

MEDICAL ACUPUNCTURE: A PRIMER

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I. HISTORY OF ACUPUNCTURE

A. Early Chinese Practitioners and Texts

1. Acupuncture has evolved over two millennia and continues to evolve today. While the ancient classic texts were written in poetic and metaphoric language, they still present models of health, dysfunction and treatment which are compatible with contemporary psychology, physiology, physics, and neuro-pharmacology
2. Early acupuncture history tells of the legendary emperor and doctor Fu Xi Shi from approximately 4000 B.C. who is credited with inventing nine types of stone acupuncture needles.
3. Bone etchings circa 1600 B.C. represent the earliest written records.
4. The I Ching, compiled from 2500-1000 B.C. presented the foundation of energy dynamics, which serve as the operating laws in acupuncture as well as a reference and guide for later texts.
5. The Huang Ti Nei Ching, known as the “Yellow Emperor’s Classic of Internal Diseases,” is a compilation of a series of authors from the 5th to the 2nd centuries B.C. and represent the Chinese “Hippocratic Corpus.”
6. Following came the Nan Ching or “Classic Difficulties” in the 1st century A.D., perhaps the cleanest source of ancient thoughts.
7. In the 2nd century A.D., the Shang Han Lun presented an organized approach to the “Cold Illnesses.”

B. Acupuncture Practice in Other Civilizations

1. Ancient China is not the only source of references to energetic or acupuncture-like therapies.

ancient Egyptian medical writing and discuss peripheral “vessels” or meridians

3. Indian Ayurvedic medicine presents concepts similar to those acupuncture
 4. South African Bantu tribes have known to scratch various body parts to treat disease
 5. Treatment of sciatica with ear cauterizations has been known through much of Arabic history
 6. Eskimo people have used simple stone stimulation of the skin for healing
 7. Even an isolated Brazilian tribe has used tiny blowpipe arrows to the body for healing. Interestingly, these tribal members present with distinct Mongoloid features
- C. Translation of Eastern Texts into Latin and French
 1. European colonization of Indochina led to an abundance of training and textual sources since the 16th century.
 2. Many of these were later translated into Latin and French by Jesuit priests.
 3. Since that time, the French has been intimately involved in the further development of acupuncture as it continues to evolve to this day.

III. WESTERN MEDICAL ACUPUNCTURE LITERATURE

- A. Western Medical Literature is more significant than most recognize
 1. 1792, Galvani observed small tissue generated electric currents
 2. 1825 Dr. Franklin Bache, Benjamin Franklin’s great grandson, wrote the first US medical acupuncture article, entitled “Memoirs on Acupuncture,” and also translated Mourand’s French treatise into English.
 3. 1863 Dr. Edward Warren’s medical and surgical text discussed the use of acupuncture and acupressure
 4. Others also wrote of acupuncture’s use during the US Civil War
 5. 1892 Sir William Osler’s “The Principles and Practice of Medicine” recommended “for lumbago, acupuncture is, in acute cases, the most efficient treatment.” and that for sciatica “acupuncture may be used.”
- B. The Literature Shows Acupuncture’s Effects on Nearly Every Biophysical System
 1. Pulmonary
 - a. Attenuation exercise induced asthma (Lancet)
 - b. Diminishes bronchoconstriction in clinical asthma attacks (Annals of Allergy)
 2. Obstetrics
 - a. Relieves pain of labor and delivery (Anesthesiology)
 - b. Aided in the induction of labor (Obstetrics and Gynecology)

Gynecology 11/92)

3. Genitourinary

- a. Treatment for infertility (Gynecology and Endocrinology 9/92 and a German publication)
- b. Treatment of renal colic, acupuncture demonstrated more rapid response than contemporary treatment (avaforton) and with no side effects (J Urology 1/92)

4. Gastrointestinal

- a. Arrested cholestatic crisis (personal communication Dr. Frank with Dr. Chan Gunn)
- b. Relieves GI tract spasm which failed medication (Lancet)
- c. Demonstrated support for regulation of GI motor and secretory function via decrease in peri-operative nausea and vomiting has been demonstrated through peri-operative acupuncture (British Medical Journal, Anesthesiology News)
- d. Prevention of nausea and vomiting in laproscopic patients by a Neiguan (PC-6) injection of glucose in water (Acta Anaesthesia Scandinavia 2/93)

5. Cardiovascular system

- a. Acupuncture led to reversal of CV arrest in experimental animals (Journal of Surgical Research).

