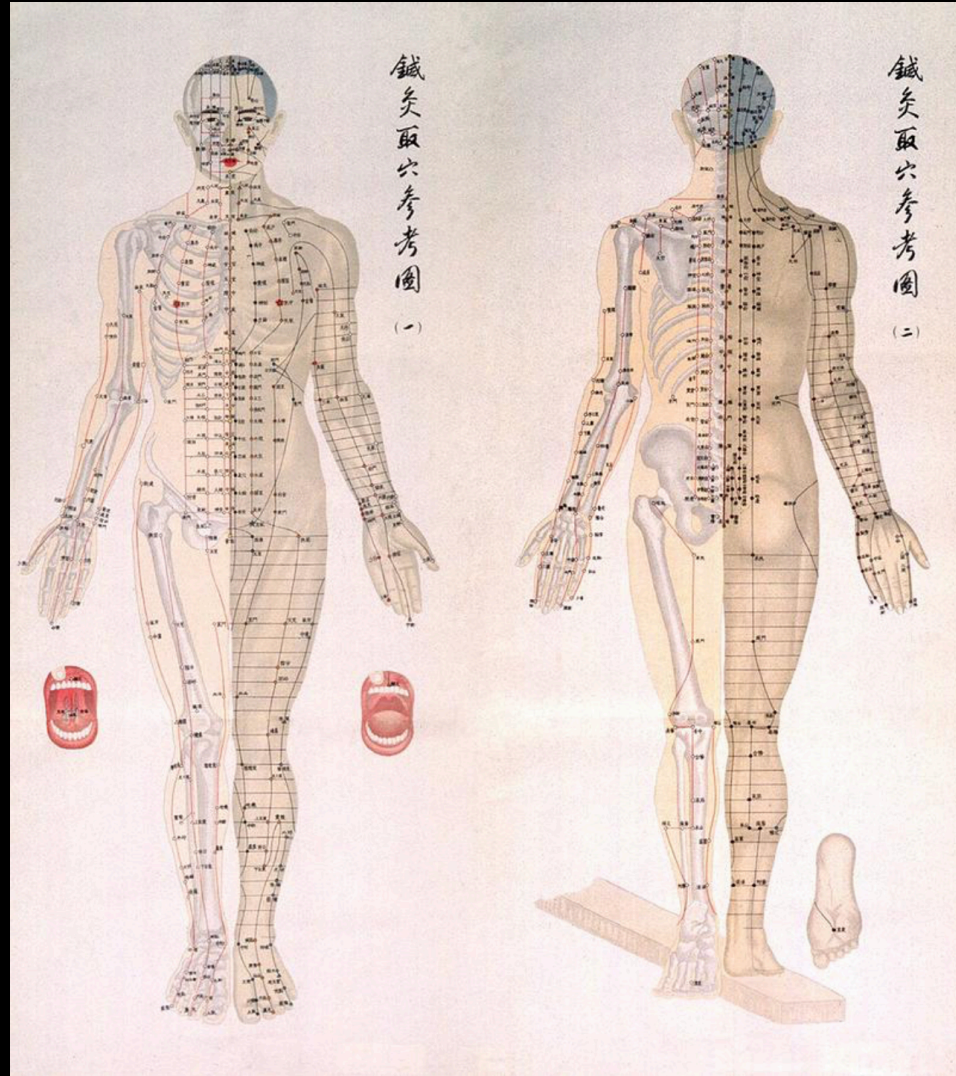
- Acupuncture began in China more than 2,500 years ago.
- It involves inserting thin needles at certain points on the body.
- According to traditional Chinese medicine, the body has more than 365 of these points.
- All points are connected by pathways or meridians, which create a flow of energy called Qi (pronounced “chee”).
- Stimulating these points is said to correct the imbalance of *qi* and improve the flow of energy.



Acupuncture-Uses

- Acupuncture is one of the oldest and most popular complementary alternative medicines in the world.
- It has been widely utilized for pain, including low back pain, osteoarthritis, headache, and cancer.
- The scientific explanation for the mechanism of action of acupuncture is incomplete.
- It is proposed that needling the acupuncture points stimulates the nervous system to release chemicals in the muscles, spinal cord, and brain.
 - Released agents include endorphins, enkephalin (a type of endorphin) and other neurochemicals.

