


DERMATOLOGIC DISQUISITIONS AND OTHER ESSAYS
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Getting to the point: the potential for modern medical acupuncture in dermatological therapy

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Since a journalist covering Richard Nixon's historic trip to China in the early 1970s reported on his incredible experience of having an emergency appendectomy performed under acupuncture anesthesia, acupuncture gradually increased in popularity and sophistication in the United States. Although most noted for its effects on pain, acupuncture has been studied extensively and found to be effective in a variety of medical conditions, including skin disorders such as atopic dermatitis, acne, and psoriasis.^{1–8}

The term *acupuncture* is derived from the Latin words *acus* (needle) and *punctura* (puncture)—or using a needle to puncture the body. A more modern and expansive definition of acupuncture is the stimulation of specific points on the body with needles and/or other stimuli (eg, moxibustion, heat, massage, and electricity), which are discussed subsequently in this article.

To understand how stimulating points on the body with any modality could lead to physiologic changes that might be beneficial, one must first remember that human beings are composed of matter and energy and that energy condenses into matter and matter can become energy. A fundamental tenet of all energetic medicine is that the goal of therapy is to eliminate energetic dysfunction before it condenses into material or physiologic disturbances. Initially, energetic dysfunction manifests itself as symptoms and symptom complexes that lead to reversible alterations in matter that

ultimately cause fixed alterations in matter if they are allowed to continue. Different modalities are used to achieve similar goals in traditional medicine. For example, it is the goal of acne therapy to suppress or eliminate inflammation to prevent the ultimate material presentation of a scar.

Although the goal of acupuncture from a traditional Chinese medicine standpoint is to balance the body's qi, blood, and fluids, it may be more instructive to view this in terms of balancing the sympathetic (yang) and parasympathetic (yin) nervous systems. The sympathetic nervous system is responsible for regulating our “fight or flight” responses, whereas the parasympathetic nervous system is responsible for regulating our “rest and repair” systems. Most organs and tissues in the body are controlled by dual sympathetic and parasympathetic innervation. Acupuncture points (acupoints) are chosen to turn on and off sympathetic and parasympathetic “switches” to restore appropriate neurologic balance. Sympathetic acupoints are located on the posterior, lateral, and distal (yang) aspects of the body. Parasympathetic acupoints are located on the anterior and medial (yin) aspects of the body. The goal of acupuncture is therefore to balance the sympathetic and parasympathetic nervous systems, thereby regulating physiologic function, neuroendocrine function, and immunity.

Metal needles placed into the body generate electric activity because needle contact with electrolytes in body fluids creates a simple microcurrent battery, with the needle tip being positive (anode) and the needle handle being negative (cathode). Acupuncture needles are inserted into the skin as well as deeper structures and stimulate small myelinated A-delta afferent nerve fibers and myelinated

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groups II and III muscle nerve fibers. The stimulated nerve fibers synapse with nuclei in the dorsal horn of the spine.

Acupuncture needles and other stimuli delivered to acupoints appear to generate afferent (orthodromic) action potentials to the spinal cord, which travel to the central nervous system and/or organs. Ultimately, these action potentials lead to the release of neurotransmitters and neuropeptides in nerve terminals. Orthodromic impulses may also trigger efferent impulses to the peripheral nervous system as antidromic action potentials that travel along other branches of the same sensory nerve. Neurogenic inflammation is the result of these antidromic action potentials releasing pro-inflammatory neuropeptides in cutaneous sensory nerve terminals. Acupuncture needles also have the potential to promote healing by causing ionic flow alterations in the lymph, semiconduction along the fascia and connective tissue, and biological and biochemical information to be released in the form of neuropeptides in the lymph and blood.