6. Wound healing

- a. Acceleration of wound healing through electro-acupuncture has been demonstrated (Archives of

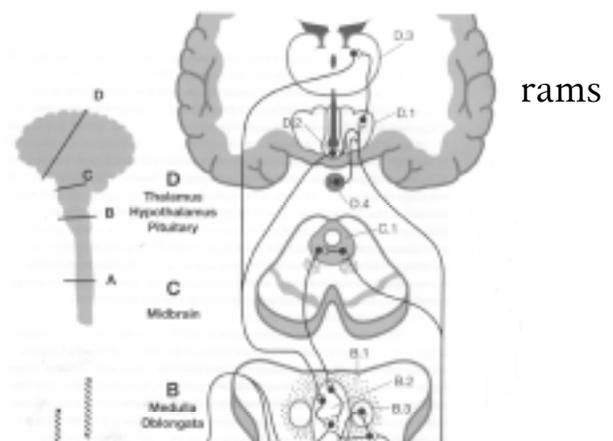
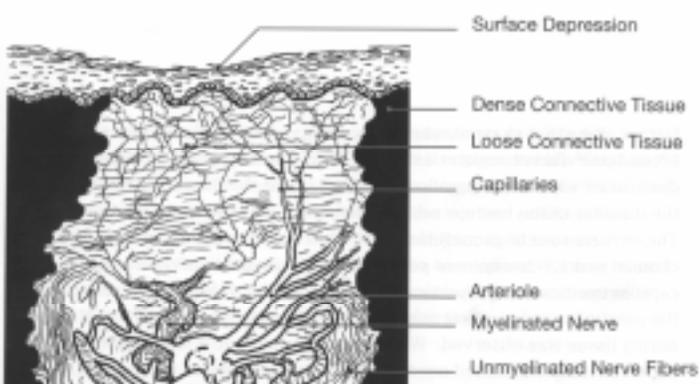
Physical Medicine & Rehabilitation)

- b. Accelerated skin ulcer healing (Southern Medical Journal) and augmentation of bone repair Science)

7. Sports Medicine

- a. Increased maximum performance capacity over controls (International Journal of Sports Medicine 8/92)
- b. Substance P and Prostaglandin E have been shown to be increased in patients with unsuccessful acupuncture anesthesia

