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Tattooing as a Method of Acupoint Stimulation and Potential Therapeutic Intervention

Douglas S. Wingate, MAcOM, L.Ac.

Abstract

Evidence of probable therapeutic applications of tattooing based on placement date back approximately 3500 years, yet has sparsely been explored or properly tested to gauge its application potential in initiating a healing process within the body. This article explores the basic theory and diagnostic methods utilized by the author as both a licensed acupuncturist and licensed tattoo artist along with case studies in which Chinese medical theory was applied in determining individualized tattoo placement to optimize therapeutic potential and/or efficacy.

Theory of Acupoint Stimulation During Tattooing Procedures

Varying opinions seem exist on the impact of tattoos upon the body, the meridians, and the flow of “Qi” throughout the body. Some claim or are taught that it blocks flow, is thus detrimental, and to be avoided. Others claim it to have little to no effect or have little opinion on the matter. It is however an infrequently explored topic despite a large portion of the population having one or multiple tattoos. In clinical experience I have always been intrigued when finding that a patient already has a tattoo, sometimes rather precisely, directly over a point about to be needled. Was this location chosen intuitively by them or simply coincidence? As coincidences accumulated more attention was paid to this phenomena. I was then informed of a gentlemen who sustained significant nerve damage to his arm and had lost feeling throughout most of his hand. Upon getting a tattoo that covered the majority of this hand for aesthetic purposes he found afterward that sensation had returned to the appendage. This certainly couldn't be coincidence. The intense stimulation of the tattooing process seemed to have elicited a response from the local peripheral nerves and “rebooted” them or initiated a regeneration of the body's ability to receive a sensory signal from the injured area. Upon further inquiries with various individuals with tattoos some indeed relayed stories of chronic headaches no longer affecting them or lumbar pain subsiding following a procedure as an unintended, yet welcome, side effect. How could this be so?

As very little written literature seems to exist on this phenomena, a formal hypothesis has not been laid out on the matter. It is the intention of this paper to thereby draw from documented bio-regulatory effects demonstrated to result from acupuncture and put forth the following as a potential mechanism:

Acupuncture's effect on the fascia

It has been observed independently by various researchers that the fascia planes throughout the body form a network resembling traditional meridians described in Chinese medicine. Langevin and Langevin and Yandow¹ examined the locations of acupuncture points and meridians in gross anatomical sections of the arm of cadavers and found significant correspondences between the locations of acupuncture points and intermuscular or intramuscular connective tissue plane junctions. Yuan et al. constructed a virtual human body model of three-dimensional fascia networks that resembled the network of meridians and acupuncture points. The team hypothesized this network to be a hitherto undiscovered auto-surveillance system in the body that may lead to further explanations of the basic mechanism of acupuncture action.² Meyers has also explored this correlation in the 3rd edition of his well received book *Anatomy Trains*.³ Nerves within these fascia planes carry signals throughout the body, with it being suggested that mechanical signaling propagating along these

channels may be responsible for some of the therapeutic effects of acupuncture. In essence, when the inserted acupuncture needle impacts connective tissue, it causes the “needle grasp” phenomenon in which the fascia responds by “wrapping around” the needle in response to the stimuli. This results in a perturbation of mechanical force within muscle tissue which propagates to neighboring muscles and associated viscera. This mechanical signal evokes a response in connective tissue downstream resulting in adaptive changes in fascia or anti-inflammatory response. Other signals such as the flow of paracrine-signaling molecules,⁴ and piezoelectric signal conduction throughout the liquid crystalline structure^{5, 6} of the fascial network have also been proposed.

Acupuncture's Local Effects on Inflammation and Healing Response Induction

The insertion of an acupuncture needle into the skin, in essence, creates a type of micro-injury. While this is not enough to cause lasting damage to the area, it does breach the epidermis, which alerts the body to respond in a number of various ways. Upon needle insertion, an “axon reflex” occurs throughout the meshwork of surrounding nerves. This stimulates local muscle fibers including A-delta (also A-gamma and sometimes A-beta) and II and III muscle fibers. Through this there is a triggering of calcitonin gene-related peptide (CGRP), a powerful vasodilator, which opens local capillaries and releases various neuropeptides - prostaglandins, red and white blood cells, glutamate, excitatory amino acids, substance P, and serotonin - from local mast cells. This release down-regulates the pain cascade, works to reduce inflammation in the area, initiates the healing response of tissue, fights infections and increases local circulation. The cells in the local tissue, including arterioles, nerve terminals and mast cells can stimulate vascular nerve fibers which triggers nitric oxide (NO) production. Other tissues that may be involved include smooth muscle cells and endothelium cells as a result of NO production which further increases the blood flow and local circulation.⁷

