Acupuncture

Ancient medicine for modern times

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East vs. West



"This is the kind of stuff that really makes me question Western medicine."

Goals

- What is acupuncture?
- What do we know about it scientifically?
- What problems can it help?
- When to refer?
- What are the risks?
- What can your patient expect?

What is acupuncture?

- A practice of medicine in continual use in Asia for more that 2000 years.
- Treatments involve the insertion of needles into specific points on the body in order to influence body function or health.



A brief history of acupuncture



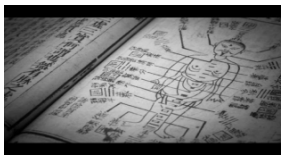
History of Acupuncture

- Thought to be based on Daoist philosophy of energy balancing man between Heaven and Earth.

YIN  YANG

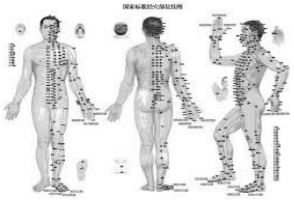
Early History of Acupuncture

- ~1000 BC Hieroglyphs show evidence of acupuncture. Stone needles and bronze needles are excavated from ruins.
- ~200 BC- Huang Di Nei Jing (Yellow Emperor's Classic of Internal Medicine) is published



Nei Jing- Principles of Acupuncture

- Best health is achieved when life's energies are appropriately balanced.
- Qi- the vital force or energy circulating throughout the body



Nei Jing Principles

- Disease is caused by blockage in the flow of Qi which creates imbalance of yin and yang
- Insertion of acupuncture needles at specific points along the body meridians can restore balanced flow of Qi and in turn, good health

History of Acupuncture in Asia

- (500-700 AD) Acupuncture practice arrived in Japan and Korea.
- Through the next 2000 years, the popularity of acupuncture in China waxed and waned.
- (1644-1840) From the Qing Dynasty through the Opium Wars, acupuncture decreased in popularity compared with herbal medicine
- 1929- Registration of traditional doctors ceases and it is proposed to abolish traditional medicine altogether. Acupuncture continues to be practiced in rural areas

Acupuncture in the People's Republic of China



Proclamation of the President of the Chinese Medical Association- 1952

A new "One Medicine" will "possess a basis in modern natural sciences, will have absorbed the ancient and the new, the Chinese and the foreign, all medical achievements, and will be China's New Medicine"

Acupuncture spreads throughout the world

- (1500's) French Jesuit missionaries to China brought back reports of acupuncture. This practice was embraced by French clinicians.
- (1971) NY Times reporter, James Reston travels to China in preparation for Richard Nixon's visit of 1972

1971- NY Times reporter James Reston writes favorably of his experience with acupuncture

Now, About My Operation in Peking

By JAMES RESTON
Special to The New York Times

PEKING, July 25—There is something a little absurd about a man publishing an obituary notice on his own appendix, but for the last 10 days this correspondent has had a chance to learn a little about the professional and political direction of a major Chinese hospital from the inside, and this is a report on how I got there and what I found.

In brief summary, the facts are that with the assistance of 11 of the leading medical specialists in Peking, who were asked by Premier Chou En-lai to cooperate on the case, Prof. Wu Wei-jan of the Anti-Imperialist Hospital's surgical staff removed my appendix on July 17 after a normal injection of Xylocain and Benzocain, which anesthetized the middle of my body.

There were no complications, nausea or vomiting. I was conscious throughout, followed the instructions of Professor Wu as translated to me by Ma Yu-chen of the Chinese Foreign Ministry during the operation, and was back in my bedroom in the hospital in two and a half hours.

However, I was in considerable discomfort if not pain during the second night after the operation, and Li Chang-yuan, doctor of acupuncture at the hospital, with my approval, inserted three long, thin needles into the outer part of my right elbow and below my knees and manipulated them in order to stimulate the intestine and relieve the pressure and distension of the stomach.