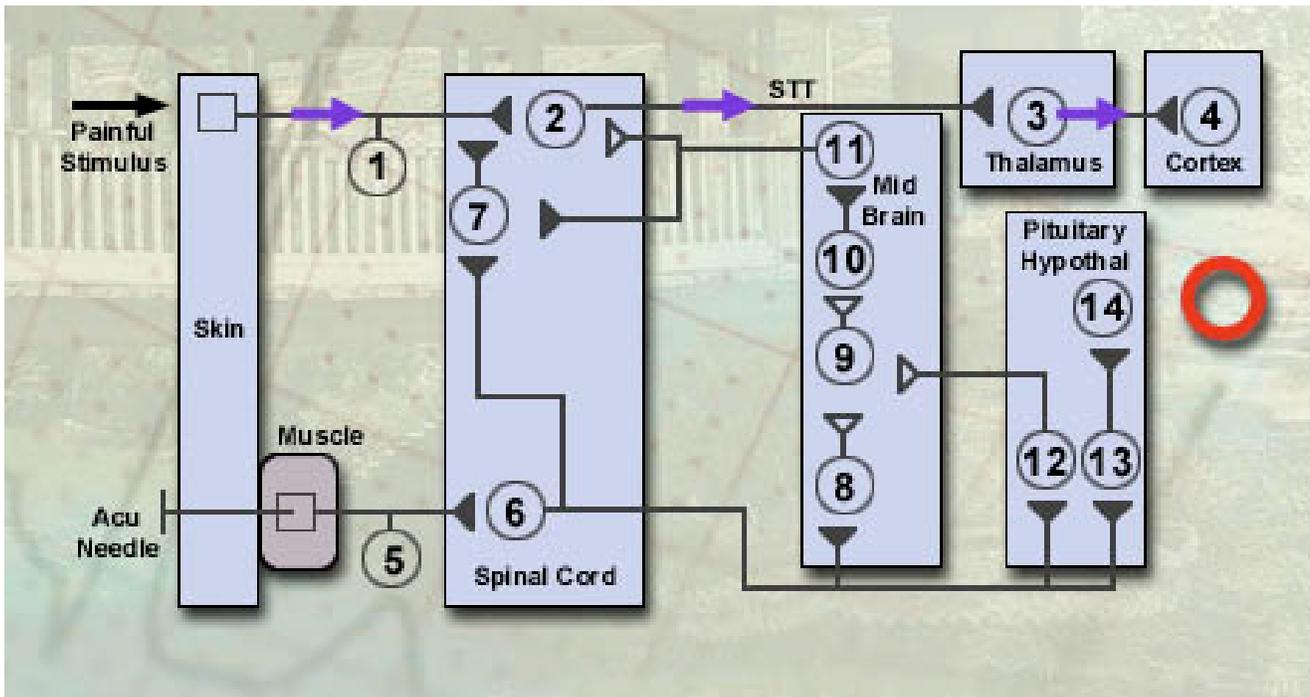
8. Drug Detoxification



A. Neurohumoral effects of electroacupuncture

1. Various Afferent Nerve Fibers Are Involved in Transmitting Pain Impulses from the Skin to the Cortex

- a. Large myelinated nerves
 - 1) A beta (skin) carry touch
 - 2) Type I (muscle) carry proprioception
- b. Small myelinated nerves carry pain
 - 1) A delta (skin)
 - 2) Type II and III (muscle)
 - 3) Types II, III, IV and C also carry non-painful message



2. Review of transmission of a painful stimulus from the skin to the cortex

- a. An injury to the skin activates the sensory receptors (squares) of small afferent A-delta and C-fibers (#1)
- b. These synapse onto the Spinothalamic Tract in the spinal cord (#2)
- c. The Spinothalamic Tract cell projects its axon to the Thalamus (#3)
- d. Here it synapses with a cell that sends impulses to activate the primary sensory cortex (#4)
(Dark triangles on Pomeranz slide are excitatory synapses, white triangles are inhibitory)

3. Effect of low frequency/high intensity electroacupuncture stimulation

- a. The acupuncture needle activates a Type II or III small myelinated afferent nerve (#5) from a sensory receptor in the muscle (square)

tract cell (#6) which projects to one of three centers:

- 1) the spinal cord
- 2) the midbrain
- 3) the pituitary-hypothalamus complex

- c. In the spinal cord, cell 6 sends a short segmental branch to cell 7 (an endorphinergic cell)
- d. This releases either enkephalin or dynorphin (but not B-endorphin)
- e. This, in turn, causes presynaptic inhibition of cell 1, and, thereby prevents transmission of the painful message from 1 to 2

4. Additional effects

- a. Cell 6 also ascends along the anterolateral tract of the spinal cord to the midbrain
- b. Here it excites cells in the Periaqueductal Grey (#8 and 9)
- c. This releases enkephalin to disinhibit cell #10
- d. This activates the raphe nucleus in the medulla (#11), causing it to send impulses down the dorsolateral tract to release monoamines (labeled M), such as serotonin and norepinephrine onto spinal cord cells.
- e. Cell 2 is thereby inhibited by postsynaptic inhibition, while Cell 1 is presynaptically inhibited through Cell 7

5. Effect on pituitary-hypothalamus complex

- a. The action of Cell 6 onto Cells 12 and 13 in the pituitary-hypothalamus complex is less well understood
- b. Probably Cell 12 in the arcuate nucleus activates the raphe through B-endorphin and Cell 13 in the hypothalamus releases B-endorphin from the pituitary
- c. In the Pituitary B-endorphin and ACTH are co-released on an equimolar basis into the circulation
- d. ACTH travels to the adrenal cortex, where cortisol is released

into the blood, perhaps explaining the anti-inflammatory effects acupuncture in the treatment of arthritis and asthma

e. This slide shows the three centers activated by low frequency/high intensity electroacupuncture (EA) using the endorphin mechanisms in them. Low frequency stimulation is thus inhibited by naloxone

6. Effects of high frequency/low intensity EA stimulation

- a. HF/LI EA stimulates only the spinal cord and the midbrain, but bypasses endorphin synapses there
- b. It is therefore not blocked by naloxone, but is sensitive to the manipulations of monoamines
- c. Also high frequency EA has a strong spinal segment effect, not antagonized by naloxone, which suggests that Cell 7 use

non-endorphinergic transmitters such as GABA

7. Some anatomic areas are not included in this discussion because of insufficient data

the Anterior Caudate.