Proposed effect of tattooing

It is here put forth that the process of tattooing initiates very similar physiological responses as those to acupuncture. Key differences exist, however, in matters of degree and specificity. The dermal layer of the skin lies 1-2mm below the surface and ranges from 1.5-4mm. thick. It is made up of two layers: the papillary dermis and reticular dermis. The papillary dermis is the more superficial of the two, made up of loose connective tissue that includes capillaries, elastin fibers, reticular fibers, and collagen. The reticular dermis is thicker than the papillary layer and made up of dense connective tissue which includes blood vessels, elastin fibers, parallel layers of collagen, fibroblasts, mast cells, nerve endings and lymphatics.⁸ The permanence of ink in a tattoo lies in it settling within the innermost layer of the epidermis, the basal layer. Here, melanocytes, or pigment cells, lie. Merkel cells are also within the basal layer, which are responsible for light sensory input. Tattoo application results in the same immune response elicited from an acupuncture procedure or any other penetration of the skin. With an initial sloughing of the overlying epidermis, variable dermal inflammation, and gradual assimilation of the pigment into macrophages. Eventually, much of the pigment is carried to the regional draining lymph nodes, with a residue staying within macrophages localized to dermal perivascular regions.⁹ Given that more superficial needling techniques such as those common in Japanese style acupuncture are able to elicit clinical results needling within this dermal layer,¹⁰ it is feasible that the tattooing process would be capable of creating a similar physiological response.

Standard tattooing procedures involve multiple simultaneous needles with a high speed repetition of puncturing the site, resulting in a higher degree of stimulation. This can be considered similar to comparisons between standard acupuncture and electro-acupuncture methods in which the electrical pulse stimulates the point to a greater degree and for longer duration.¹¹ Stronger and more consistent manual stimulation may also be indicated as a needling technique, as in lifting-thrusting technique or vibrating technique. In most cases these techniques tend to be dispersive in action and thus used more

frequently used in conditions of excess or stagnation.¹² The same would theoretically hold true for the physiological effects of specifically tattooing over an acupoint and has been my experience in its application. A small study recreating the tattoos found on Otzi the iceman made estimates of a tattoo being equivalent to between 10-15 acupuncture treatments.¹³ This ratio can likely be attributed to the nature of the stimulation. It is unlikely that the ink of the tattoo plays a positive or negative role in therapeutic potential as both individuals who received tattoos with ink, and individuals who have received a “bloodline”, in which ink highly diluted by water is inserted into the skin have reported positive therapeutic effect.

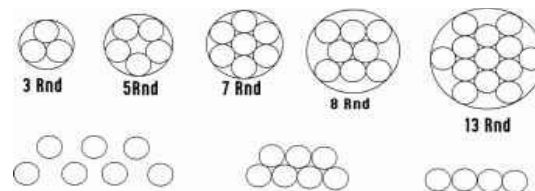
Acupuncture vs. Tattoo Procedures

In both acupuncture and tattooing the use of a single or multiple steel needle(s) is inserted into the skin. Beyond this, straight-forward similarities cease, as discussed below:

Needle size and quantity

Acupuncture needles commonly range from 40-30 gauge (0.16mm.-0.3mm.) with a single needle generally placed at indicated acupoint. Deviations from this may be the use of a larger gauge lancet in bleeding procedures or seven-star needle use along a region of skin or along a fascial/meridian plane without any intended depth of penetration so much as superficial stimulation along said plane.¹⁴

Needles used in tattooing procedures tend to range from 0.3-0.35mm. and are used in clusters of varying quantities.¹⁵ While a single needle can be used, and is done so in stick-poke methods, in most cases even when desiring a single needle width at least three needles are used at staggered depths to add stability and avoid blow-out. Clusters may range upwards of 14 or more needles simultaneously arranged as either a “round”, in which they are placed in a circular manner, or a “liner”, in which they are arranged side-by-side in a straight row. Various needle common arrangements are depicted below.



