

AN INTRODUCTION TO ACUPUNCTURE AND HOW IT WORKS

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There are two very different ways of looking at acupuncture: from the traditional Chinese perspective and from the modern international perspective. Each of these will be briefly described.

TRADITIONAL VIEW

The understanding of how acupuncture works has evolved with its practice, but the descriptions set down a thousand years ago have largely been retained. The dominant function of acupuncture is to regulate the circulation of qi (vital energy) and blood. Approximately 2,000 years ago, the pre-eminent acupuncture text, *Huangdi Neijing* (Yellow Emperor's Classic on Internal Medicine), was written. In it, acupuncture was described as a means of letting out excess qi or blood by making holes in the body along certain pathways, called *jingluo* (meridians). For some of these meridians, it was advised to acupuncture in such a way as to let out the blood but not the qi; for others, to let out the qi, but not the blood. Many diseases were thought to enter the body through the skin, and then penetrate inward through muscle, internal organs, and, if not cured in timely fashion, to the marrow of the bone. By inserting a needle to the appropriate depth-to correspond with the degree of disease penetration-the disease could be let out.

Prior to the time when there were microscopes by which people could envision individual cells and before autopsies revealed the intricate structures within the body, doctors and scholars projected the internal workings of the body from what they could actually experience, which was the world outside the body. On this basis, the workings of the body were described in terms similar to those used to describe the visible world. One of the critical aspects of nature for humans living a thousand years ago, when Chinese civilization was well developed, was the system of water courses, which included tiny streams, huge rivers, man-made canals and irrigation systems, and the ocean. It was envisioned that the body had a similar system of moving, life-giving fluid. This fluid was the qi, and the pathways through which it flowed were the meridians.

Instead of discussing acupuncture in terms of letting something out of the body, physicians began describing it in terms of regulating something within the body. The flow of qi through the meridians, just like the flow of water through a stream, could be blocked off by an obstruction-a dam across the waterway. In the streams, this might be a fallen tree or a mud slide; in humans, it might be caused by something striking the body, the influence of bad weather, or ingestion of improper foods. When a stream is blocked, it floods above the blockage, and below the blockage it dries up. If one goes to the point of blockage and clears it away, then the stream can resume its natural course. In a like manner, if the qi in the meridian becomes blocked, the condition of the body becomes disordered like the flooding and dryness; if one could remove the blockage from the flow of qi within a meridian, the natural flow could be restored.

In a blocked stream, just cutting a small hole or crevice in the blockage will often clear the entire stream path, because the force of the water that penetrates the hole will widen it continuously until the normal course is restored. In the human body, inserting a small needle into the blocked meridian will have a similar effect. Just as a stream may have certain points more easily accessed (or more easily blocked), the meridians have certain points which, if treated by needling, will have a significant impact on the flow pattern. Many acupuncture points are named for geological structures: mountains, streams, ponds, and oceans.

Although this description of the basic acupuncture concept is somewhat simplified, it conveys the approach that is taught today to students of traditional acupuncture: locate the areas of disturbance, isolate the main blockage points, and clear the blockage. Of course, many layers of sophistication have been added to this model, so that the needling-which might be carried out in several different ways-can be seen to have subtle

and differing effects depending upon the site(s) needled, the depth and direction of needling, and even the chemical composition of the needle (such as gold, silver, or steel). For example, some needling techniques are used for the primary purpose of increasing the flow of qi in a meridian without necessarily removing any blockage; other techniques reduce the flow of qi in the meridians. These tonifying and draining methods, as well as transference methods that help move qi from one meridian to another, are part of the more general aim of balancing the flow of qi in the body.

Ultimately, all the descriptions of acupuncture that are based on the traditional model involve rectifying a disturbance in the flow of qi. If the qi circulation is corrected, the body can eliminate most symptoms and eventually-with proper diet, exercise, and other habits-overcome virtually all disease.

MODERN VIEWS

When the human body was finally described in terms of cells, biochemicals, and specific structures (most of this accomplished less than 150 years ago), the Chinese method of acupuncture and its underlying concepts were evaluated in these new terms. As a first effort, researchers sought out physical pathways that might correspond to the meridians, and even a fluid substance that might correspond to qi. Neither of these were found. Nonetheless, the action of performing acupuncture was shown to have effects on the body that required some detailed explanation.