Clinical Study for Acute Back Pain



Acupuncture As a Treatment for Lower Back Pain

- Most adults have the experience of low back pain (LBP) in their lives.
- Low back pain is one of the most common complaints when patients visit the emergency department (ED).
- Most cases of acute LBP are not related to any specific disease.
- Low back pain (LBP) is a very common disorder with consequences for the individual patient as well as for the society.
- Up to 80% of the population experiences back pain at least once in their lifetime, about 50% during the previous year.
- Point prevalence is 15%, and the condition relapses frequently, 40% within 6 months.

Clinical Study for Acute Back Pain-Acupuncture

- Acute LBP is treated primarily by primary health-care practitioners (GPs), physiotherapists, manual therapists, and chiropractors.
- There are numerous reports of patients with acute LBP responding clinically to acupuncture therapy.
- In a clinical trial for acute back pain. 60 Subjects were recruited from the Emergency Department (ED) of Changhua Christian Hospital (Taiwan).
- Participants were divided into either the treatment group or control group based on their willingness to accept acupuncture treatment. (3:1)
- All candidates received a standardized interview process and informed consent was obtained.

Clinical Study for Acute Back Pain

- Inclusion criteria were:
 - Age 20 to 90 years, either gender
 - Visit and stay in Emergency Department
 - Chief complaint being acute low back pain
 - Diagnosis with International Classification of Diseases 9th revision (ICD-9) code 724.2 Lumbago.

Clinical Study for Acute Back Pain

- METHODS:
- The treatment group (n=45) received a series of fixed acupuncture needles: Bilateral Hegu (LI4), Shousanli (LI10), Zusanli (ST36), Yanlingquan (GB34), and Taichong (LR3)
- Needles were inserted and manually stimulated until the “De Qi” sensation was elicited.
- The needles stayed in place for 15 minutes. The control group (n=14) received sham acupuncture by pasting seed-patches next to the same location as correct acupoints of experimental group.



FIGURE 2: Acupoint locations (LI4, LI10, ST36, GB34, and LR3).