- b. also not shown are numerous peptides present in the terminals of Cell 1, including CCK, Somatostatin, Neurotensin, Bombesin, Calcitonin Gene-Related Peptide, Angiotensin, Substance P and Vasoactive Intestinal Peptide

8. Summary

- a. EA activates nerve fibers in the muscle, which send impulses to the spinal cord to activate three centers to cause analgesia

- 1) the spinal site uses

- a) enkephalin and dynorphin to block incoming messages with low frequency stimulation
- b) and other transmitters such as GABA at high frequencies

- 2) The midbrain uses enkephalin to activate the raphe descending system

- a) this inhibits spinal cord pain transmission by a synergistic effect of the monoamines serotonin and norepinephrine
- b) The midbrain also has a circuit which bypasses the endorphinergic links at high frequency stimulation

- 3) The pituitary

- a) releases B-endorphin into the blood and CSF to cause analgesia at a distance
- b) the hypothalamus sends long axons to the midbrain which, along with B-endorphin,

activate the descending analgesia system,

activated only at low frequency stimulation.

9. The significance of this three-level system is fascinating:

- a. When needles are placed close to the site of pain (Ah Shi points) they are maximizing the segmental circuits operating at Cell 7 within the spinal cord, while also bringing in Cells 11 and 14 of the other two centers
- b. When needles are placed in distal points away from the painful region, they activate the midbrain and hypothalamic-pituitary complex without benefit of the segmental effects.
- c. Clinically, the two kinds of needling are often used together, to enhance one another.
- d. The analgesia produced by these two approaches is quite different
 - 1) The low frequency stimulation produces analgesia of slower onset and long duration, with a 20 minute stimulation effecting 30-120 minutes of analgesia.
 - a) The effects are also cumulative in their response to repeat sessions
 - b) this may be due to an observed increase in the presence of m-RNA for endorphins seen more

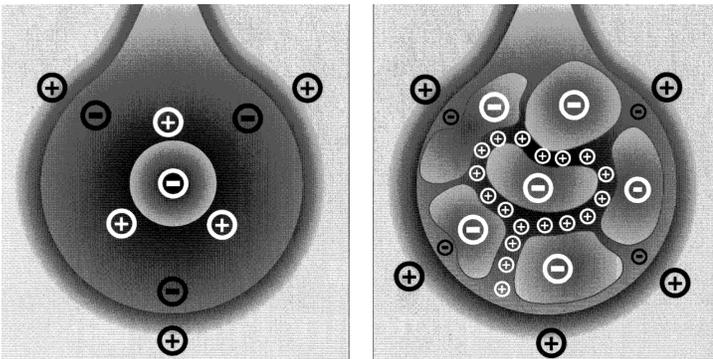
- 2) The high frequency stimulation is rapid but of very short duration and has no cumulative effects.

V. ACUPUNCTURE ENERGETICS

A. The above explanations don't give an adequate understanding of Acupuncture Mechanisms

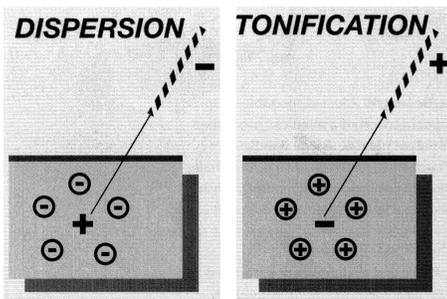
1. Even to the strictly orthodox or western scientifically-oriented
2. It is necessary to explore paradigms or models in the classic tradition of acupuncture
3. It's Necessary to Create an Integrated Hybrid Acupuncture model that is acceptable to our scientific and clinical perspectives.