From the modern perspective, diseases and injuries are resolved by a complex set of responses; the responses are coordinated by several signaling systems. The signaling systems mainly involve peptides and other small biochemicals that are released at one site, travel to other sites, interact with cells, and stimulate various biologically programmed responses. Rather than blockages of circulation described in the old Chinese dogma, diseases are understood to be caused by microorganisms, metabolic failures, changes in DNA structure or signaling, or breakdown of the immune system. Some of these disorders are resolved by the cellular functions that are designed for healing, while others become chronic diseases because the pathological factors involved have either defeated the body's normalizing mechanisms or because something else has weakened the body's responses to the point that they are ineffective. For example, poor nutrition, unhealthy habits, and high stress can weaken the responses to disease.

Modern studies have revealed that acupuncture stimulates one or more of the signaling systems, which can, under certain circumstances, increase the rate of healing response. This may be sufficient to cure a disease, or it might only reduce its impact (alleviate some symptoms). These findings can explain most of the clinical effects of acupuncture therapy.

According to current understanding, the primary signaling system affected by acupuncture is the nervous system, which not only transmits signals along the nerves that comprise it, but also emits a variety of biochemicals that influence other cells of the body. The nervous system, with over 30 peptides involved in transmitting signals, is connected to the hormonal system via the adrenal gland, and it makes connections to every cell and system of the body.

In a review article, *Acupuncture and the Nervous System* (American Journal of Chinese Medicine 1992; 20(3-4): 331-337), Cai Wuying at the Department of Neurology, Loyola University of Chicago, describes some of the studies that implicate nervous system involvement. According to a report of the Shanghai Medical University, cranial nerves, spinal nerves, and their terminals were dispersed in the area surrounding the acupuncture points for about 5 millimeters. They also found that the nervous distribution of the Bladder Meridian points (which run along the spine) was in the same area of the spine as that of the corresponding viscera. In Japanese research, it was reported that when acupuncture points were needled, certain neurotransmitters appeared at the site. In laboratory-animal acupuncture studies, it was reported that two such transmitters, substance P and calcitonin gene-related peptide, were released from primary sensory neurons. Acupuncture analgesia appears to be mediated by release of enkephalin and beta-endorphins, with regulation of prostaglandin synthesis: all these have an effect on pain perception. One of the dominant areas of research into acupuncture mechanisms has been its effect on endorphins. Endorphins are one of several neuropeptides; these have been shown to alleviate pain, and have been described as the body's own "opiates." One reason for

the focus on these biochemicals is that they were identified in 1977, just as acupuncture was becoming popular in the West, and they are involved in two areas that have been the focus of acupuncture therapy in the West: treatment of chronic pain and treatment of drug addiction.

According to traditional Chinese doctors, one of the key elements of a successful acupuncture treatment is having the person who is being treated experience what is called the "needling sensation." This sensation may vary with the treatment, but it has been described as a numbness, tingling, warmth, or other experience that is not simple pain (pain is not an expected or desired response to acupuncture treatment, though it is recognized that needling certain points may involve a painful response). Sometimes the needling sensation is experienced as propagating from the point of needling to another part of the body. The acupuncturist, while handling the needle should experience a response called "getting qi." In this case, the needle seems to get pulled by the body, and this may be understood in modern terms as the result of muscle responses secondary to the local nervous system interaction.

According to this interpretation, acupuncture is seen as a stimulus directed to certain responsive parts of the nervous system, producing the needling sensation and setting off a biochemical cascade which enhances healing. Some acupuncture points are very frequently used and their applications are quite varied: needling at these points may stimulate a "global" healing response that can affect many diseases. Other points have only limited applications; needling at those points may affect only one of the signaling systems. It is common for acupuncturists to combine the broad-spectrum points and the specific points for each treatment. Some acupuncturists come to rely on a few of these broad-spectrum points as treatments for virtually all common ailments.