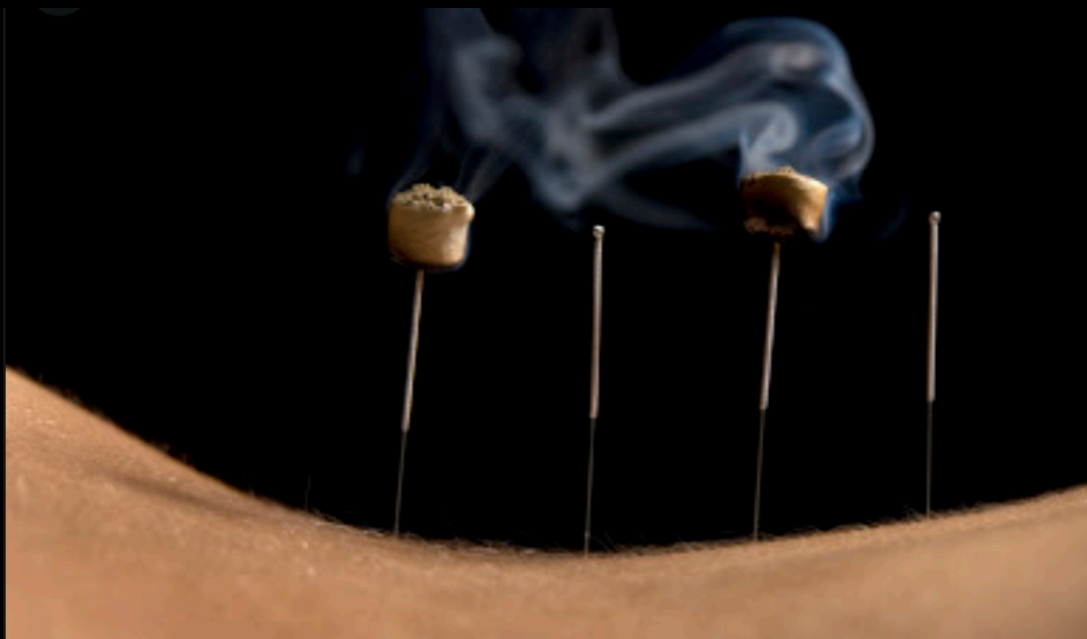
Clinical Study for Acute Back Pain

- RESULTS:
- Back pain was measured as the primary outcome using a visual analog scale (VAS) at three time points:
 - Baseline
 - Immediately after treatment
 - 3 days after intervention
- The VAS demonstrated a significant decrease (P value <0.001) for the treatment group after 15 minutes of acupuncture.
- At 3 days, the VAS was significantly reduced in all patients after 3 days ($P = 0.031$)
- The study supported the conclusion that acupuncture could provide an immediate effect in reducing the pain of acute LBP.
- No safety issues were reported.
- Conclusion: Acupuncture might provide immediate effect in reducing the pain of acute LBP safely.

“De Qi” Sensation

- Acupuncture stimulation elicits “*De Qi*”, a composite of unique sensations.
- According to traditional Chinese medicine (TCM), *De Qi* experienced by patients is often described as *suan* (aching or soreness), *ma* (numbness or tingling), *zhang* (fullness, distention, or pressure), and *zhong* (heaviness) and is felt by the acupuncturists (needle grasping) as a sensation of being tense, tight, and full.
- It is believed that *De Qi* may be an important variable in the studies of the mechanism and efficacy of acupuncture treatment.

Moxibustion



Moxibustion

- Moxibustion is a type of traditional Chinese medicine.
- It is a technique that involves the burning of mugwort (moxa, *Artemisia argyi*), a small, spongy herb, to facilitate healing over specific acupuncture points.
- Moxibustion heat helps stimulate points and improves the flow of *qi* (energy) in the body.
- According to traditional Chinese medicine practices, this increased *qi* circulation can help with a range of health issues, from acute lower back pain (LBP) to digestive trouble



Moxibustion

- There are two types of moxibustion, direct and indirect.
- In direct moxibustion, a small, cone-shaped amount of moxa is placed on top of an acupuncture point and burned.
- This type of moxibustion is further divided into two types: scarring and non-scarring.
 - **Scarring moxibustion**, the moxa is placed on a point, ignited, and allowed to remain on the point until it burns out completely, which may lead to localized scarring.
 - **Non- scarring moxibustion**, the moxa is placed on the point and lit, but is extinguished or removed before it burns the skin.
 - The patient will experience a pleasant warming sensation that penetrates deep into the skin but should not experience any pain, blistering, or scarring.

