Microcurrent Conference
2015
Phoenix, Arizona, October 7-11, 2015
Forty Plus Years of Research and Clinical Practice in Electroacupuncture

- Young King Liu, Ph.D., L.Ac.
  University of Northern California
  1300 Valley House Drive, 100-27
  Rohnert Park, CA 94928
Brief History of Acupuncture
“Physiological Rendition by Young King Liu, Ph.D., L.Ac.”

Axiom I

- The difference between a living person and its dead body is called “Xue(⾎) Qi(⽓)”. It was rendered from the Chinese, by a French sinologist, into “vital energy”.

- Physiological Rendition: I would prefer the term: “Flow of oxygenated blood”
Axiom II

- The skin locations where the vital energy is closest to the surface locates the acupuncture point.

- Physiological Rendition: Local Minimum of acupuncture oval.
Axiom III

- The acupuncture points having similar systemic effects are linked into channels or “meridians”. The vital energy flows along 14 channels. Excesses (yang) and deficiencies (yin) in this flow are the causes of diseases. Wherever there are excesses in the body, there must be corresponding deficiencies.

- Physiological Rendition: The flow of oxygenated blood is along the veins, arteries and nerves (VAN).
Axiom IV

- The percutaneous insertion of a fine metallic needle into the acupuncture point generates a xue-qi or energetic flow.

- Physiological Rendition: Needle insertion causes ions to migrate to the bevel needle tip. When needle is manipulated, e.g., rotated and steered, an ionic current results.
Axiom V

- The therapeutic principle of Traditional Chinese Medicine, where acupuncture is a subspecialty, is to lead the excess to the deficiency.

- Physiological Rendition: Stimulate the acupuncture point with excess oxygenated blood and lead to the acupuncture point where there is less.
Brief History of Electroacupuncture

- The French physicians were the first to add electricity to acupuncture therapy: they rubbed ebony rods with silk to generate static electricity. Static voltage in the rod was then brought close to the metallic needle resulting in a spark to create a transient pulse current. Supposedly, the therapeutic effect was enhanced.
Pathogenesis in TCM

I. Environmental
II. Psychogenic
III. Food is Medicine
IV. Biomechanics
The 1985 book, entitled *Body Electric* by Robert O. Becker and Gary Selden, established the concept that during the natural healing of the small wound, created by the percutaneous insertion of the acupuncture needle, generated a “current of injury”. This micro-current keeps stimulating the acupuncture point to prolong its intended therapeutic effects.
Acupuncture in the U.S.

When Henry Kissinger explored the establishment of diplomatic ties with the People’s Republic of China (PRC), the accompanying New York Times correspondent, James Reston, suffered from appendicitis while in the PRC. He was operated on, but the post-surgery pain was severe. He was given acupuncture, which relieved the pain. He wrote in 1971 in his column that U.S. medical establishment better sent some authorities over to investigate what is taking place in medicine in the PRC. Thus, the acupuncture seed was planted in the U.S. and following President Nixon’s official visit in 1972, it has blossomed, year after year, until now.
My Master: Docteur Nguyen Van Nghi

ACUPUNCTURE
21, RUE DU COQ, 21
MARSEILLE (1ER)
SUR RENDEZ-VOUS
TELEPHONE: 62-54-11
Professor Tu Youyou
2015 Nobel Prize for Medicine

Tu, 84, has been chief professor at the China Academy of Traditional Chinese Medicine since 2000.

She conducted research in the 1970s that led to the discovery of artemisinin, a drug that has slashed the number of malaria deaths.

The treatment is based on herbal medicine -- a herb called sweet wormwood or Artemisia annual.

According to the World Health Organization (WHO), there were about 198 million malaria infections in 2013 and 584,000 deaths -- most of them African children.