Penetration Depth

Needle insertion depth during acupuncture can vary greatly depending on the point used and desired therapeutic effect. Some points may be needled rather deep, in some schools of practice even to the degree of exiting back out the body at a second location in a technique called “through and through”. Many points are indicated to be needled at a fairly superficial depth, with particular angles being required in many cases to safely stimulate the point without causing harm to any other nearby tissue or organ. Japanese approaches to needling can be extremely superficial, barely penetrating the skin, or, as in shonishin techniques, not at all. Some points are indicated to not be needled, but may be indicated for techniques such as moxibustion. Clinically, unless looking to directly release a particular muscle or fascia/meridian trajectory, I tend to err on the side of superficial needling to an appropriate depth to stimulate the superficial fascia plane/meridian and have found it to yield results with great efficacy.

During tattoo procedures there is a much more consistent range of depth at which the needle acts as a carrier for inks to settle into within the dermis between 1-4mm in depth. This allows for maximum ink deposition without risking the ink “blowing out” the pigment cells and resulting in diffusion of the ink

under the skin. It also reduces risk of creating adhesions (scar tissue) which can not only be aesthetically displeasing, but can indeed reduce local blood flow to the area and negatively impact tensegrity within the surrounding fascia structure.¹⁶ This may be seen as a cause of blockage in Qi flow. When tattooing is performed properly lasting adhesions should not occur. If done too superficially the ink will not be properly deposited within the pigment cells and it will fade very quickly or not be visible at all.

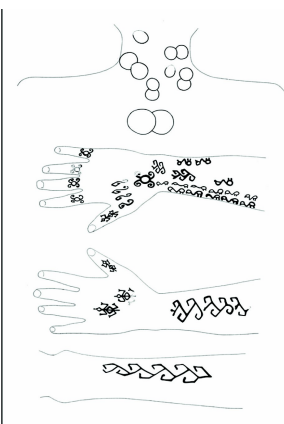
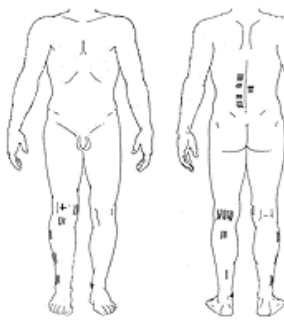
Stimulation

In a typical acupuncture session points are inserted and stimulated to varying degrees. Often the points are inserted, initially provided the appropriate degree of stimulation based on whether the aim is to tonify or disperse and are then left for a period of time. A practitioner may return to these point and re-stimulate them for a short duration before leaving them for another period of time. There are conditions and approaches which entails more consistent stimulation of the points, as in Zhu scalp acupuncture techniques in which the practitioner often maintains stimulation with a rapid lift-thrust techniques for 2–3 minutes at a time, with a rest period of 5–10 minutes between stimulations.¹⁷ Electro-acupuncture provides an electrical pulse which continues to stimulate the point for the duration it is attached. This is often done with rotating frequencies to prevent acclimation, which would otherwise lessen the therapeutic potential.¹⁸

A tattoo machine can move the set of needles at a rate of between 50-3000 times per minute.¹⁹ It would then reason that this rapidity of movement and direct penetration of the region would elicit a great degree of stimulation with a corresponding inflammatory-mediating response from the body and direct tissue response within the fascia as laid out above.

History of Evidence of Therapeutic Tattooing

Evidence has been demonstrated of multiple cultures utilizing tattooing methods with therapeutic intent. One which has garnered the most attention is “Otzi the iceman”, a mummified body found in 1991 in ice at the Italian-Austria border that has been dated back to 3200 BCE^{20, 21} in which 61 small tattoos at various body regions have been analyzed. Many of these being sets of parallel lines and have been correlated with a proximity to traditional acupuncture points for ailments the individual was shown to have suffered from.^{13, 21} Many of these were rheumatic in nature, with tattoos along the lumbar region and along the traditional bladder meridian as seen in figure 1. Another example which has caught some attention is that of a 1,500 year old mummy of a young woman found in Peru. While this woman was heavily tattooed in multiple body regions, with most suspected to be decorative in nature; a series of circular tattoos around her cervical spine and upper back are speculated to have possibly served a therapeutic purpose. These, too, overlap closely with acupuncture points that may be used for rheumatism in the neck. An interesting component of this case is that two different substances were determined to be used in her tattoos – an ash or soot for the decorative imagery, and a burned plant material for the presumed therapeutic tattoos – implying that materials used may have varied depending on the intent of the tattoo.²² Maria Anna Pabst of the Medical University of Graz says “If you use different materials, they have different functions,” She goes on to speak of how tattooing a person at these points could have worked in a similar manner to ways in which acupuncture is thought to work. “From the location of the circles, Pabst concludes that the tattoo treatment may have been intended to relax the subject or to relieve neck pain. When she showed a



drawing of the tattoos to a modern-day shamanic healer in Peru, he suggested that they might have been part of a strengthening ritual on an upper-class subject.”²³ Other cultures have used various local plant medicinals within their inks.²⁴