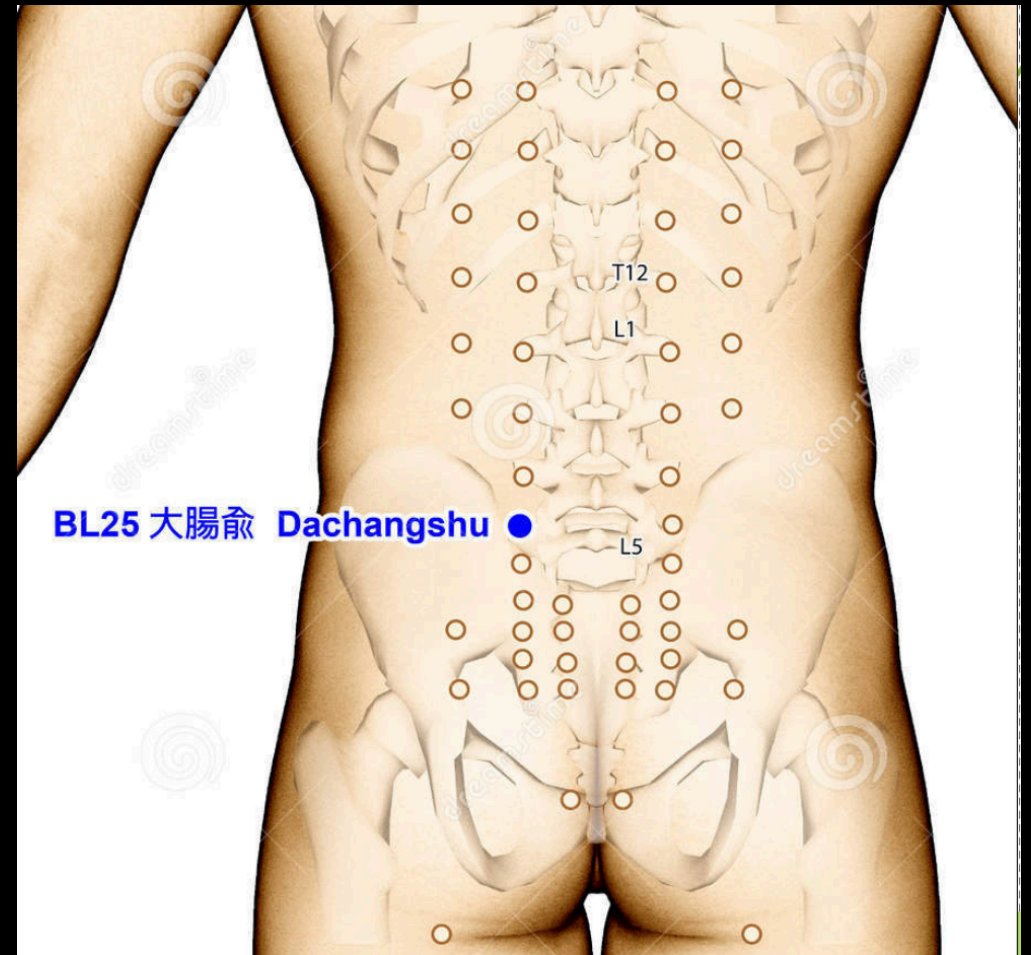


Moxibustion

- Indirect moxibustion (called “suspended” moxibustion) is, at present, the most popular form because there is a much lower risk of pain or burning.
- In indirect moxibustion, a practitioner lights one end of a moxa stick, roughly the shape and size of a cigar, and holds it close to the selected acupuncture point for several minutes until the area turns red
- We use indirect moxibustion for the treatment for LBP with Ashi-point, Dachangshu (BL 25), and Weizhong (BL 40).
 - Ashi-point and Dachangshu (BL 25) can promote *qi* and blood circulation of the affected channels, collaterals and muscle regions to relieve pain. Weizhong (BL 40), a point of the channel of foot-taiyang, is a key point in the treatment of lumbar conditions, and it adjusts qi and blood circulation of the bladder channels in the back.

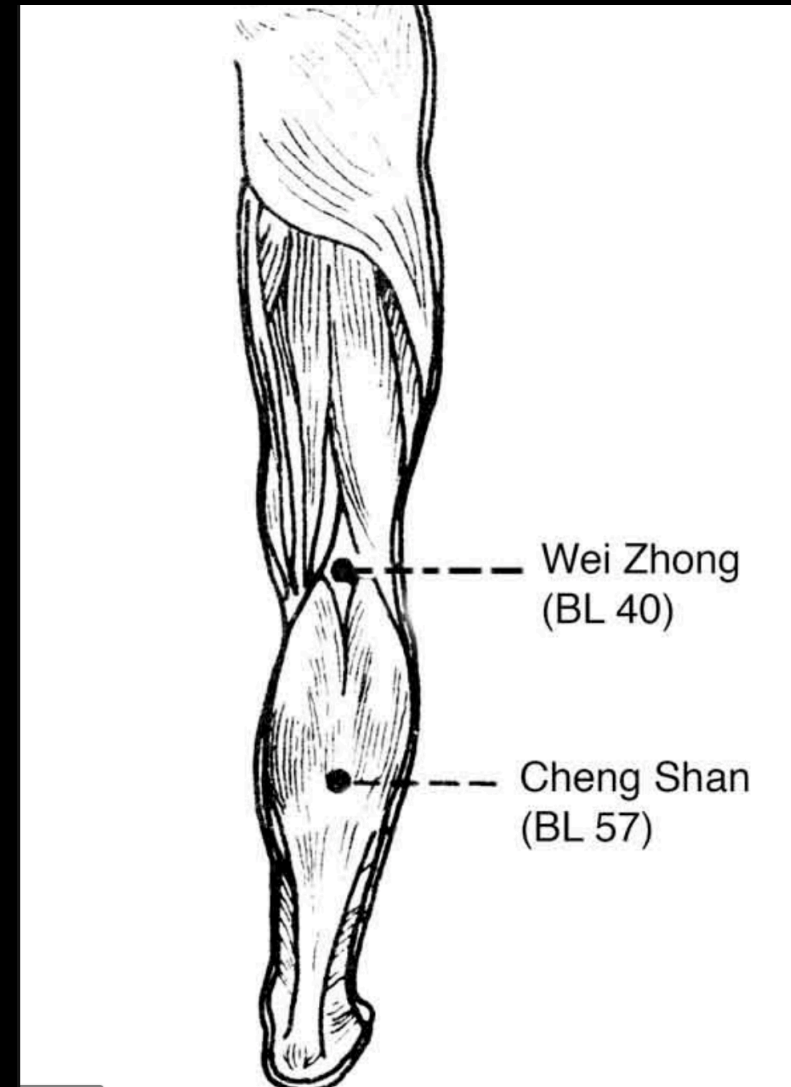
Moxibustion-Dachangshu (BL 25)