This modern explanation of how acupuncture works does not explain why the acupuncture points are arrayed along the traditional meridian lines. At this time, no one has identified-from the modern viewpoint-a clear series of neural connections that would correspond to the meridians. However, acupuncturists have identified other sets of points, such as those in the outer ear, which seem to be mapped to the whole body. The description, in the case of the ear, is of a layout of the body in the form of a "homunculus" (a miniature humanoid form). Such patterns might be understood more easily than the meridian lines, because the brain, which is adjacent to the ear, also has a homunculus pattern of neurological stimulus that has been identified by modern research. Similarly, acupuncturists have identified zones of treatment (for example, on the scalp or on the hand) that correspond to large areas of the body, and this may also be more easily explained because there are connections from the spinal column to various parts of the body which might have secondary branches elsewhere. In fact, acupuncture by zones, homunculi, "ashi" points (places on the body that are tender and indicate a blockage of qi circulation), and "trigger" points (spots that are associated with muscle groups) is becoming a dominant theme, as the emphasis on treating meridians fades (for some practitioners). The new focus is on finding effective points for various disorders and for getting biochemical responses (rather than regulating qi, though there is no doubt some overlap between the two concepts).

During this modern period (since the 1970s) an increasing number of ways to stimulate the healing response at various body points have been advocated, confirming that needling is not a unique method (the idea that the needle would produce a hole through which pathogenic forces could escape has long been fading). In the past, the main procedures for affecting acupuncture points were needling and application of heat (moxibustion). Now, there is increasing reliance on electrical stimulation (with or without needling), and laser stimulation. Since the basic idea of acupuncture therapy is gaining popularity throughout the world while the practice of needling is restricted to certain health professions and is not always convenient, other methods are also becoming widely used. Lay persons and practitioners with limited training are applying finger pressure (acupressure), tiny metal balls held to the skin by tape, magnets (with or without tiny needles attached), piezoelectric stimulus (a brief electric discharge), and low energy electrical pulsing (such as the TENS unit provides with electrical stimulus applied to the skin surface by taped electrodes). Some of these methods may have limited effectiveness, but it appears that if an appropriate body site is stimulated properly, then the healing response is generated.

For many nervous system functions, timing is very important, and this is the case for acupuncture. The

duration of therapy usually needs to be kept within certain limits (too short and no effect, too long and the person may feel exhausted), and the stimulation of the point is often carried out with a repetitive activity (maintained for a minute or two by manual stimulation-usually slight thrusting, slight withdrawing, or twirling-or throughout treatment with electrostimulation). It has been shown in laboratory experiments that certain frequencies of stimulus work better than others: this might be expected for nervous system responses, but is not expected for simple chemical release from other cells.

TRADITIONAL AND MODERN VIEWS COEXISTING

The traditional and modern understandings of acupuncture arise from significantly different world views and from application of different levels of technology. It is difficult to directly correlate the two, though one can say that many of the traditional observations and ideas have partial explanations by modern mechanisms. Still, the modern practitioner can become aware of and trained in the application of both approaches to acupuncture. A person to be treated can be analyzed from both perspectives and the treatment strategy can be devised according to the conclusions derived from each perspective. Certain aspects of the case may be more amenable to traditional analysis and corresponding treatment, while other aspects are better suited to modern analysis and treatment approach.

An individual who is suffering from a chronic pain syndrome might be analyzed in terms of which meridians are blocked: through treatment of appropriate points on the meridian, the pain might be alleviated. The same individual might be analyzed according to which muscle groups are involved in the painful area and might be treated by acupuncture at trigger points that specifically affect those muscles. An individual suffering from an autoimmune disorder might be analyzed according to which of the traditional organ systems are involved, with treatment of the associated meridians. The same individual might be analyzed in terms of the immune system disturbance and treated by stimulating points that have been recently identified as immune regulators.

Since the traditional acupuncture approach has been shown to be effective in clinical trials conducted in China (and elsewhere in the Orient), one can rely on the traditional methods. However, many practitioners in the West, with little or no prior exposure to Oriental philosophy but with experience and training in Western modes of analysis, may feel uncomfortable turning partly or completely to the traditional Chinese view, and will, instead, focus on the modern understanding of this healing technique.

Traditional Chinese medicine is not a static system, but an evolving one. Thus, in the Orient and in the West there are many doctors and researchers who are working on an integration of the earlier traditional approach and the modern understanding.