That sent ripples of pain racing through my limbs and, at least, had the effect of diverting my attention from the distress in my stomach. Meanwhile, Doctor Li lit two pieces of an herb called ai, which looked like the burning stumps of a broken cheap cigar, and held them close to my abdomen while occasionally twirling the needles into action.

All this took about 20 minutes, during which I remem-

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The New York Times
Published: July 26, 1971
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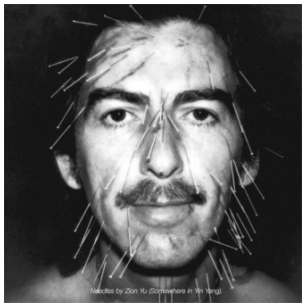
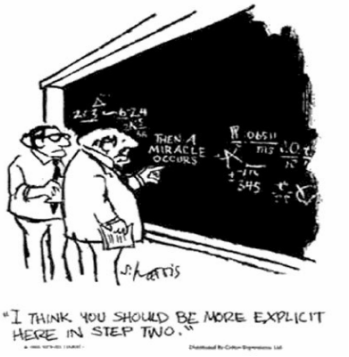


Acupuncture in America

- 1976 - FDA classifies acupuncture needles as "investigative devices"
- 1978 – FDA reclassifies acupuncture needles as "medical devices"
- 1997 – NIH concludes that acupuncture therapy is effective for postoperative and chemotherapy induced nausea and vomiting

How Does Acupuncture Work?



Dimensions of the Pain Experience

1.Sensory-discriminative

- **Noxious stimulus** ~~ce~~llular disruption cy~~tok~~ines and inflammatory factors ~~–~~afferent sensory nerve stimulation Central Nervous System.
- The most commonly recognized and treated faction of pain in Western Medicine

2. Cognitive- evaluative

- Patient's perception of how the pain affects their existence (Perception can be influenced by- cultural factors, suggestive input, distraction)

3. Affective- motivational

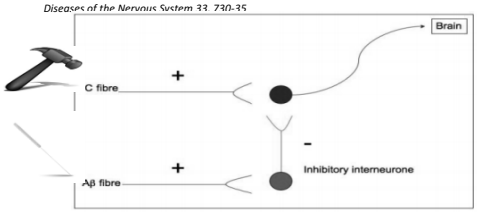
- How the patient's affect and mood are changed by the pain. (Also influenced by – cultural factors, suggestive input, distraction)

Modern Theories of Acupuncture's Mode of Action

1. Gate Control Theory:

- Needle insertion with stimulation of certain nerves ("non-nociceptive" nerves) can inhibit transmission of pain signals from nociceptive pain fibers to the brain

Man, P.L. and Chen, C.H. 1972. The Mechanism of Acupuncture Anaesthesia. The two gate control theory. *Diseases of the Nervous System 33, 730-35*



Modern Theories of Acupuncture's Mode of Action

2. Endorphin Theory:

Acupuncture works by triggering production of endorphins found in the CSF and brain (hypothalamus and periaqueductal gray matter of the mesencephalon)

Wang, Shu-Ming, MD, et al. Acupuncture Analgesia: I. The scientific basis. *Anesthesia and Analgesia, Feb 2008, Vol-106, 602-610*

Modern Theories of Acupuncture's Mode of Action

3. Neurotransmitter model:

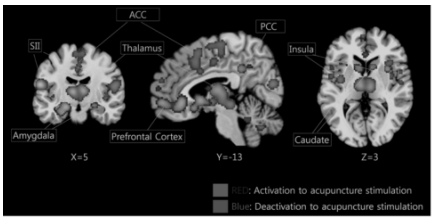
Acupuncture works by modulating release of various neurotransmitters (e.g. serotonin, norepinephrine, acetylcholine) in the brain and spine cord

Chae Ha Yang, et al. A Possible Mechanism Underlying the Effectiveness of Acupuncture in the Treatment of Drug Addiction. *Evid Based Complement Alternat Med, Sep 2008, 5(3): 257-266.*

Modern Theories of Acupuncture's Mode of Action

4. Activation of Neuronal Networks:

Acupuncture works by recruiting dormant neuronal networks that compete with and override the pathologic networks which propagate pain