- **Dachangshu (BL25)**
- It is 1.5cun lateral to the lower border of the spinous process of the 4th lumbar vertebra.
- It is main point for large intestinal diseases: abdominal pain, diarrhea, dysentery, constipation, hemorrhoids.
- It is also a main point to treat lumbar region and lower limbs.



Moxibustion-Weizhong (BL 40)

- **Weizhong (BL40)**
- Weizhong is on the midpoint of the transverse crease of the popliteal fossa, between the tendons of the biceps femoris and semitendinosus
- It is a main point for pains of the back and lumbar, spasm of the popliteal tendons, weakness or paralysis in the lower limbs.



Moxibustion

- Moxibustion can help back pain.
- Moxibustion works in a similar way to acupuncture treatment.
- There no needle used, it is a heat therapy.
- Moxa burns on top of acupuncture point and stimulates the nervous system to release chemicals in the muscles, spinal cord, and brain.
- These chemicals will either change the experience of pain, or they will trigger the release of other chemicals and hormones which influence the body's own internal regulating system.

Cupping

- Cupping is a treatment used by acupuncturists or other therapists, which utilizes a glass or bamboo cup to create suction on the skin over a painful area or acupuncture points.
- Cupping as a traditional therapy, is used to treat a myriad of health conditions, including pain.
- A recent systematic review on the effects of wet cupping on musculo- skeletal problems suggested that wet cupping is effective for treating low back pain.

Cupping-Trials

- A systematic review evaluated cupping for the treatment of pain.
- Fourteen databases were searched.
- Randomized clinical trials (RCTs) testing cupping in patients with pain of any origin.
- Trials using cupping with or without drawing blood were included.
- Excluded:
 - Trials comparing cupping with other treatments of unproven efficacy were excluded.
 - Trials were excluded if pain was not a central symptom of the condition.

Cupping-Trials

- The selection of studies, data extraction, and validation were performed independently by three reviewers
- Seven RCTs met all the inclusion criteria.
- Two RCTs suggested significant pain reduction for cupping in lower back pain compared with usual care ($P < 0.01$) and analgesia ($P < 0.001$).
- Another two RCTs also showed positive effects of cupping in cancer pain ($P < 0.05$) and trigeminal neuralgia ($P < 0.01$) compared with anticancer drugs and analgesics, respectively.
- The other RCT failed to show superior effects of cupping on pain in herpes zoster compared with anti-viral medication ($P = 0.065$).

Cupping-Trials

- Another study investigated the effects of cupping therapy for the treatment of LBP among nurses.
- 100 nurses with chronic non-specific low back pain, ages 39 to 51 were randomly divided into two groups: treatment and control group.
- The control group received placebo, and the treatment group received cupping therapy for 4 weeks.

Cupping-Trials

- The VAS pain score of the treatment group (1.32 ± 0.78) was significantly lower than that of the control group (2.88 ± 0.83) after treatment.
- Cupping therapy has positive effect in the treatment of LBP.
- Research also confirms it can reduce pain and improve quality of life.
- Future research should focus more on the pathological mechanism and long-term clinical effect of cupping therapy to provide more evidence for the role of cupping therapy in treating LBP.

