

Acupuncture

Introduction

Acupuncture is a European name for this ancient Chinese art. It was coined by William Ten Rhyne, a Dutch physician and traveller for the practice he observed on his visit to Japan in the seventeenth century. It literally means to "to puncture with a needle" from the Latin acus, (needle) and puntura (puncture).

Acupuncture can be defined as a method of stimulating certain points on the body by the insertion of special needles, to modify the perception of pain or to normalise physiological functions, for the treatment or prevention of disease.

Moxibustion, often used with acupuncture is a technique where heat is applied to particular points on the body, usually acupuncture points, by the burning of moxa, the dried leaves of *Artemisia Vulgaris* (mugwort). Acupuncture is part of a complete system of traditional Chinese Medicine which also includes herbal medicine, dietary therapy, massage (Tuina), relaxation and special exercise, (Taichi, Qigong).

Acupuncture has a long history, it was first mentioned in Chinese writings in 475-221 BC (Yellow Emperors' classic of internal medicine) It is thought that this book was a collection of accepted wisdom of the time and the practices giving rise to it must have been even earlier. Needles were originally thought to have been of bone, bamboo and even sharpened stone. In succeeding dynasties various metals were used, including bronze, iron and later, silver and gold. They were each thought to have a specific action and became very fine, filiform, the precursor of the fine stainless steel needle used today.

Many of the ideas of traditional Chinese medicine have developed from Taoist thought, emerging during 771-476 BC. Taoism focuses on finding harmony both with the universe and within the body itself. A central concept is the balance between the opposing forces of the natural world, Yin and Yang.

Acupuncture had been used for several centuries by the Chinese before it became known to the outside world. The Koreans were the first to learn of it in AD 600, and soon afterwards it was introduced to Japan by Chinese and Korean Buddhist missionaries. The Western world first learned of it in the seventeenth century, mostly via Jesuit missionaries. Acupuncture reached its' zenith during the Ming dynasty (AD1368-1644) then declined during the Qing dynasty (AD1644-1911) During this period more emphasis was placed on herbal medicine and acupuncture lost favour.

In the first half of the nineteenth century acupuncture was practised in Europe by some members of the medical profession. In 1823 acupuncture was actually mentioned in the first issue of the Lancet. It was not, however, employed in a selective or discerning manner. Acupuncture came back into widespread use in China under Mao Tse Tung as a means of reaching more of the peasant population with a rudimentary form of health care. It still continued to be subject to politics and fashion, however. It was given a great boost both in China and the West by President Nixons' visit to China in the early 1970s. Following impressive demonstrations a wave of enthusiasm then spread throughout the Western world.

Basic Concepts

Yin, Yang

This is probably the single most important theory of traditional Chinese medicine. It is very simple, yet also very profound. The theory holds that all things have two aspects, Yin and Yang, which are both opposite and yet, at the same time, inter-dependant. These two opposites are in a constant state of change, that is day changes into night, summer into winter, growth into decay and *vice versa*.

The Chinese characters for Yin and Yang indicate the shady and sunny sides of a hill. Everything in the natural world may be classified as either predominantly Yin or Yang. Yin is associated with female, shade, water, cold, inhibition, and matter. Yang represents male, fire, heat, motion, noise, excitement and energy.

Disease results when there is loss of the normal balance between Yin and Yang.

Qi

The concept of Qi is very difficult to translate exactly. It is often translated as "energy" or "life force". There are various forms of Qi within the body which have a variety of functions. Qi governs the functions of the internal organs and circulates around the body in the Meridians. Disturbance to this flow of Qi can cause pain.

Zang Fu, internal organs

The Chinese concept of the internal organs and their functions is much broader than that of Western medicine. Each organ is seen as a complex system which includes anatomical identity and physiological functions and corresponding emotions, mental functions, tissue, sense organs, taste colour, environmental influences and seasons.

There are 12 main organs in traditional Chinese medicine, of which 6 are Yin (*Zang*) organs and 6 are Yang (*Fu*) organs. Each Zang organ is linked to a corresponding Fu organs *ie* Liver to Gall Bladder, Heart to Small Intestine.

Meridians and acupoints

The meridians are pathways in which the Qi of the body is circulated. They are also believed to regulate Yin and Yang. Acupuncture points are specific, named sites through which the Qi is transported to the body surface. There are 361 regular points situated on the meridians and quite a number of extra points which have specific names and anatomical sites but which are not related to the meridians. The acupuncture points are classified into group and function, *ie* antique points and Ah Shi points.