Younbyyoung Chae, et al. Inserting Needles Into the Body: A Meta-analysis of Brain Activity Associated With Acupuncture Needle Stimulation. *The Journal of Pain, Mar 2013, Vol-14: 215-222.*

Modern Theories of Acupuncture's Mode of Action

5. Autonomic Nervous System Involvement

- Reduces activity in the sympathetic (fight or flight) nervous system
- Effects on pulse rate, heart rate variability, skin conductance, GI motility

- Qian-Qian Li, et al. Acupuncture Effect and Central Autonomic Regulation. *Evid Based Complement Alternat Med, May 2013, 267959*

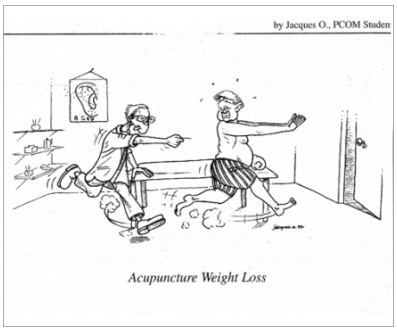
Modern Theories of Acupuncture's Mode of Action

6. Mechano-transduction/Connective Tissue Hypothesis-

- Proposes that fascia is a matrix for intercellular communication and biochemical and bioelectric signaling and that needling of fascia activates such processes.

1. Qi, YC, et al. Effect of Acupuncture on Inflammatory Cytokines Expression of Spastic Cerebral Palsy Rats. *Asian Pac J Trop Med, Jun 2014, 7(6): 492-5.*
2. Jeong HJ, et al. The Effect of Acupuncture on Proinflammatory Cytokine Production in Patients With Chronic Headache: A Preliminary Report. *Am J Chin Med, 2003; 31(6): 945-54.*

What Problems Can Acupuncture Treat?



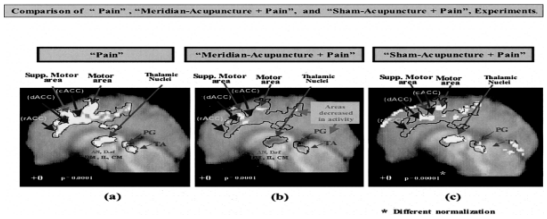
Scientific Studies

- Difficulty with double blinded placebo- control trials
- Sham acupuncture
  - Points off the meridian
  - Sham needles

Argument against the placebo effect

- Animal Studies
- Analgesic effects blocked by local anesthetic and naloxone
- Many studies DO show statistical superiority of true acupuncture vs. sham acupuncture

Argument against the placebo effect- functional MRI



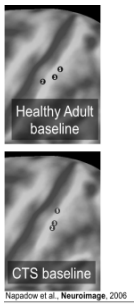
Chernyak, G.V., MD. Perioperative Acupuncture and Related Techniques. *Anesthesiology, May 2005, Vol-102, 1031-1049.*

Research on Neuroplasticity Effects of Acupuncture

Acupuncture Effects on Mild-Moderate carpal tunnel symptoms.

1. subjective symptoms
2. median nerve conductivity
3. fMRI (somatotopy of digits 2,3 and 5)

Maeda, Yumi, et al. Rewiring the Primary Somatosensory Cortex in Carpal Tunnel Syndrome with Acupuncture. *Brain (2017) 140 (4) 914-927.*



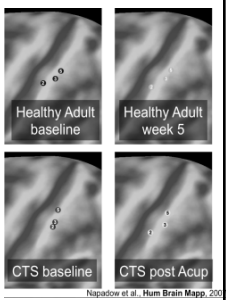
Napadow et al., **Neuroimage**, 2006

Results of Carpal Tunnel Study

- 80 patients in 3 experimental groups- 16 treatments over 8 weeks

1. Electroacupuncture –affected wrist
2. Sham electro-acupuncture- affected wrist
3. Electroacupuncture – contralateral ankle

- All groups showed some improvement in subjective symptoms
- Electroacupuncture of the affected wrist or contralateral ankle showed improvement in median nerve conductivity and fMRI



Napadow et al., **Hum Brain Mapp**, 200

Maeda, Yumi, et al. Rewiring the Primary Somatosensory Cortex in Carpal Tunnel Syndrome with Acupuncture. *Brain (2017) 140 (4) 914-927.*

What Does the Research Show?