Conclusions

- Although acupuncture originated in TCM, its migration to the West was through other Asian countries, chiefly Korea and Japan.
- Acupuncture was considered for some time as a fringe treatment and not part of legitimate medical care.
- Recognition of the efficacy of acupuncture is changing.
 - Up to 1.5% of the US population has utilized acupuncture at some point, and the service is even available at many top academic medical centers in the United States.
- Acupuncture is seldom used as a sole treatment, but rather in conjunction or as an adjunct to traditional medical care.

Conclusions

- Multiple studies have shown the effectiveness of acupuncture in the treatment of back pain, both acute or chronic
- Many studies have shown acupuncture leading to superior pain relief for various ailments.
- Given the overall positive patient response, limited side-effect profile, and little to no cost on the healthcare system, acupuncture is an essential alternative treatment modality

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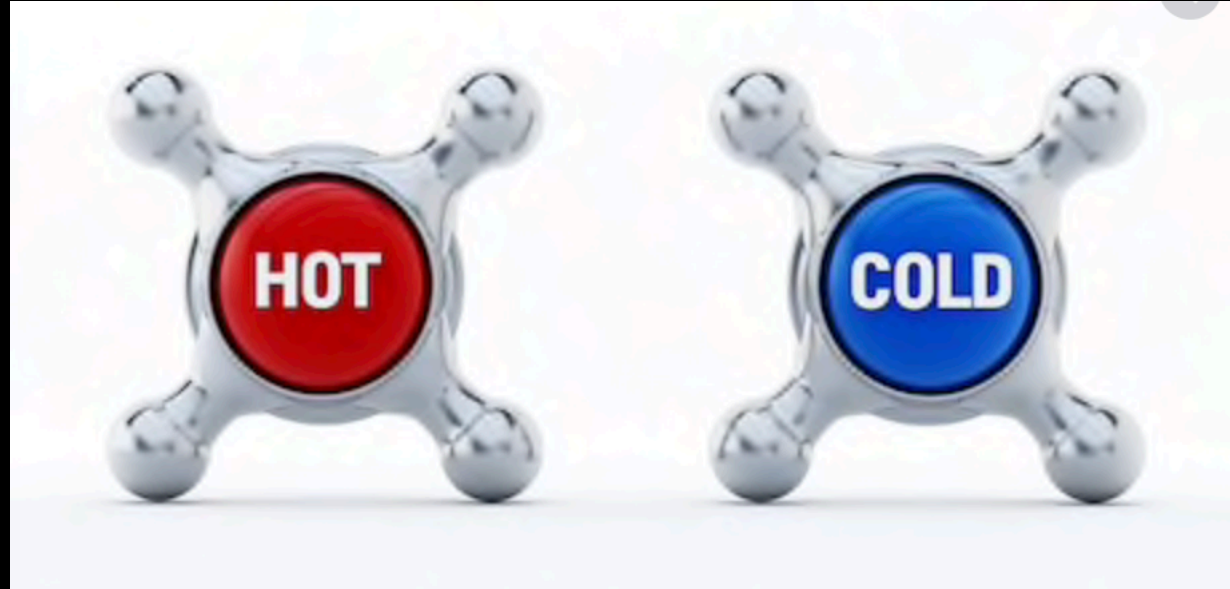
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Dr. Keith Candiotti

Use of heat and cold in the treatment of acute pain

Basics of Thermotherapy

- Hot and cold therapy have been used for literally thousands of years to treat both acute and chronic pain.
- However, even today there is debate about which therapy to apply and when.
- There are even some schools of thoughts that suggest applying any form of thermotherapy is bad or harmful.
- Certainly extreme heat should never be used and ice should never be applied directly to skin (possible exception of an ice massage).



Basics of Thermotherapy-COLD

- Cold alleviates pain, reduces tissue metabolism, and modifies vascular responses to restrict swelling and reduce blood flow.
- Most useful if applied within 48 hours after an injury.
- Acts as a local anesthetic
- Cold therapy typically consists of applying to the affected area for 20 minutes, every 4-6 hours, for 3 days.

Basics of Thermotherapy-COLD

- Ice or an ice pack (should not normally be applied to skin directly) can be used in a circular motion for a max of 5 minutes, 2-5 times a day.
- Osteoarthritis pain appears to respond well to a 10 min on, 10 min off pattern.
- Cold should not be used if area is numb, an open wound, vascular injury or sympathetic dysfunction.
- Cold may actually aggravate back pain if due to muscle tension.

