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Acupuncture in Theory and Practice Part 2: Clinical Indications, Efficacy, and Safety

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The likelihood that a physician will encounter a patient who is considering acupuncture, undergoing acupuncture, or has questions about acupuncture, has undoubtedly increased significantly over the past few decades.[1–3] Understanding the basics of this treatment modality has increasingly become important for physicians and other health care providers who do not practice these techniques. This article is the second of a 2-part series exploring the theory and practice of acupuncture in the context of Western medicine. The first part, published in the April 2004 issue of *Hospital Physician*, introduced traditional Chinese medicine (TCM) concepts and reviewed what is currently known regarding the physiologic mechanisms underlying acupuncture. The second part discusses the suggested clinical indications and safety of acupuncture as well as potential applications to Western medicine.

ACUPUNCTURE INDICATIONS

Pain Relief

The most common reason Americans seek acupuncture is pain relief, especially chronic pain. The efficacy of acupuncture for treating pain is generally supported by existing evidence, although the study of acupuncture suffers to a certain extent from poorly designed, limited studies (discussed later in this article). Studies have compared acupuncture with medications, placebo pills, and sham acupuncture (ie, needles are placed in non-acupuncture points).

In studies of acute pain, sham acupuncture does not inhibit acute pain, and placebo pills are successful in only 3% of cases.[4,5] In human clinical studies on chronic pain, placebo analgesia is effective in 30% to 35% of patients, sham acupuncture in 33% to 50% of patients, and true acupuncture in 55% to 85% of patients.[4,6,7] Studies have found the efficacy of acupuncture in the treatment of fibromyalgia, myofascial pain, and tennis elbow to be comparable to that of nonsteroidal anti-inflammatory drugs (NSAIDs) and steroid injections.[8–10]

WHO-Listed Medical Conditions

The June 1979 World Health Organization (WHO) Interregional Seminar established a list of 40 medical conditions that lend themselves to acupuncture treatment, based on their review of clinical experiences and not on controlled clinical trials.[11] This list includes problems of the following systems or regions:

- Upper respiratory tract (acute sinusitis, acute rhinitis, common cold, acute tonsillitis)
- Respiratory system (acute bronchitis, asthma)
- Eye (acute conjunctivitis, central retinitis, childhood myopia, uncomplicated cataract)
- Mouth (toothache, post–tooth extraction, gingivitis, acute and chronic pharyngitis)
- Gastrointestinal tract (esophageal spasms, hiccup, gastritis, acute and chronic duodenal ulcer, acute and chronic colitis, acute bacillary dysentery, constipation, diarrhea, paralytic ileus)
- Neuromuscular system (headaches/migraines, trigeminal neuralgia, facial palsy, pareses following a stroke, peripheral neuropathy, poliomyelitis, Ménière's disease, neurogenic bladder, nocturnal enuresis, intercostal neuralgia, cervicobrachial syndrome, sciatica, frozen shoulder, tennis elbow, lower back pain, osteoarthritis).[12,13]

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Table 1. Conditions for Which the Use of Acupuncture Is Supported by Clinical Studies

Postoperative or post-chemotherapy nausea and vomiting
Postoperative dental pain
Addiction treatment
Stroke rehabilitation
Headache
Menstrual cramps
Tennis elbow
Fibromyalgia
Myofascial pain
Osteoarthritis
Low back pain
Carpal tunnel syndrome
Asthma

Data from Acupuncture. NIH Consens Statement 1997;15:1–34. Available at http://consensus.nih.gov/cons/107/107_statement.htm. Accessed 29 Mar 2004.