A FEW COMMONLY USED ACUPUNCTURE POINTS

In ancient times, the number of acupuncture points was established to be the same as the number of days in the year: 365. These points were mapped to 14 major meridian lines, one meridian for each of the 12 inner organs, one meridian along the spine (called the governing vessel), and another along the midline of the abdomen (called the conception vessel). More recently, the number of points identified by acupuncturists has exploded. There are extra meridians (some of them outlined in ancient times, others modern) with their own sets of points, there are special points (off meridians), and there are complete mappings of body structures and functions by points along the outer ears, on the nose, in the scalp, on the hands, on the feet, and at the wrists and ankles. Despite the growing number of treatment zones, most acupuncturists still utilize the traditionally-identified points on the 14 main meridians. On each meridian there are a small number of points used repeatedly, because of their versatility, for a wide variety of patients and diseases. One such point on each major meridian is mentioned below, sometimes with a second point also briefly described, for a total of 21. It is important to recognize that although a list of disorders and diseases treated by each point can be given, sometimes the points are selected entirely or primarily on the basis of the Chinese theory of balancing the flow in the meridians, so that the point might be used for other kinds of disorders, aside from those listed, because of its usefulness in this balancing process. For points not on the central line of the body, each point has a left and right side reflected location (the point is counted only once for enumeration purposes). For each point in this presentation, the name of the meridian, the number of the point, the number of standard points on the

meridian, its designation by one of the number-based classification systems (two letters and the point number), and the Chinese name are given.

Large Intestine Meridian, point #4 of 20: LI4, *Hegu*

This point is located on the back side of the hand between the thumb and first finger. The dominant uses are to relieve pain and to treat constipation or other bowel disorders. However, this point is also utilized in the treatment of inflammatory and feverish diseases which have symptoms in the throat and head, because the large intestine meridian runs from the hand to the face. Another key point on this meridian is LI11 (*Quchi*), located at the elbow. It is used for many upper body disorders, such as sore throat, eye pain, lymphatic swellings, rashes, and difficulty moving the arms, and for intestinal disorders, such as diarrhea and intestinal cramping.

Lung Meridian, point #7 of 11: LU7, *Lieque*

This point is located above the wrist on the inside of the arm. It is used to treat several disorders of the upper body, including headache, neck stiffness, cough, asthma, sore throat, facial paralysis, and wrist problems.

Stomach Meridian, point #36 of 45: ST36, *Zusanli*

This point is located on the front of the leg, just below the knee. It is helpful for digestive disorders, including nausea, vomiting, gastralgia, and abdominal distention, and also for general weakness. Recently, numerous clinical trials have been conducted with treatment of this point alone, demonstrating positive effects in treating anemia, immune deficiency, fatigue, and numerous diseases.

Spleen Meridian, point #6 of 21: SP6, *Sanyinjiao*

This point is located on the inner side of the leg just above the ankle. Although it is on the spleen meridian, which generally influences the digestive system, this point is also valuable for treating hormonal disorders (irregular menstruation, impotence) and immune disorders. Another key point on this meridian is SP9 (*Yinlingquan*), located just below the knee. It is used in the treatment of urinary diseases, especially with fluid retention, abdominal and back pain, and female reproductive system disorders.

Gallbladder Meridian, point #20 of 44: GB20, *Fengchi*

This point is located at the base of the skull where it joins the neck in back. It is used in the treatment of acute disorders, such as common cold, influenza, headache, neck pain, and fever. In addition, it lowers blood pressure and relaxes tension in the area of the eyes. Another key point on this meridian is GB34 (*Yanglingquan*), located on the outer side of the knee, and used for treating a wide range of injuries and disorders of the muscles and tendons.

Liver Meridian, point #3 of 14: LV3, *Taichong*

The point is located on the top of the foot, between the first and second toes. It is used to balance emotional energy, to regulate menstruation, to reduce tension and pain in the chest, treat eye disorders, alleviate headaches, and reduce high blood pressure. The adjacent point in the meridian, LV2 (*Xingjian*), at the webbing between the toes, is also considered quite important and is frequently needled along with LV3; it has similar uses, but is also incorporated into the treatment of lower abdominal disorders, such as urinary problems.

