

# Chapter 17

## Medical Acupuncture

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### Introduction (Fig. 17.1)

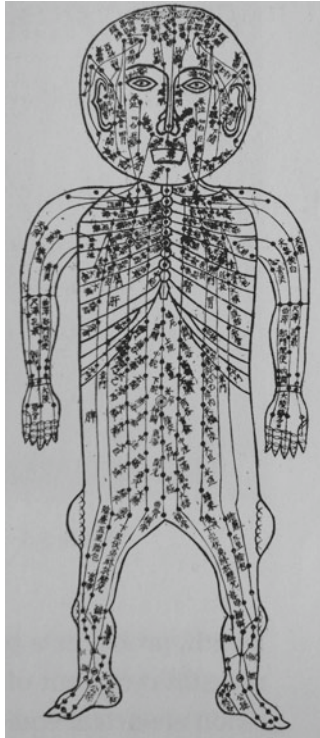
- Origin: China
- Branch: CAM (Complementary and Alternative Medicine)
- Technique:
  - Insert solid, thin, and pliable needles into the body at various defined points
  - Varying depths, angles, and rotations are utilized for needle manipulation
  - Combining with electrical stimulation or moxibustion is common
- Uses: pain relief, decreasing symptoms of: asthma, fatigue, or GI issues

### The Facts

- In 1965, human and animal trials began in China to evaluate acupuncture analgesia.
- By 1980, a connection was noted between the endogenous opioid peptide system and analgesic events observed with electrical acupuncture stimulation.

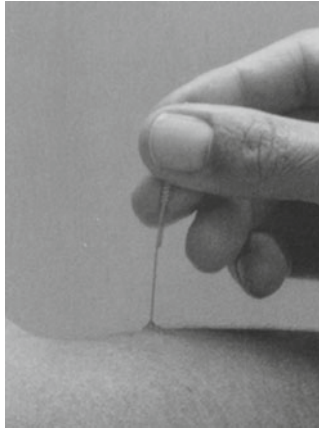
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**Fig. 17.1** Postulated representation of the electrical charges transmitted through fluid bathing the organs and muscles, which are projected to the surface of the body as acupuncture points

- The connection was later reproduced in a variety of animal studies including mice, monkeys, rats, and rabbits, which led to the suggestion that acupuncture analgesia can be thought of as a general phenomenon in the mammalian world.
- Acupuncture seems to provide a mechanism to activate the human bodies pain modulation system, changing the processing of noxious stimuli.
- There are many theories of how exactly acupuncture works; the following is one commonly accepted **physiological** explanation [1]:
  - Every organ has its own encompassing electrical field.
  - This electrical field results from the sum of individual cellular electrical fields.
  - Each organ produces a distinct field and transmits that field to the surface.



**Fig. 17.2** Example of needle inserted into skin

- The electromagnetic mediums are the fascia and interstitial fluid.
- Electrical charges transmitted through the fluid bathing the organs/muscle are projected onto the body's surface as channels or meridians.
- On the surface of the body, traditionally described meridians are usually located between muscle groups and allow direct access to the fascia and ionic flow.
- The **hardware**: (Fig. 17.2)
  - The needle electrode is an instrument used to influence the electrical flow through the acupuncture circulation network.
  - The design is carefully crafted and follows principles of the thermoelectric effect of Thomas Kelvin, the Bimetallic effect, and the Electron Transfer effect.
  - The needle itself consists of two separate spiraled portions of metal:
    - The first spiral → needle shaft
    - The second spiral → needle handle
  - When inserted into the body, the tip of the needle is warmer than the handle.
  - The spiral handle of the needle acts as a radiator, which maintains a rather large surface area of metal in contact with air, and in turn allows the temperature gradient to be preserved for a longer period of time.

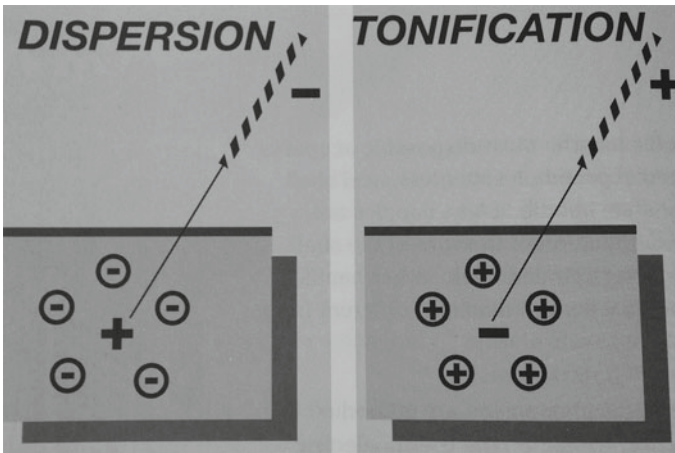


Fig. 17.3 Illustration of dispersion and tonification

- The electrical gradient along the shaft is reinforced by the electromagnetic effect of the second metal spiral, which is in close contact with the first, creating a sort of bimetallic battery.
- The positive electrode (needle tip), which is inserted into the interstitial medium, the meridian, attracts negative ions until equilibrium is reached.
- It takes approximately 10–15 min to reach electrical equilibrium after insertion, a needling technique known as *dispersion* (Fig. 17.3).
- If the needle handle is heated or manipulated manually, the polarity of the needle tip is altered to become a positive electrode, attracting positive ions.
- A heated needle can take up to 60 min to reach equilibrium, an acupuncture technique known as *tonification*.
- The needle-electrode placed in tonification stimulates a flow of electrons toward a second needle placed in dispersion along the same flow pathway. If this sequence is repeated, an acupuncturist is thought to be able to influence the ionic flow. This is achieved by provoking an electron wave that is capable of propagating itself in a specific trajectory along the acupuncture channel.