Acupuncture Helps:

- Headaches
- Back pain
- Neck pain
- Osteoarthritis of the knee
- Nausea and vomiting occurring after surgery or with chemotherapy
- Dry mouth which occurs after radiation therapy for head and neck cancers
- https://nccih.nih.gov/health/acupuncture/introduction

Acupuncture Likely Benefits

(*More research needed*)

- Addiction withdrawal (auricular acupuncture)
- Allergic Rhinitis
- Infertility (when used in conjunction with IVF)
- Anxiety, Depression, PTSD
- Hot Flashes (due to hormonal therapy for breast and prostate cancers)
- Tendonitis (e.g. tennis elbow)

WHO: diseases, symptoms or conditions for which acupuncture has been proved

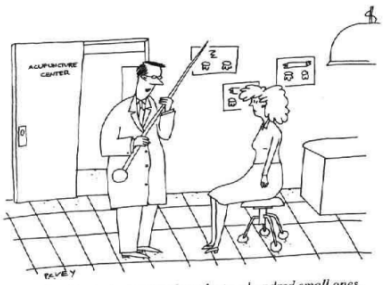
- Adverse reactions to radiotherapy and/or chemotherapy
- Allergic rhinitis (including hay fever)
- Biliary colic
- Depression (including depressive neurosis and depression following stroke)
- Dysentery, acute bacillary Dysmenorrhoea, primary
- Epigastralgia, acute (in peptic ulcer, acute and chronic gastritis, and gastrospasm)
- Facial pain (including craniomandibular disorders) Headache
  Hypertension, essential
  Hypotension, primary
- Induction of labour
  Knee pain
  Leukopenia
  Low back pain
  Malposition of fetus, correction of Morning sickness
- Nausea and vomiting
- Neck pain
- Pain in dentistry (including dental pain and temporomandibular dysfunction)
- Periarthritis of shoulder
- Postoperative pain , Renal colic
  Rheumatoid arthritis
- Sciatica, Sprain
- Stroke
- Tennis elbow

When to Refer?

Zhen Jiu Jia Yi Jing

- The ***superior physician*** controls disease before any illness has declared itself;
- The ***average physician*** practices acupuncture before the disease comes to crisis;
- The ***inferior practitioner*** treats a patient when the illness is already dying away

What are the risks?



"It's going to hurt more than the two hundred small ones, but it's much faster."

The Acupuncture Needle



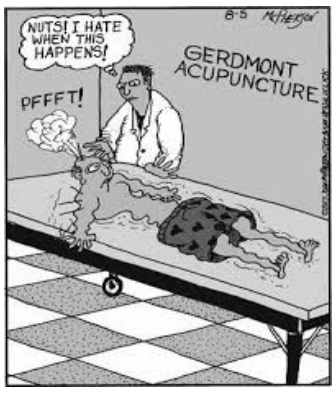
Acupuncture Side Effects

- Infrequent and mostly minor
- Serious Side effects can occur but are rare (2007 study of chronic pain. Study group of 454,920 patients. Incidence of serious side effects 3 per 100,000.

(Weidenhammer W, et al. Acupuncture for Chronic Pain Within the Research Program of 10 German Health Insurance Funds. *Complementary Therapies in Medicine, 2007, 15(4): 238-46.*

Acupuncture Side Effects

- Common (and minor):
  - Minor bruising or bleeding at needle insertion site
  - Minor discomfort at needle insertion site
  - Temporary aggravation of presenting symptoms
  - Mild feeling of giddiness or sedation or emotional release
- Rare: Infection, organ puncture, significant bleeding, pneumothorax (collapsed lung due to needle puncture), seizures (have been reported with electroacupuncture)



What can your patient expect?