Causes of disease

TCM holds that there is normally a state of relative balance and harmony both within the human body and between the human body and the external environment. The primary factor in determining whether a disease occurs or not is the power of adaptability of the body in response to various pathogens.

Many factors are capable of causing disease. The main external cause of disease are climatic (environmental) factors. Wind, Cold, Summer Heat, Damp, Dryness and Fire. Internal pathogens are thought to be excess emotions, Joy, Anger, Sadness, Worry, Grief, Fear and Fright. Each of these, if excessive can cause imbalance and disease and tend to affect a particular organ or system. Other causes of disease are recognised, weak constitution, incorrect diet, lack of physical exercise over-exertion, excessive sexual activity, and trauma.

Diagnosis

Chinese diagnosis makes use of a broad range of signs and symptoms, most of which would not be considered important in Western medicine. The outer manifestations are considered to reflect the condition of the internal organs and analysis of them leads to identification of a pattern of disharmony, or syndrome which is quite different from a Western diagnosis.

Tongue and Pulse diagnosis are frequently used. Observations of the colour , coating and shape of the tongue can indicate the state of the internal organs and the presence or absence of various pathogenic factors. Pulse diagnosis is rather more complex and involves a high degree of subjectivity. The radial pulse is felt with the index, middle and ring fingers at three different levels.; that is superficial, middle and deep. The various pulse are said to reflect the state of the Qi, Blood, Yin and Yang and Internal organs and the presence of pathogenic factors.

Types of Acupuncture

Traditional Chinese Acupuncture:

The points are selected in accordance with traditional Chinese theories, the principles of treatment being based on the individual "pattern of disharmony" rather than a Western medical diagnosis.

Formula or "cookbook" approach:

A standard formula is used to treat disorders diagnosed on a Western, medical basis. However the points used are classical ones, and the formula may originally be derived from chine classical ideas.

Trigger point acupuncture:

Needling of myofascial trigger points may be used to treat musculo-skeletal pain. Although the practitioner makes no use of Chinese theories, there is a close correlation between trigger points and acupuncture points for pain (Melzack et al 1997).

"Scientific" acupuncture:

The points are chosen according to modern interpretations of their actions, (for example, homeostatic, immune enhancing, anti-allergy), or according to their spinal segmental location.

Modern techniques:

These include hybrid techniques such as electro-acupuncture according to Voll (EAV) and Ryodoraku therapy and Vega testing.

ELECTRO-ACUPUNCTURE

Electro-acupuncture is the use of pulsed current to stimulate acupuncture needles, and has been used in selected cases in China since the 1930s. In the West, such electrical stimulation has frequently been used as part of standard acupuncture therapy, and many of the studies investigating the mechanism of acupuncture and evaluating its analgesic effects have used electro-stimulation techniques. It is most useful in the following situations:

- 1 for producing analgesia during surgery
- 2 painful conditions not responding to manual stimulation of the needles
- 3 paralysis or weakness, particularly bells palsy
- 4 nerve damage such as trauma or peripheral neuropathy.

ACUPUNCTURE ANAESTHESIA

The use of acupuncture to relieve pain during surgery goes back to Shanghai in 1958, with early trials of its use in tonsillectomies. Subsequently, interest spread rapidly throughout China, and there was experimentation in many different types of operation. High rates of success were claimed but were often exaggerated.

Acupuncture anaesthesia is used mainly in surgery of the head, neck and chest and some gynaecological conditions. However analgesia may not be complete and is sometimes supplemented with pharmacological medication.

TRIGGER POINTS

The eminent Chinese physician Sun Simiao 673-581 BC long ago drew attention to the importance of inserting needles into tender points. These became known in Chinese as Ah Shi (Ah yes!) points. It is only over the past 70 years that Western physicians have noted the importance of tender points, or myofascial trigger points as they are now termed, in the causation of musculo-skeletal pain. Simple needling as performed by the Chinese is as effective as injecting these points with any variety of substances.

AURICULAR ACUPUNCTURE

Simple ear acupuncture has been known to the Chinese since ancient times, as it is to other cultures, including the Egyptians. Dr Paul Nogier, working in France in the 50s and 60s, developed ear acupuncture into a highly sophisticated system for diagnosis and treatment. It is now accepted as one of the acupuncture micro-systems where other parts of the body can be affected by careful needling of a defined, localised area. Nogier discovered a homunculus on the ear, with the head represented on the earlobe, the spine situated on the antihelix, and the viscera represented on the cortex. He found that if there is pain in the body, then the corresponding part of the ear becomes tender; this tender point can then be needled to treat pain. Nogier's findings have been confirmed by experiment with a 70% success rate. Auricular acupuncture is used particularly for acute and painful disorders, but also for acupuncture anaesthesia. It is a very quick method and can be used along with body points or when body points are not suitable. The insertion of semi-permanent needles can extend the effect but there are occasional infection problems with these. Seeds under plaster can be used as an alternative.