Basics of Thermotherapy-COLD

- RICE (Rest, Ice, Compression and Elevation) has been used for sports injuries for many years.
- Cold therapy has been shown to be useful in reducing exercise induced muscle damage (EIMD) and Delayed onset muscle soreness (DOM).
 - DOM typically shows 24 to 48 hours after exercise.
 - A Cochrane study suggested that a cold bath after exercise may help prevent DOM
 - Participants spent 5-24 min in a 50-59F degree water bath(10-15C)(Bleakley, 2012)

Use of Icing in An Animal Model of Acute Contusion

- Animal model of contusions,
- Icing attenuated and/or delayed neutrophil and macrophage infiltration; the expression of vWF, VEGF, and nestin; and the change in vessel volume within muscle in the first 7 d after injury ($P < 0.05$).
- Icing did not influence capillary density in muscle 28 d after injury ($P = 0.59$).
- Percentage of immature myofibers relative to the total number of fibers was greater in the icing group than in the sham group 28 d after injury ($P = 0.026$) (Singh, 2017)

Use of Icing in An Animal Model of Acute Contusion

- Myofiber cross-sectional area did not differ between groups after 7d ($P = 0.35$) and 28d ($P = 0.30$).
- In conclusion, although icing disrupted inflammation and some aspects of angiogenesis/revascularization, these effects did not result in substantial differences in capillary density or muscle growth. (Singh, 2017)

Basics of Thermotherapy-Heat



- HEAT
- Promotes blood flow and helps muscles relax. Perhaps more useful in general for chronic pain.
- Heat therapy has been shown to dilate blood vessels, promote blood flow, and help sore and tight muscle to relax.
- Heat may also help reduce lactic acid build up.
- Heat therapy is usually more effective in chronic pain.
- Heat is typically applied to an area for 20 min, up to tid.
- Some heat wraps can be used up to 8 hours.
- Alternating heat and cold may help reduce exercise-induced muscle pain.

Ankle Sprains

- The periods for an ankle sprain are roughly divided into acute (48-72h), subacute (72h to 10d or 2w) and chronic periods (2w+).
- Treatment during the acute phase has been fairly well researched which supports the use of cold therapy during the acute phase.
- Once reaching the chronic phase, most experts agree heat is typically indicated.
- During the subacute phase, there is debate on which modality of thermotherapy will result in the best outcomes and quickest and best recovery. (Weerasekara, 2015)

