Acupuncture

The topic of Acupuncture was chosen for this issue since it was rated a highly desirable Integrative Medicine service by the WDH medical staff, according to a December 2007 survey. The medical data supporting its efficacy for a variety of conditions is unequivocal.

Acupuncture

Acupuncture is an ancient Chinese healing treatment used in the US predominantly for pain management. Acupuncture “meridians” are historically believed to be physical pathways of energy transmission through the body. Like the neurological or vascular system, they are thought to be connected with end organ transmission of flow signals important in health and disease states, and are traditionally named as the end organ.

There are 365 acupuncture points. Scientific study of these ancient points finds them to correspond to areas of diminished skin resistance as measured by galvanometers. As such, acupuncture points direct needles into fascial planes rich in fluid. The thermocouple effect of Kelvin Thomas asserts that if there is a temperature difference across a universal conductor (an acupuncture needle), then this will elicit an electrical potential at one end. Thus, acupuncture needles are designed to maximize temperature gradients by using a spiraled metal handle to disperse heat. These needles are excellent conduits to effect changes in local electrical charge within the tissue; the average charge at the tip of an inserted acupuncture needle is about 3 microvolts.

However, acupuncture affects not only the local milieu, but it also has remote effects on multiple humoral and neurally-mediated physiologic responses. Acupuncture points are demonstrated to be consistent across a species and can be easily visually sketched by experienced providers.

Acupuncture has thousands of years of documented success in clinical practice, and cannot be considered to be lacking in evidence of clinical efficacy. In the United States, acupuncture came to the fore when President Nixon traveled to China. James Reston, a journalist covering Nixon’s groundbreaking trip, authored an article that appeared on the front page of the New York Times detailing his personal account of having acupuncture analgesia during his emergency appendectomy. Nixon’s diplomacy opened the door for Western physicians to study the art and science of acupuncture. In the intervening years, Western medicine’s initial skepticism has centered on the idea that no anatomic or biochemical correlate of these meridians has yet been identified, and thus the mechanism of action is unknown. A French radiologic study demonstrated flow along the classic Chinese meridians when technetium was injected into acupuncture points. When injected into non-acupuncture points, technetium failed to flow. New technological advances in measuring electromagnetic bioenergies based on quantum biophysics are showing promise that these “energy” pathways may be more biophysical than biochemical.

In 1997, the National Institutes of Health published a landmark consensus statement on acupuncture, citing medical evidence supportive of its efficacy in specific medical conditions. Since that time, its use as an integrative approach to care has grown exponentially in part due to research aimed at better understanding the physiologic effects of acupuncture in addition to its safety. Neuroimaging advances have made enormous strides in Western acupuncture research. fMRI, (functional Magnetic Resonance Imaging), PET (positron emission tomography), EEG, and MEG (magnetoecephalography) have all been utilized in acupuncture studies. EEG studies show that acupuncture may have humorally as well as neurally mediated effects on pain. (Xu 93) Other neuroimaging data shows that acupuncture modulates brain responses in widespread cortical, limbic, and brainstem centers. Many of these centers support both sensory and affective pain perception, and are also implicated in “endogenous anti-nociceptive signaling” (opioidergic and monoaminergic neurotransmission). Thalamic, hypothalamic, and pituitary regions are specifically involved in this “endorphin” pathway. (Zubieta 06)

However, endorphins alone (a temporary state) are not responsible for acupuncture’s pain management effects. Recent fMRI studies at MGH/MIT show that deactivation of the amygdala, the brain’s center for encoding negative memory and emotion, was more significant in “verum acupuncture” (using true acupuncture points) compared to “sham acupuncture” in the treatment of carpal tunnel pain. (Napadow 06) This may alter the encoding of the negative emotional/cognitive “pain experience” and allow for better coping mechanisms in the presence of chronic pain. (Petrovic 04) Studies utilizing “sham” acupuncture have been plagued with controversy regarding proper methodological control.

Acupuncture is sometimes dismissed by some allopathic physicians due to difficulty distinguishing from “placebo effects” which itself is not well understood. However, reproducible research on acupuncture analgesia in laboratory animals has shown the pain mitigating effects to be reversed with the use of narcotic antagonist.
Numerous acupuncture studies concluded that acupuncture effects are not related solely to placebo effect and it is this body of knowledge, in part, that the NIH considered when it validated the efficacy of acupuncture. Acupuncture appears to have both specific and placebo-like neural effects. (Dhond 07) However, placebo effects are short term. Long term acupuncture has been shown to change somatosensory processing. (Napadow 06)

In clinical practice, acupuncture can be delivered by licensed lay acupuncturists or trained physician acupuncturists. As mounting research confirms its efficacy and patient demand grows, ongoing challenges will include establishing access to, and appropriate indications for, acupuncture’s use.

–K Hails MD, B Gendron DO, N Stoll MD

References:


Zubieta JK, Yau WY, Scott DJ, Stohler CS. Belief or Need? Accounting for individual variations in the neurochemistry of the placebo effect. Brain Behav Immun 2006;20:15–26

Acupuncture at WDH

Acupuncture has been identified as an area in need of further development by the medical staff at WDH. Areas of greatest need/impact may be as an adjunct to comprehensive care for patients undergoing chemotherapy (antiemetic), for patients with end of life issues (palliative care), and to assist with comprehensive perioperative management.

Acupuncture is currently available on outpatient basis via physician referral for subacute or chronic musculoskeletal pain that have had failed conservative care (muscle relaxants, narcotics, epidural injections, physical therapy, joint injections etc).

Patients often have complete or near complete resolution of their pain with a typical course of four to six treatments.

Academic Centers Utilizing Acupuncture:

Thomas Jefferson Medical College
www.jeffersonhospital.org/cim
University of California, San Francisco
www.osher.ucsf.edu
University of Maryland School of Medicine
www.compmed.umm.edu
Beth Israel Medical Center
www.healthandhealingny.org
Harvard Medical School/ MGH
www.acuhealing.org
Stanford University School of Medicine
www.stanfordhospital.com

Recommended Reading and Websites:

• Acupuncture Energetics, Joseph Helms
• NIH Consensus Statement 1997
• www.medicalacupuncture.org
• www.medicalacupuncture.org/cme/cme/cmes.html (for CME)

WDH Physician Providers of Acupuncture (treatment for neuromusculoskeletal conditions & pain)

Barry Gendron..DO
Seacoast Area Physiatry
603-742-4222
Margaret Tilton MD
Seacoast Area Physiatry
603-742-4222
Bruce Myers MD
Seacoast Area Physiatry
603-742-4222
Nancy Stoll MD
South Berwick Family Practice
207-384-4949
James Hay MD
Seacoast Pain Institute
603-749-7246

Next issue: Reiki
Editor: Kelley Hails MD
ghails@comcast.net - feedback welcomed

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