Acupoints have been investigated extensively. They have been discovered to be areas of low electric resistance, high electric conductance, higher capacitance, enhanced acoustic attenuation, increased concentration of mucopolysaccharides and collagen, increased density of gap junctions, increased concentration of nitrous oxide and norepinephrine, and increased concentration of substance P. Acupoints can be found by palpating along surface depressions located along muscle cleavage planes. They tend to occur along motor points, in the midline where bilateral superficial nerves meet, over superficial nerves or plexi, and over muscle tendon junctions (where Golgi tendon organs are located). Acupoints are organized into channels or meridians that seem to function as preferential conduction pathways in the body. Meridians may represent developmental planes of biological influence because they tend to follow nerves (A- and C-fiber receptive fields in skin and muscle), arteries (perivascular sympathetic nerves), dermatomes, Blaschko's lines, and fascial planes.

Acupoints can be stimulated in a variety of ways, including needles alone, needles and electric current, electric current alone (acupuncturelike transcutaneous electric nerve stimulation), burning moxa (a smoldering stick of the mugwort herb), heat lamps, hair dryers, cupping, coining, laser, colored light, magnets, injection (vitamins, Botox), bleeding with a lancetlike device, massage (Shiatsu, Tui Na), and ultrasound. How you stimulate an acupoint determines the physiologic response. When acupuncture needles alone are used, the best response occurs when de qi (muscle grab) is achieved. Short needle retention is pro-inflammatory or tonifying, whereas long needle retention is anti-inflammatory or sedating. Studies have shown that manual and electric stimulations appear to recruit different brain networks. Both modalities have been shown to have different effects on electroencephalogram patterns, salivary flow rate, neurotransmitter release in the central nervous system, and functional magnetic resonance imaging signals. When electricity is used to stimulate acupoints, the physiologic effects depend on a variety of electric parameters, including

amplitude, frequency, polarity, wave architecture, amperage, and voltage. Because of the extreme variation in physiologic responses to different stimuli, acupuncture research is difficult to interpret and reproduce. Most studies fail to define the precise method and duration of stimulation of acupoints.

If acupuncture can be used to selectively send reflex arcs to the central nervous system and the visceral as well as peripheral tissues controlled by the central nervous system, then there is a huge potential for acupuncture to help us treat disease. Reflex arcs to the central nervous system have the potential to modulate hypothalamic-pituitary-adrenal axis activity and autonomic nervous system activity, thereby affecting neuroendocrine function, immune function, corticosteroid production (adrenal cortex), catecholamine function (adrenal medulla), reproductive function (hypothalamic-pituitary-ovarian axis), visceral function, mood and behavior, and response to stress. Local reflex arcs have the potential to modulate local neurogenic inflammation and pruritus via the release of pro-inflammatory neuropeptides (wheal-and-flare response) and anti-inflammatory neuropeptides. Acupuncture could perhaps even be used to alter local and systemic itch thresholds.

Acupuncture has been shown to influence our neurologic, endocrine, immune, and psychologic systems. Extensive research studies in animals and human beings have confirmed that the biologic effects of acupuncture include endogenous opioid release, activation of the hypothalamus-pituitary gland, alteration in central and peripheral neurotransmitters and neurohormones, changes in regulation of blood flow, and alterations in immune function. Functional magnetic resonance imaging during stimulation of different acupoints has demonstrated regionally specific central nervous system activation of the cerebral cortex, limbic and paralimbic systems, and subcortical brain structures.

Acupuncture is safe. There is a low risk for infection when using sterile disposable needles. Although hematomas can occur, they are more common in anticoagulated patients. Allergic contact dermatitis to the metals in acupuncture needles is rare. Patients may experience a temporary exacerbation of symptoms and occasionally have transient vasovagal episodes that can occur with any surgical procedure. Serious complications (eg, pneumothorax, organ injury, and nerve injury) are, however, extremely rare and are decreasing in frequency with improved acupuncturist training. Acupuncture should nonetheless be used with extreme caution during pregnancy and by experienced practitioners only. One should exercise care and probably avoid using electroacupuncture in patients with pacemakers or implantable defibrillators. It is also best to avoid using semipermanent needles in patients with valvular heart disease and to avoid using electroacupuncture across the chest, brain, and tumors. Ideally, acupuncture needles should not be used in anticoagulated patients.