Pericardium Meridian, point #6 of 9: PC6, *Neiguan*

This point is located on the inner arm, just above the wrist. Like other points on this meridian, it is useful for cardiac disorders, such as heart palpitation and angina pectoris. It is also useful for nausea, vomiting, spasms, and convulsions.

Heart Meridian, point #7 of 9: HT7, *Shenmen*

This point is located on the outer side of the wrist. It is used in the treatment of a variety of mental disorders, such as absent mindedness, insomnia, disturbing dreams, hysteria, depression, agitation, and mental illness. It is also used in the treatment of heart disease and fatigue.

Urinary Bladder Meridian, point #40 of 67: BL40, Weizhong

This point is located at the back of the knee. It is utilized in the treatment of back pain, hip impairment, muscular atrophy, leg pain and immobility, abdominal pain, vomiting, diarrhea, and a host of other symptoms. Another important point on the bladder meridian is BL23 (*Shenshu*), in the lumbar area (hip level) near the spine; it is used in treatment of a wide range of disorders, including urinary problems, impotence, menstrual disorders, low back pain, knee weakness, dizziness, ringing in the ears, blurred vision, edema, asthma, and diarrhea. A large section of the bladder meridian is of importance because, as it flows along either side of the spine (in two parallel lines on each side), it associates with the internal organs in the vicinity.

Kidney Meridian, point #3 of 27: KI3, Taixi

This point is located just behind the inner ankle. It is used for disorders in several areas of the body, including sore throat and toothache, deafness and tinnitus, dizziness, asthma, thirst, insomnia, impotence, frequency urination, pain in the lower back, and menstrual irregularities.

Triple Burner Meridian, point #5 of 23: TB5, Waiguan

The triple burner is considered to be a special type of organ system that spans the entire torso. This point on the meridian is located on the outer side of the arm, above the wrist. It is mainly used in treatment of disorders along the pathway of this meridian, that is, of the fingers, hand, arms, neck, ears, cheek, and top of the head.

Small Intestine Meridian, point #3 of 19: SI3, Houxi

This point is located on the side of the hand, below the little finger. It is used for treating mental disorders, stiffness and pain in the neck, chest, and lumbar region, seizures, night sweats, and fevers.

Governing Vessel, point #20 of 28: GV20, Baihui

This point is located at the top of the head. It is traditionally applied in the treatment of various mental disorders, and for problems that occur in the head: headache, vertigo, ringing in the ears, nasal obstruction, difficulty with speech, etc. It is also used to treat prolapse, such as that of the rectum and uterus. Another key point on this meridian is GV14 (*Dazhui*), located just below the seventh cervical vertebrae (shoulder level); it is used for treating neck and upper back problems, feverish diseases, convulsions, cough, asthma, and common cold.

Conception Vessel, point #4 of 24: CV4, Guanyuan

This point is located a little below the navel. It is used for all types of lower abdominal disorders, including urination problems, hernia, menstrual disorders, gynecological infections, postpartum bleeding, diarrhea, rectal prolapse, etc. Another important point on this vessel is CV6 (*Qihai*), half way between CV4 and the navel. The applications are similar, but it is especially used in cases of accompanying fatigue.

Examples of Combining These Points to Produce an Effective Treatment

In the book **Modern Clinic Necessities for Acupuncture and Moxibustion** (by Zhang Ren and Dong Zhi Lin), several treatment strategies are outlined. For menopausal syndrome, the main points recommended are GV20 and GV14, CV4, BL23, HT7, SP6 and ST36; secondary points include PC6, LV3, and KI3. For bedwetting at night among young children, recommended points include CV4, BL23 and SP6; secondary points include LU7, KI3, CV6, and ST36. For hayfever, recommended points include GB20, LI4, and ST36; secondary points include GV14, LU7, LI11, and SP6. In her book **Insights of a Senior Acupuncturist**, Miriam Lee describes a combination of points that have wide application: ST36, SP6, LI4, LI11, and LU7. This set of points, with slight adjustments (e.g., leaving out one or two, perhaps adding or substituting one or two) is shown to be helpful for the majority of common complaints seen in the Western acupuncture clinic. A popular treatment for injury and stress is to needle the "four gates," the right and left side points LV3 (feet) and LI4 (hands), which opens circulation throughout the meridians.