## Overview

- Acupuncture is a CAM treatment that is generally safe, with growing evidence for applications in a variety of medical conditions.
- *Risks:* bleeding, infection, and organ puncture including pneumothorax
  - A phenomenon known as *needle shock* is also a rare side effect that typically occurs during the first acupuncture treatment. This is a type of vasovagal reaction, which involves symptoms of sweating, flushing, tunnel vision, and can progress to syncope.
  - Per a study conducted by Macpherson et al. in 2004 which surveyed **6,348** patients in the UK, 11% of patients experienced side effects including fatigue, local pain, headache [2].
  - Per another study conducted by Witt et al., which surveyed **229,230** patients in Germany, 9% of patients experienced adverse effects of bleeding/hematoma, pain, or vegetative symptoms [3].

### Evaluation of the patient

- **The Diagnostic Evaluation**
  - Open-ended history and physical
  - Focused questions regarding symptoms related to specific energy axis
  - Expedited review of symptoms
  - General strengths and weaknesses in family health
  - Acupuncture evaluation initially considers all symptoms equally. The goal of this evaluation is to determine the energy circulation network level that is disturbed in the patient, the level of intensity of this disturbance, and the subsystems and axis, which give access to that disturbance.

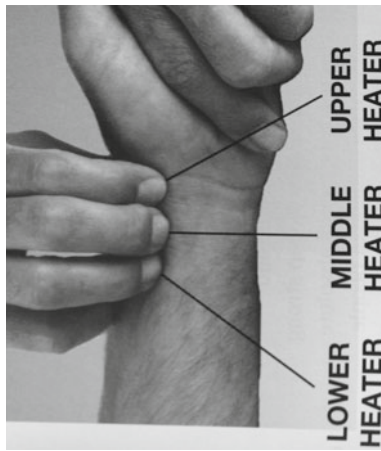
### The Initial Interview

- The initial interview forms a diagnostic impression and will aide construction of a provisional therapeutic input.
- The level of a manifested issue should be determined, as well as the disturbed energy axes or meridian segments.
- Symptoms may be associated with synergistic and coupled meridians within the energetic sub circuit.
- Investigate for patterns of symptoms, particularly if daily recurrence occurs, warranting investigation into organ midday–midnight relationships.

- The acupuncturist may label the symptoms noted in the history via energy axis, elemental term, or even by the trigram of the energy axis. This is important as labels may lead to the recognition of clustering of symptoms and a predominant energy axis.
- If a patient has multiple complaints, it is often found that when treating the most distressful issues first, secondary and tertiary issues often achieve relief as well.

### Physical Exam

- The physical exam begins at first contact with the patient. The strength of a handshake, gait, posture, skin color, liveliness of the voice all give clues to the overall well-being of a person.
- It is also important to examine the diagnostic somatotopic systems that microcosmically depict the energy of various organs. Commonly used somatotopic systems are the tongue, radial pulse, and external ear.
  - **Tongue Inspection** [1]
    - Through its color, body, coating, and surface irregularities, the tongue is thought to reflect the condition and underlying problem of a patient.
    - Meridian branches of the kidney, heart, liver, spleen, lung, and stomach all pass through the oropharynx or tongue.
    - Changes in tongue quality can be followed daily or weekly, and may serve as an indicator of illness evolution.
    - The surface reflex system of the tongue has many different documented configurations. Although most have accepted that the anterior, middle, and posterior thirds of the tongue can be described as upper, middle, and lower heaters.
  - **Radial Pulse** (Fig. 17.4)
    - Provides a means of evaluating the patient's overall well-being
    - Due to its constant change, the pulse can be used to monitor whether an input has had the desired effect.
    - The pulse is palpated at three contiguous areas overlying the radial artery. It is believed that the width of each position is equal to the width of the patient's fingertip. The pulse gives the physician a view of the internal balance among the organs.
    - The styloid process is the bony landmark used to identify the middle position. The other two positions are immediately proximal and distal to the middle. Thus, the following



**Fig. 17.4** Radial pulse being palpated, while practitioner's opposite hand slides over the edge of the radius from the dorsal surface of the forearm

terminology is used, distal pulse=upper heater, middle pulse=middle heater, and proximal pulse=lower heater.