Anthropologist Lars Krutak has studied and partaken in tattooing and body modification rituals of many cultures and written extensively on the subject. He points to a number of cultures which have applied tattoos in a therapeutic or spiritual sense including in Borneo,²⁵ Papua New Guinea,²⁶ and a number of indigenous cultures throughout North America where “treatments were believed to remedy



a variety of complaints, including infertility, spiritual possession, neuralgia, joint pain, vision problems, paralysis, heart trouble, weak limbs, and lack of breast milk.”²⁷ He recounts during an Iroquain reenactment in which Haudenosaunee tattooing is discussed of hand-poked tattoos on specific points on the body for the relief of arthritic pain, headaches, and toothaches. A gentlemen then became very interested in acquiring his own therapeutic tattoo because of the severe migraine headaches that plagued him. Following the procedure he recounts that he had not suffered a migraine since receiving the tattoo.²⁸ The Chukchi and Yupiget people tattooed fertility stripes on the cheeks of barren women or

stick-like anthropomorphic “guardian” markings on the foreheads of men and women to harness ancestral powers.²⁹ Indigenous peoples in St. Lawrence would tattoo each of the major joints of the body in regions which also seem to correlate with known acupuncture points causing scholars to question links between St. Lawrence Island and Asia.³⁰ . In the northern Philippines, tattoo artists have been recorded tattooing markings on the throats of patients suffering from goiter or other markings on the backs of individuals plagued by skin disorders. Other indigenes like the Ainu of Japan and several Native American groups in California like the Hupa practiced medicinal forms of tattooing and used obsidian lancets to open the skin and place a sooty pigment within.²⁴

Diagnostic Methods

Evaluation for acupuncture point specific tattooing are the same methods used in an evaluation for acupuncture. A key difference being that often a single, most-likely to be effective, point location is sought. There are numerous ways to refine the diagnosis to determine this. Initially, a consultation is done to determine the primary health concern wanting to be addressed. The 10 questions and 8 principles are all considered and pattern differentiation determined. Pulse and tongue are assessed. Other evaluation methods including orthopedic and range of motion testing and palpation of meridians/fascia planes are utilized and noted when appropriate. The M-Test method of Mukaino Yoshito³¹ can be particularly helpful in receiving immediate feedback of a point's effectiveness. If auricular points are being considered pressure can be applied to that point using the blunt side of an acupuncture needle while having the individual perform a motion that would ordinarily bring on or exacerbate symptoms. In some cases intradermal needles may be used over indicated points for a period of one week or less before the tattoo procedure. This acts to further verify the efficacy of the point, as well as instilling some confidence within the tattoo recipient that it is indeed a good choice before placing something permanent on their body. In some cases a series of acupuncture sessions may be recommended prior to tattoo assessment to “clear away” more superficial, readily changeable states.

Other Considerations

There are, understandably, often concerns regarding the types of inks used. Unfortunately, there is rarely rigorous testing on quality of inks due to a lack of regulation. One study³² determined Eternal

brand inks tested overall to have the fewest potentially toxic elements and for this reason I use it almost exclusively. The exception to this is with black ink in which I frequently use Dynamic brand black due to its vibrance. If a carbon-based, vegan-friendly black ink is preferred, I have found Kuro Sumi brand to be reliable.

Sanitation is of course also of paramount importance when performing both acupuncture and tattoos. A proper clean field should be maintained with all needles being single time use. Gloves and other appropriate protective barriers should be worn at all times when exposure to bodily fluids are a risk and hands should be washed frequently in accordance to procedure standards. Precautions should always be taken to avoid cross-contamination. For an outline of these sanitation guidelines please refer to OSHA standards and blood-borne pathogen training materials provided therein. For clean needle technique and sanitation guidelines for acupuncture procedures please refer to material from the Council of Colleges of Acupuncture and Oriental Medicine³³

Design

Once the appropriate point(s)/placement has been determined, the design of the tattoo is primarily the preference of the recipient. Size, complexity, colors, and any symbolism they wish to integrate into the tattoo can vary greatly so long as the acupoint(s) are integrated and appropriately stimulated during the tattooing procedure.