The National Institutes of Health 1997 Consensus Development Panel concluded that there was good evidence

for acupuncture's effectiveness in the treatment of adult postoperative pain, nausea, and vomiting related to chemotherapy and postoperative dental pain. The panel also concluded that acupuncture may be useful as an adjunctive therapy in a variety of other medical conditions but that there are many confounding research variables and a great need for larger and better designed studies. Since 1997, there have been more than 400 randomized and controlled trials on acupuncture showing its benefits for a variety of nondermatological problems. The conclusions of systematic reviews of these studies are, however, not significantly different from those of the National Institutes of Health 1997 Consensus Development Panel's conclusions because the poor methodological qualities of these randomized and controlled trials were felt to have led to inconclusive results.

Although there is no systematic review of acupuncture for the treatment of skin disease as yet, there are traditional reviews reporting its effectiveness in acute and chronic urticaria, acne, herpes zoster, psoriasis, and atopic dermatitis. There are case reports of acupuncture being effective in the treatment of atopic dermatitis, acne vulgaris, rosacea, pruritus, psoriasis, discoid lupus erythematosus, systemic lupus erythematosus, erythroderma, herpes zoster, erythema annulare centrifugum, tinea capitis, tinea pedis, seborrheic dermatitis, urticaria, neurodermatitis, verruca vulgaris, alopecia, chloasma, contact dermatitis, scleroderma, ulcers, pityriasis rosea, dyshidrotic eczema, and granuloma annulare.

At this time, the role of acupuncture in dermatology is as an adjunctive therapy. Physicians and patients need to recognize that more research is needed to determine acupuncture's true efficacy, and better studies are not likely to occur soon. Traditional medical therapy is often effective and more convenient than having 1 to 2 acupuncture sessions a week for 2 to 3 months, taking a break from therapy for 1 month, and then repeating the cycle. These frequency and length of therapy are needed to see meaningful results. Another hurdle for patients is that most health insurance plans do not cover the cost of therapy. Response to therapy is best in patients motivated to change their lifestyle and when acupuncture is combined with other therapies.

Physicians must decide on whether they will perform acupuncture themselves or refer patients to a physician or a nonphysician acupuncturist. Extensive practitioner training is necessary to perform acupuncture well and therefore involves significant training commitment on the part of the practitioner. Referring to nonphysician acupuncturists can sometimes be challenging because they have a different philosophy about treating disease and may encourage patients to abandon traditional medical therapy. If a truly integrated approach to dermatological care is the goal, then dermatologists would do well to refer only to acupuncturists who are willing to participate in a combination of traditional and alternative approaches to treating patients.

Despite the cited concerns, acupuncture has many advantages. It is safe and can help avoid or minimize the

need for potentially harmful systemic therapies in patients with skin disease. Acupuncture can also promote normalization of autonomic, neuroendocrine, and immune functions, thereby improving the total health and well-being of patients, in addition to treating their skin disease. Dermatologists should consider acupuncture for their patients when their current therapies are not as effective or as safe as the physicians or patients would like them to be or if their therapies have bothersome or dangerous side effects. Acupuncture also offers a safe and effective adjunctive therapy for patients who are looking for something more than traditional therapy, especially those with symptoms suggestive of sympathetic and parasympathetic dysfunctions.

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Dr Baker completed his undergraduate training at the University of Pennsylvania, obtained his medical degree from the University of Medicine and Dentistry of New Jersey—Robert Wood Johnson Medical School, accomplished his internal medicine residency at the Thomas Jefferson University Hospital, and completed his dermatology residency at the Hahnemann University Hospital.

Early in his career, he recognized that traditional medicine worked well to suppress his patients' symptoms but did not address their underlying causes. In 1993, he began training in natural medical therapies, including acupuncture, auricular medicine, microcurrent therapy, herbology, homeopathy, and mind-body medicine. Traditional medicine provided quick relief from symptoms, whereas these natural medical therapies stimulated the body to heal itself for longer-lasting results. In 1999, Dr Baker created the Center for Integrative Dermatology, where he currently treats dermatology patients with the best of traditional and natural medical therapies. When he is not working, Dr Baker's true passion is spending time with Judy, his wife of 16 years, and their 2 children, Ryan and Justin. He also enjoys water sports, especially surfing.