- A radial artery diagnostic somatotopic system has also been mapped and can be found in various acupuncture texts.
- Temperature: during evaluation, notation should be made of any region that appears unusually warm or cool. The musculoskeletal evaluation should include identification of muscle knots, trigger points, and any subcutaneous bands or nodules overlying musculature. Each painful point should be taken into consideration when designing a treatment plan.

### **The Acupuncture Treatment** (Fig. 17.5)

- Location of acupuncture points demand a refined sensitivity to palpation, as each patient's acupuncture sites are unique. Acupuncture points may be described at a fixed distance of inches or "cun," from an anatomic landmark.
- Needle insertion, similar to locating an acupuncture point, is a skill that is acquired with experience. The needles must be sterile, and the use of isopropyl alcohol can be used to alleviate the patient's fear of infection, although an aseptic technique is adequate unless the skin is grossly soiled.



**Fig. 17.5** Example of needling technique

- The most important consideration in needle insertion is the minimization of discomfort. Pain with needle insertion is mostly associated with the initial piercing of skin and then again as adequate depth is achieved.
- When the needle achieves a depth that supports its upright posture, it must be advanced by simultaneously rotating and progressing until the “De Qi” is felt.
  - “De Qi” also known as “the arrival of Qi” is a term used when contact is made with energy of a channel. The patient may describe this sensation as an electrical sensation or even as a dull ache. It is vital to the effectiveness of treatment that each needle achieve “De Qi” [1].
- There are many techniques for manipulating the needle for tonification and sedation. The most widely accepted method to achieve tonification is by angling the needle in the direction of channel’s energy flow, and advancing the needle slowly, and with slow, firm clockwise rotation. Sedation needle technique contrasts tonification technique.
- Positioning of the patient is also very important. Both the patient and the acupuncturist should be as comfortable as possible prior to beginning treatment.
- Following treatment, patients should be made aware that they may feel somewhat lightheaded or disoriented for  $\geq 30$  min. As further treatments are provided, this sensation should subside. Patients should also be made aware that after initial treatment one of several phenomena may happen:
  - Gradual and progressive improvement
  - Marked amelioration of symptoms
  - Marked exacerbation of symptoms
  - No change at all in the symptoms



### Acupuncture In Practice

- **Headache/migraine**—Various studies have been conducted with regard to acupuncture and headache; the results are conflicting. Some studies have found evidence to support the use of acupuncture for headache, while others have found that most of the studies were of poor quality. Several studies have demonstrated that acupuncture reduces migraine symptoms and is as effective as certain pharmaceutical treatments for headache. In 2009, Linde et al. found that acupuncture might help to relieve tension headaches [4]. However, two large trials that looked at acupuncture for migraines found no difference between actual and simulated acupuncture.
- **Neck pain**—Studies aimed at acupuncture and its ability to relieve chronic neck pain, as demonstrated by Trinh et al. in 2006, have more consistently revealed that acupuncture provided better pain relief than some simulated treatments [5]. It is important to note that stronger studies are needed, as the previous studies varied in terms of design and most had small sample sizes.
- **Low-back pain**—According to clinical practice guidelines issued by the American Pain Society and the American College of Physicians in 2007, acupuncture is one of several complementary and alternative medicine therapies physicians are encouraged to consider when patients with chronic low-back pain do not respond to conventional treatment. Early studies, have demonstrated that combining acupuncture with conventional treatment was more effective than conventional treatment alone for relieving chronic low-back pain.

### *Sample Acupuncture Referral*

Patient Name:

DOB:

Referring Physician:

Referring Physician Phone #: (Fig. 17.6)

Primary Dx:

Brief Hx:

Significant Past medical Hx:



**Fig. 17.6** Image should be used to notate areas of discomfort

Allergies:

Regions of discomfort listed from most significant to least significant

- 1.
- 2.
- 3.

Patient's expectation of treatment:

Restrictions or conditions of treatment:

Has patient had acupuncture treatments in the past?

History of needle-phobia? Relative contraindications to treatment (please circle all that apply). Extreme frailty—Concurrent febrile illness—Local skin infection—First trimester of pregnancy—Use of anticoagulants—Hx of bleeding disorders—Cardiac pacemaker (when electrical stimulation used)

## References

1. Helms JM. *Acupuncture energetics a clinical approach for physicians*. 1st ed. Berkely, CA: Medical Acupuncture Publishers; 1995.
2. MacPherson H, Scullion T, Thomas K, Walters S. Patient reports of adverse events associated with acupuncture: a large scale prospective survey. *Qual Saf Health Care*. 2004;13:349–55.
3. Witt CM, Pach D, Brinkhaus B, et al. Safety of acupuncture: results of a prospective observational study with 229,230 patients and introduction of a medical information consent form. *Forsch Komplementmed*. 2009; 16(2):91–7.
4. Linde K, Allais G, Brinkhaus B, et al. Acupuncture for tension-type headache. *Cochrane Database Syst Rev*. 2009;(1):CD007587.
5. Trinh KV, Graham N, Gross AR, et al. Cervical overview group acupuncture for neck disorders. *Cochrane Database Syst Rev*. 2006;3:CD004870.