Case Studies

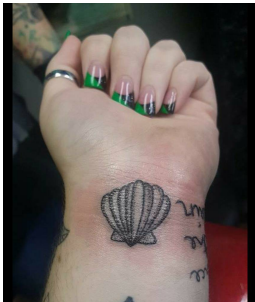
19 y/o female

complaint: anxious feelings, panic attacks

Chinese medical Dx: Heart and Gallbladder Qi deficiency, Liver Qi stagnation

Point(s) Utilized: HT-7, PC-6, LU-9

Tattoo procedure by Courtney Pownall



"I'm 19 I have had anxiety my whole life. I was having anxiety attacks on the daily if not 2 to 3 times a day. I would get very shakey and shut down. When I got the tattoo the anxiety attacks stopped I still have some anxiety here and there but I have not had an attack since. And when I'm feeling one come on I just press on it and the feeling goes away. I feel like a different person in a better way of course. Getting this has and is definitely helping with some of the issues I was [having] and is saving with life."

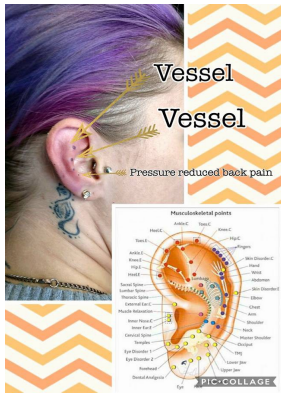
33 y/o female

complaint: chronic back pain

Chinese medical Dx: Qi and Blood stagnation in Du and Bladder meridians, Liver Qi Stagnation, Kidney Yin deficiency

Point(s) Utilized: 3 responsive auricular points + 1 aesthetic point

"Here's my testimony: I still swear by mine!! My back pain was at a daily level 7, both sharp and dull aches in varying degrees of pain throughout my entire back. It's been at least 2 months and my back pain hasn't been above a level 4, even when I overwork myself doing manual labor!! I'm extremely impressed and relieved with how well it's worked! It's been life changing!... I had pain in my upper shoulders, and my entire spine would stay tight and hurt so bad I could barely move without hurting. Yoga was even impossible most days. I was dealing with the severest sharpest pain in my upper back between my shoulder blades, and the muscles running parallel down my spine... I still have some general stiffness but overall it's improvement has allowed me to do not only yoga but physical labor too, and still never hurt as bad as I did. The first session after the tattoo, I was the loosest I've ever been



on the table, actually turned into "wet noodle" which was my first time to experience such relaxation and relief. It's been life changing to finally get to do normal activities that I should be able to do but never could!?"

35 y/o female

Condition: chronic headache/migraine as result of chiari malformation

Chinese medical Dx: Blood stasis in Du and GB channel of the neck

Point(s) Utilized: GB-40 (left)



Chronic, persistent headache at time of assessment that had been consistent for years. The first 3 days following procedure pain was reduced from the normal, constant 7-9/10 to noticeable fluctuations that never went above a 5/10. She said even this change was a relief. The following few weeks she reported having virtually no headache at all. Headaches did eventually return and she pursued decompression surgery for the condition.

32 y/o female

Condition: chronic painful menstrual cramps

Chinese medical Dx: LR Qi and Blood Stasis, Heart heat

Point(s) Utilized: Dao Ma technique in region of Fu Ke



"I got these done in the middle of a severe cramping session, and by the time these three dots were done being tattooed, my cramps were gone. They remained gone for the entirety of my cycle, which lasted about 4 more days after that. The next cycle I also didn't have any cramps, which is unusual for me. I generally cramp the entire cycle, and up to 2 days after and 1 Or 2 days before. The cycle after that I started to get cramps again, but with the dots tattooed on my thumb I was able to give myself some relief by pressing and rubbing them. "

Discussion

There has been multicultural evidence of tattoos being applied within a medicinal sense, however little information is readily available on the matter and very few modern applications have been explored or recorded in a manner that allows thorough gauging of the therapeutic potential therein. A recreation of the Otzi tattoo locations yielded intriguing results with claims of potent effectiveness and case studies

presented herein through my own exploration of acupuncture point specific tattooing (referred to by Krutak as “acu-tattooing”) present that this method warrants further exploration as a potential mechanism of therapeutic effect.

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