NIH-Listed Medical Conditions

The 1997 National Institutes of Health (NIH) Consensus Panel on Acupuncture reviewed more than 2000 acupuncture studies and found evidence supporting the use of acupuncture as an either adjunct or alternative treatment for a number of conditions (**Table 1**).[12,14] The Panel felt that there was clear evidence of efficacy for postoperative or post-chemotherapy nausea and vomiting and probably for nausea associated with pregnancy. Other studies reviewed focused on pain, and the Panel felt that there was reasonable evidence supporting the efficacy in relieving menstrual cramps, tennis elbow, fibromyalgia, postoperative dental pain, lower back pain, myofascial pain, and epicondylitis. They found the evidence less convincing, but nonetheless supportive of its use for addiction, stroke rehabilitation, headache, osteoarthritis, asthma, and carpal tunnel syndrome. Conversely, they found evidence that acupuncture is not efficacious for smoking cessation.[12,14]

METHODOLOGIC ISSUES IN ACUPUNCTURE RESEARCH

The clinical studies reviewed by the 1997 NIH Consensus Panel on Acupuncture ranged from case reports to randomized, double-blinded, controlled studies. Many of the studies had methodologic problems that suboptimal studies often have, such as inadequate sample sizes, inadequate blinding, or lack of proper controls. Furthermore, many studies also had at least 1 of the following 3 problems specific to acupuncture studies[6,12,14]: inadequate acupuncture treatments, generalizing results of one style of acupuncture to others, and using inadequate sham acupuncture controls.

Inadequate Acupuncture Treatments

A considerable proportion of trials did not use acupuncture procedures that an experienced acupuncturist normally would use. For example, many trials used fixed acupuncture points rather than points tailored to each patient's presentation. Other trials omitted key elements of the method being studied. In a 1997 trial, 56 patients with chronic plaque psoriasis were randomized to receive either treatment (classic Chinese acupuncture with electrostimulation and ear acupuncture) or placebo (sham, "minimal acupuncture") twice weekly for 10 weeks. To standardize treatments, the needling of the actual psoriatic lesions was omitted, which drastically changed the method being investigated.[15]

Acupuncture studies should clearly indicate the treatment method being studied, reference the method (citing texts, literature, and experts), describe the procedure thoroughly, and state the background of the acupuncture expert participating in the study. The expert must certify that the procedure used accurately follows accepted guidelines of the technique being tested. Investigators must realize that seemingly minor alterations in procedure can have profound effects.

Generalizing Results of One Style of Acupuncture to Others

Findings from one style of acupuncture are not necessarily applicable to other methods of acupuncture because the range and scope of each approach can be very different. A certain method may be more effective than others in treating a specific condition, just as different antibiotics are more effective for different infections. Unfortunately, many studies do not specify in their titles or abstracts what method of acupuncture was used, which may mislead readers who do not closely examine the methods into thinking that the results are generalizable to all forms of acupuncture. Many acupuncture meta-analyses have aggregated studies that used different acupuncture methods.[16–19] (This approach would be analogous to aggregating different types of cardiothoracic surgery in a meta-analysis.) Berman et al[7,20] found that a specific TCM method was effective as an adjunct treatment of knee osteoarthritis. The results of this study supported the notion that a particular acupuncture style could be successful for a particular type of disorder. However, these results should not

be extrapolated to attempt to answer the question of whether other styles would have been equally effective with the same patient population or whether the same technique would have been effective in different populations.

Inadequately Controlled Studies

Sham controls are used to determine whether the acupuncture experience produces a placebo effect. An adequately controlled study must have a large enough study population to detect a statistically significant difference. But in a meta-analysis of studies looking at acupuncture and neck pain and back pain, studies that showed acupuncture to be better than placebo/control did not use large enough populations for the differences to be statistically significant (ie, even large differences seen in very few patients could still be due to random chance).[21] Moreover, sham points must be far enough away from acupuncture points and meridians to avoid inadvertent actual stimulation. This concern is especially problematic in studies of chronic pain because the effective area of acupuncture points is increased for chronic pain. Unfortunately, many studies do not adequately describe the locations or use of sham points.[22–24]

Summary

There has been debate over the amount of evidence needed before acupuncture should be used for a given medical problem. Is it necessary and appropriate to wait for randomized clinical trials to be designed, executed, and completed? Or can less rigorous clinical studies provide ample support? Is extensive anecdotal evidence enough, especially when patients have no viable alternatives? Although there is a relative shortage of well-designed studies on acupuncture, few therapies have been used successfully for so many years.