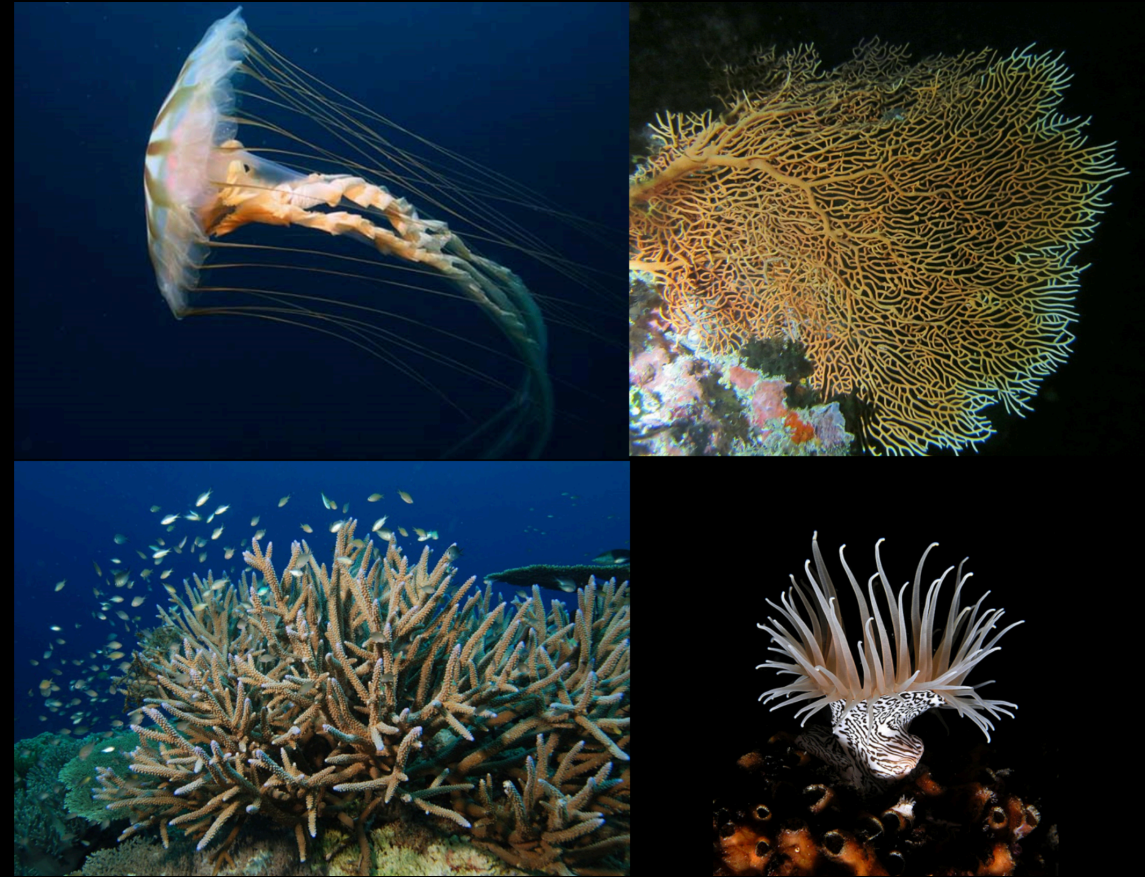
Ankle Sprains

- A study on 115 patients with grade 1 or 2 level sprains was conducted.
- The use of heat and contrast therapy was examined.
 - Contrast therapy- ice pack was applied at the temperature of 0°C to 10°C for 1 minute and then heat was applied with a hot pack at the temperature of 40°C to 50°C for 1 minute. This cycle was repeated for 15 minutes.
- While there were many variable that remained the same, it appeared contrast therapy was better at reducing swelling after 3 days compared to heat.
- Heat appeared to be the most useful modality for pain reduction.
(Weerasekara, 2015)



Use of Heat for Cnidarian Envenomations

- Cnidaria is a phylum containing over 11,000 species of aquatic animals found both in freshwater and marine environments.
- Their distinguishing feature is cnidocytes, specialized cells that they use mainly for capturing prey.
- 150 million envenomations a year, kill more people than sharks.
- Debate on therapy. Venom is heat labile.
- In an extensive review it is clear that hot water immersion provided superior relief to icing therapy. (Wilcox, 2016)



Thermotherapy and Childbirth

- Many women wish to avoid or limit medications for pain during childbirth.
- There are several studies of varying levels that address the use of thermotherapy to help treat the pain of labor.
- In one trial, warm and cold packs were used intermittently on the lower back and lower abdomen in the first phase of labor and on the perineum during the second phase of labor.
- 64 subjects, RTC. (Ganji, 2013)

Thermotherapy and Childbirth

- The treatment group reported a significant decrease in pain during the first and second phases of labor. ($p=0.002$) They also reported a shorter duration in the 1st and 3rd phases of labor. No other significant differences were noted.
- There was also a high number of patients (12.5%) reporting “very high satisfaction” in the treatment group compared to 0% in the control group. (Ganji, 2013)

Thermotherapy and Childbirth

- A Cochrane report looked at “manual” methods of controlling pain during labor.
 - In addressing thermotherapy, both hot and cold, they reported that while several trials did show a reduction in pain and labor duration, the studies were considered low to very low quality.
- Their conclusions were “thermal therapy” “...may have a role in reducing pain, reducing length of labour and improving women’s sense of control and emotional experience of labour” (Smith, 2018)

Conclusions

- TCM has yet to be fully understood in terms of Western medicine and we may never actually reach that goal
- TCM has been used for thousands of years and while studies are mixed there is some evidence that it is useful in some areas, such as lower back pain.
- The techniques of TCM can be combined to enhance their effects and improve outcomes.
- Even simple methods such as heat and cold can be useful to treat both acute and chronic pain.
- There are many areas related to TCM that appear to be worth further investigation.

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