- a. As a basic model in physiology, all human life may be reduced to a sac of electrolytes containing the organ to be studied.
- b. Each organ produces an electric field resulting from metabolic activity
- c. the electric activity is measured as positive on the surface of the organ in relation to a more negative interior

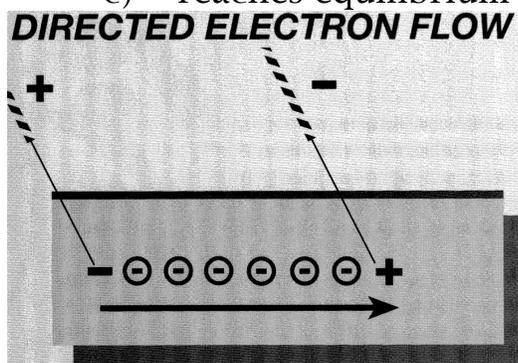


- d. The electric field of the organ is projected to the surface of the container, through the medium of the interstitial electronic milieu
 - 1) Applying this model to the thoracic, abdominal, or pelvic cavities is not difficult to conceptualize
 - 2) In the extremities, the paths of least resistance are the cleavage planes between the major muscle groups--the lamellar flow of the interstitial fluid is least obstructed outside the sheaths of the muscle groups
 - 3) The percolation through the muscle planes project onto the surface of the body as acupuncture meridians, familiar to you from the many classic acupuncture charts
4. Acupuncture Needles are Ideal Instruments Due to Their Physical Properties

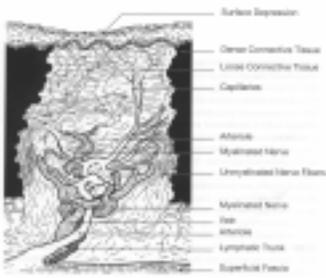
- handle of copper, bronze, or other alloy
- b. the Thermocouple effect of Kelvin-Thomas
 - 1) describes a gradient along the length of a homogenous conductor with a temperature gradient produced by the ends of the conductor at different temperatures
 - c. The Benedick's Effect--states that the current along a uniform conductor is reinforced by the electro-magnetic effect between the second (spiralled) metal of the handle in contact with the first metal of the shaft
 - 1) The typical needle is 1 to 8 cm long , 0.3-0.4mm in diameter or 28 to 26 gauge
 - 2) the electrical potential is 3 microvolts with the tip at body temperature and the handle at T'
 - 3) this gradient reaches equilibrium in 10-15 minutes



- 4) this represents a needle in "dispersion"
 - a) Dispersion is used in a condition defined as a problem of excess, such as acute strain or sprain
 - b) the needle may be inserted and simply allow the reaction to take place
 - c) this often produces a local erythema of the skin around the needle insertion, and reaching equilibrium as the erythema clears
- 5) Needle "in tonification"
 - a) manipulate the needle manually
 - b) the potential changes to 10-15 microvolts
 - c) reaches equilibrium in 60-90 minute



- a) deficiency states
 - 1))chronic or dysfunction states
 - 2))requires heat, manual manipulation or electrical stimulation in an anatomically logical circuit
- b) provokes a wave of depolarization/repolarization that propagates itself from one needle to the next along the course of least resistance, the lamellar flow around the muscles, the deep aspect of the acupuncture meridians



D. The Acupoints

- 1. Technetium 99 studies in France showed linear flow when injected in real points at 6cm/min.
- 2. “Dummy” points did not show linear flow of Tc99

E. Classic Chinese with French Energetic theories

- 1. Single needle gives local agitation
- 2. Second needle in circuit gives agitated equilibrium
- 3. Third needle in circuit leads to dynamic equilibrium, thus flow within the meridian

F. The Meridians or Channels (demonstrate w/ point finder)

- 1. Principal Meridians - on classic acupuncture charts, main acupuncture circuits which develop early in embryonic life, associated with classic 12 organs/functions
- 2. Tendinomuscular Meridians - often most useful in acute injuries
- 3. Distinct Meridians - for organ or histopathological problems
- 4. Shu-Mu Subsystem - to enhance patient’s energetic level
- 5. Curious Meridians - often for endocrine problems

VI. Into the Medical Mainstream?

- A. FDA - 1996, classified acupuncture needle as Class 2b medical device
- B. NIH - November 1997 Consensus Conference showed “clear evidence” of acupuncture efficacy in various clinical conditions

Chairman Dr. David J Ramsay states, "It's time to take it seriously."

Acupuncture is a great adjuvant treatment and in some cases a primary treatment, for problems not improved by Western Medicine (e.g. psychogenic ED, premature ejaculation, decreased libido, stress associated with male sexual dysfunction, infertility, prostatic/pelvic pain, back pain, headache, postoperative nausea, fibromyalgia)

Books:

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