The conclusion to be drawn from these studies is that although the available evidence seems to support the use of acupuncture for the treatment of certain conditions, many of the studies are poorly designed. Poor study design may be a result of a lack of understanding of acupuncture, poor knowledge of experimental design, or inadequate research support. Therefore, in either reviewing or designing a study examining acupuncture, it is particularly important to use an informed, critical eye, with attention to the 3 potential methodologic problems specific to acupuncture. Although available evidence suggests that acupuncture may be beneficial in a number of circumstances, the need is great for additional, well-executed research if acupuncture is to be ushered into more mainstream practice.[15]

APPLICATIONS OF ACUPUNCTURE-LIKE MODALITIES TO WESTERN MEDICINE

The use of acupuncture techniques has not been limited to pure acupuncture. Health care providers have applied acupuncture theory and techniques to Western clinical medical practice. In many cases, practitioners do not need to be licensed or registered as acupuncturists to apply various devices other than needles to acupuncture points. Manual pressure (acupressure), surface electrical stimulation, piezo electric devices, moxibustion (the burning of mugwort plants), infrared lamps, and low-energy (cold) lasers have been used. Tai-chi movements and qi qong postures, breathing, and mental practices also are believed by some to affect the meridians described in acupuncture theory. Using cold lasers or electric stimulation requires supervision or collaboration with a physician acupuncturist or a licensed acupuncturist knowledgeable in the use of these modalities. Studies have demonstrated the efficacy of a variety of surface electrical stimulation devices in treating chronic pain, HIV peripheral neuropathy pain, carpal tunnel syndrome, stroke sequelae, and other musculoskeletal disorders.[25–29]

These results suggest that elements of acupuncture techniques could be integrated with traditional Western physical therapy manipulations and exercises. Additionally, after initial instruction from a trained therapist, patients may be able to use similar techniques in self-directed home therapies. Before a clinician incorporates any aspect of acupuncture into practice, however, he or she must have a thorough understanding of the location of acupuncture points and meridians because stimulating the wrong areas may either dampen efficacy or lead to untoward effects.

SAFETY OF ACUPUNCTURE

Acupuncture has a better overall safety record than many standard therapies. Although transmission of diseases such as HIV and hepatitis through contaminated acupuncture needles has been reported, it is rare, and disposable needles are widely used. Other problems reported with acupuncture include needle fragments left in the body; nerve damage; pneumothoraces; pneumoperitoneum; hemothoraces; cardiac tamponade; and punctures of the kidney, bladder, and spinal medulla. Local problems, such as bleeding, contact dermatitis, infection, pain, and paresthesias as well as nonspecific systemic complaints (eg, nausea, chest pain, dizziness, dyspnea, syncope) also have been reported (**Table 2**). One case of aphasia lasting an hour after acupuncture was reported in the literature.[30] However, the incidence of side effects appears to be

Table 2. Potential Adverse Effects of Acupuncture

Frequency	Adverse Effects
Majority of cases	None
Rarely (possibly 1% of all cases)	HIV or hepatitis transmission
	Needle fragments left in the body
	Nerve damage, pain, and paresthesias
	Pneumothoraces
	Cardiac tamponade
	Punctures of organs
	Bleeding and infection
	Contact dermatitis
	Nausea and vomiting

low. Studies found only 9 reported complaints about licensed acupuncturists[31] and 50 adverse events over a 20-year period.[7,32,33] In 2 prospective studies comprising more than 60,000 acupuncture visits in the United Kingdom, no serious adverse events occurred.[34,35] The 1997 NIH Consensus Panel on Acupuncture and the US Food and Drug Administration consider acupuncture safe when done by qualified practitioners using sterile needles.[36]

The WHO has identified 4 settings in which acupuncture should be avoided: (1) Caution should be taken with regard to pregnant patients because acupuncture may induce labor. (2) Patients with bleeding disorders or who are on anticoagulant therapy may suffer bleeding problems during and after acupuncture. (3) Needling at tumor sites may promote metastatic dispersal of tumor cells. Finally, (4) patients with medical emergencies should be stabilized before acupuncture is even considered.[37]