Herbal Medicine & Acupuncture are subspecialties of Traditional Chinese Medicine.
Acupuncture Points for Osteoarthritis of the Knee
Acupuncture Points for Osteoarthritis of the Knee
Electroacupuncture for osteoarthritis of the knee
Acupuncture Points for Osteoarthritis of the Knee with Brace
Treatment Data for Osteoarthritis of the Knee
Treatment Data for Osteoarthritis of the Knee

CASE ID: PL05

- **VAS**
- **PRE**:
  - 7/13/2009: 5.40
  - 7/15/2009: 4.30
  - 7/17/2009: 2.90
  - 7/20/2009: 1.80
  - 7/22/2009: 2.30
  - 7/24/2009: 0.90
  - 7/27/2009: 0.80
  - 7/29/2009: 0.40
  - 7/31/2009: 1.30
  - 8/3/2009: 0.50
  - 8/5/2009: 0.40
  - 8/7/2009: 0.40

- **POST**:
  - 7/13/2009: 0.50
  - 7/15/2009: 1.60
  - 7/17/2009: 1.60
  - 7/20/2009: 0.30
  - 7/22/2009: 1.70
  - 7/24/2009: 0.70
  - 7/27/2009: 0.70
  - 7/29/2009: 0.20
  - 7/31/2009: 0.60
  - 8/3/2009: 0.85
  - 8/5/2009: 0.50
  - 8/7/2009: 0.30
Treatment Data for Osteoarthritis of the Knee

CASE ID: PR08

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Treatment Data for Osteoarthritis of the Knee

CASE ID: PR12

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Treatment Data for Osteoarthritis of the Knee
Effect of Hyperextension-Hyperflexion (Whiplash) on the Function of the Blood-Brain Barrier of Rhesus Monkeys

Floyd R. Domer, Y. King Liu, K. B. Chandran, and Kenneth W. Krieger

Departments of Pharmacology and Orthopaedics, Tulane University School of Medicine, New Orleans, Louisiana 70112

Received July 3, 1978

Fifteen rhesus monkeys were placed in a cart and subjected to a sudden acceleration to administer a whiplash. The intensity of the acceleration of the head was determined either with a high-speed movie or from accelerometers mounted on the skull. The cart was maximally accelerated at 35 g 30 ms after onset of the impact, and the maximal angular acceleration was $40 \times 10^2 \text{ rad/s}^2$ at 50 ms. The animals did not apparently lose consciousness. The permeability of the blood–brain barrier (BBB) was assessed prior to and 1 h after the whiplash trauma using intravenously administered radioactive pertechnetate ($^{99m}\text{Tc}$). The ratio of radioactivity in the cerebrospinal fluid to that in the blood 1 h after administration served as a measure of the blood–brain barrier permeability. Prior to the whiplash trauma this ratio was $4.85 \times 10^{-3}$, and after the trauma it had increased to $28.44 \times 10^{-3}$. This acute change in barrier function may contribute to the alterations in function of the central nervous system subsequent to whiplash trauma.
Pulsed EM field for Osteoarthritis
Pulsed Electromagnetic Fields for Treating Osteo-arthritis

Van Nguyen, J and Marks, R (2002). ‘Pulsed electromagnetic fields for treating osteo-arthritis’, *Physiotherapy*, 88, 8,

**Summary**

**Background** Osteo-arthritis, a painful joint disorder involving degenerative changes of the articular cartilage and subchondral bone, often results in progressive functional impairment and disability. One particular modality used by physiotherapists that shows very promising results in reducing the joint damage and pain found in osteo-arthritis is pulsed electromagnetic fields.
Past Research


Past Research


Potential Acupuncture Points for the Eye
Mathematical Models

- Finite Element (FEM) of the eye to study the current flow through the tissues and its corresponding electromagnetic field.

Requirements:

1. Electro-statics and Electro-dynamics of the tissues of the eye.
2. The nature of the stimulus, i.e., voltage, current, pulse, shape, frequency, etc.
3. Numerous mathematical simulation of the model will decrease the number of *in vivo* animal and *ex vivo* human experiments.
4. Construct the frame work for clinical trials in animals & humans.
Thank You!