- Usually requires multiple visits (4-8) to begin to notice the effects.
- Treatment often involves sites distant from the presenting problems
- Treatments usually last 20-60 minutes
- Most insurances do not cover the service
- Price range: Initial visit $75-100
  Follow-up visit $50-80

Electroacupuncture



Han J S, Sun S L 1990 Differential release of enkephalin and dynorphin by low and high frequency electroacupunture in the central nervous system. Science International Journal (NY) 1:19-23.

Case presentation: Knee Arthritis

- 44 yo female. Bilateral knee pain x 5 yrs.
- Dx Osteoarthitis. s/p arthroscopic surgery with temporary improvement. s/p injections of Hyaluronic acid and Cortisone without good results.
- Pain 2/10 at rest. 10/10 sharp when first getting up from sitting. Unable to continue low-pact regular aerobic exercise due to pain.

Case Presentation: Knee Arthritis

- 1st acupuncture treatment involved electroacupuncture at local knee points, followed by treatment involving peripheral points. Results= 50% improved
- By 5th treatment (over 5 weeks), pain was minimal and aerobic exercise was resumed.

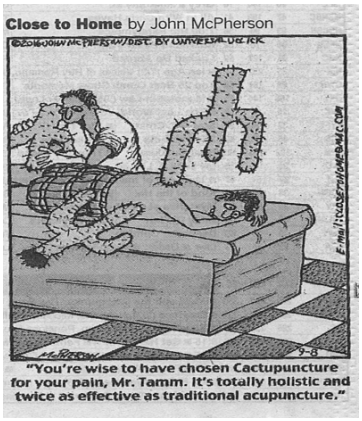
Case Presentation: migraines

- 23 yo female.
- Dx: migraine headaches x 3 years. Initially several per week. Decreased to 2x a month on Propranolol and PRN Butalbital/ acetaminophen. Still incapacitating and did not like side effects of propranolol.
- By 5th acupuncture treatment, migraine frequency decreased despite inadvertent D/C of propranolol. No use of butalbital/acetaminophen.
- Since then (> 1 year) – occasional headache on no prophylactic meds. No opioid derivatives

Reduction in Pain Medication

- In 2015 Medical Acupuncture Training was introduced to the Family Medicine Residents at Nellis Air Force Base, NV.
- 172 patients treated with 4 or more acupuncture treatments
- Results: 45% decrease in opioid prescriptions, 42% decrease in NSAIDS, 34% decrease in muscle relaxants, 14% decrease in benzodiazepines.
- Improved symptom control, ability to function, and improved quality of life (as reported in MYMOP2 =Measure Yourself Medical Outcome Profile)
- 2016- Clinic achieved $250,000 decrease in off-base referrals for pain management compared to 2015

Crawford, P, MD et al. Reduction in Pain Medication Prescriptions and Self –Reported Outcomes Associated with Acupuncture in a Military Patient Population. *Medical Acupuncture, Vol 29(4): 229-231, Aug 2017.*
Helms, J, MD, Medical Acupuncture Meets the Military, *Medical Acupuncture, Vol 29(4): 189-190, Aug 2017*



Summary

- Acupuncture is a 2000+ year old healing art that has made its way into the world of western medicine over the last 60 years
- Acupuncture's mode of action is not fully elucidated but it likely has multiple mechanisms of action
- Acupuncture is very safe
- Good research supports acupuncture's benefits for LBP, headaches, TMJ syndrome, neck pain and a host of other conditions. More research is needed to establish its full array of benefits

Thank You !!!

- Michael Martin, MD. Walter Reed Medical Center, Washington, D.C.
- John Spieker, MD, Orthopaedic Associates of Southern Delaware, Lewes, DE
- Leon Harris, L Ac, Golden Road Acupuncture and Oriental Medicine, East Greenwich, RI
- Sara Clemens, MD, University of Pennsylvania Hospitals, Philadelphia, PA