The WHO also has identified specific precautions to take when performing acupuncture. Moving abruptly during acupuncture sessions may result in displaced or lost needles. Needles should not be used in areas affected by lymphedema or in certain areas of the body, such as the fontanelle in babies, external genitalia, nipples, umbilicus, and eyeball. Moxibustion should not be used directly on the face, over tendons, over large blood vessels, or on areas with suppuration close to a joint (as joint movement may make healing difficult). Special care should be taken in areas that have poor circulation because these areas tend to heal poorly and have collateral blood vessels that may bleed. Several acupuncture points are very close to vital structures such as the eyeball (BL-1, jing-ming; ST-1, cheng-qi), trachea (CV-22, tian-tu), carotid artery (ST-9, ren-ying), femoral artery (SP-11, ji-men; SP-12, chong-men), and radial artery (LU-9, tai-yuan). (Meridians are abbreviated as follows: BL = bladder, ST = stomach, CV = conception vessel, SP = spleen, LU = lung.) Only skilled practitioners should attempt to needle these points.[37]

Table 3. Acupuncture Training Information Sources

Nonphysician programs:

Accreditation Commission for Acupuncture and Oriental Medicine (ACAOM)
7501 Greenway Center Dr., Ste. 820
Greenbelt, MD 20770
Phone: (301) 313-0855
Web site: www.acaom.org

Physician programs:

American Academy of Medical Acupuncture
4929 Wilshire Blvd., Ste. 428
Los Angeles, CA 90010
Phone: (323) 937-5514
Web site: www.medicalacupuncture.org

American College of Acupuncture
1021 Park Ave.
New York, NY 10028
Phone: (212) 876-9781
Web site: www.acupuncturesociety.com

Chinese Acupuncture for Physicians
Department of Family Medicine
Keck School of Medicine of the University of Southern California
Parkview Medical Building B205
1420 San Pablo St.
Los Angeles, CA 90089
Phone: (323) 442-1313
Web site: www.chineseacupunctureforphysicians.com

Helms Medical Institute
2520 Milvia St.
Berkeley, CA 94704
Phone: (510) 649-8488
Web site: www.hmieducation.com

ACUPUNCTURE TRAINING AND LICENSING

Licensing and registration requirements vary from state to state and for physician and nonphysician practitioners. Before referring a patient to an acupuncturist, physicians should ensure that a practitioner is compliant with the regulations of the state in which he or she practices and evaluate a practitioner's competence by talking to the practitioner and, if possible, to his or her patients. It also may be important to review the practitioner's experience with the particular referred

problem, since some practitioners may be more or less adept at handling specific clinical situations. For more information on training programs and requirements, consult the guidelines of the World Health Organization[37] and the organizations listed in **Table 3**.

INSURANCE COVERAGE FOR ACUPUNCTURE

Regardless of the need for well-designed clinical trials of acupuncture, its use continues to grow. Currently, Medicare and Medicaid do not cover acupuncture. According to the Web site www.acupuncture.com, there are numerous insurance carriers that have some form of acupuncture coverage, including Aetna, several Blue Cross or Blue Shield plans, Cigna, John Hancock, and Prudential Health Care.[38] Insurance companies continue to add and change their coverage, and coverage varies significantly. Some plans require physicians or chiropractors perform the services. Some limit coverage to certain indications. The amount of coverage varies widely, ranging from a small discount from the out-of-pocket payment to total coverage. Patients considering acupuncture should check with their insurance carrier to determine whether and how much acupuncture treatment is covered.

CONCLUSION

Existing trends suggest that the use of acupuncture in the United States will continue to grow. There is a clear need for more and better research on the mechanisms and efficacy of acupuncture to clarify and further refine acupuncture techniques. In addition, opportunities for integrating acupuncture theory and techniques with Western medicine will continue to emerge. These trends make it increasingly important to have a good understanding of acupuncture, as well as a systematic manner of approaching and understanding acupuncture literature. **HP**

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