General Guide to Treatment

In skilled hands acupuncture is not actually a painful procedure. However, there is no denying that the therapeutic value depends on the insertion of a needle into the skin and that involves a transitory sensation. This sensation is very important. It is known as "Deqi" and signals the arrival of Qi at the needle. The patient will usually experience this as a dull, heavy, slightly aching sensation. It is usually very brief but can some times slowly build during the course of a treatment session. The needle is sometimes manipulated after insertion in order to maximise this Deqi effect. Sensation may radiate down the path of the channel being stimulated and this "propagated channel sensation" can be controlled by a skilled practitioner.

Usually no more than 6-10 needles are inserted and they are left in situ for about 20 minutes before being removed. It is common for patients to experience a degree of relaxation after acupuncture treatment, some may, indeed, feel drowsy and be unable to drive immediately. Others can experience frank euphoria. These effects are likely to be due to the release of endorphins.

In general acute conditions will respond quickly and need few treatments. Chronic disorders will take longer, perhaps as many as 8-10. The individual response of patients is very variable. Three or four treatments are usually necessary to assess whether the acupuncture should be continued.

About 5% of the population are strong reactors and may experience marked local and general effects from needling including a tendency to feel faint or sick. Such patients should be treated with care, leaving the needles in situ for a shorter time and reducing the number of acupoints at each session. Approx 10-20% of the population do not respond at all. There may be many reasons for this, including, perhaps a deficiency in endogenous opioid receptors and /or excess of anti-opioid substances. (Han 1991)

COMPLICATIONS

1. **Damage to viscera:** Rare but possible, pneumo-thorax possible with poor needling technique.
2. **Infection:** Bacterial infections occur very rarely. Ear acupuncture is most hazardous.
3. **Fainting:** New patients should always be treated lying down, in case they are strong reactors. They are most likely to react in this way on the first treatment, rarely on subsequent occasions.
4. **Abortion:** Unlikely, but some points are able to induce parturition so they are not advisable in pregnancy.
5. **Haemorrhage:** Minor capillary bleeding can occur. Bruising and haematoma may result.
6. **Post-treatment drowsiness:** Occasional patients unable to drive home immediately.
7. **Broken needle:** Theoretically possible but with modern single use needles, unlikely.

Contra-indications

1. Skin infections
2. Pregnancy (First and third trimesters)
3. Bleeding disorders
4. Valvular heart disease, insertion of semi-permanent needles is contra-indicated.
5. Hepatitis or HIV carriers
6. Cardiac pacemaker

What disorders are suitable for treatment?

In 1979 the WHO drew up a list of 104 different conditions that they considered were responsive to acupuncture treatment. (Banner man 1979) This was based primarily on clinical experience, particularly in China and not necessarily on controlled studies. From our experience it would be entirely reasonable to consider a trial of acupuncture for the following conditions, though unequivocal proof of efficacy in each individual case may be lacking.

- 1 Painful and musculo skeletal disorders such as headache , migraine, neuralgia, carpal tunnel syndrome, osteo arthritis, back pain, sciatica, frozen shoulder, tennis elbow and sports injuries.
- 2 Respiratory disorders such as sinusitis, rhinitis, asthma and bronchitis.
- 3 Cardio-vascular disorders such as hypertension, Raynauds' syndrome and intermittent claudication.
- 4 Gastro-intestinal disorders such as irritable bowel syndrome, inflammatory bowel disease, gastritis, gastroenteritis and biliary colic.
- 5 Gynaecological disorders such as dysmenorrhoea, premenstrual syndrome and some menopausal problems.
- 6 Urological disorders such as renal colic and enuresis.
- 7 Neurological disorders such as hemiparesis and facial paralysis.
- 8 Skin disorders such as eczema, psoriasis, acne, and urticaria.
- 9 Psychological disorders such as anxiety, insomnia and depression.
- 10 Possibly allergies and addiction.

PHYSIOLOGICAL EFFECTS OF ACUPUNCTURE

There have been numerous studies investigating the physiological effects of acupuncture, and these are reviewed best in the book by Bensoussan, *The Vital Meridian*, published by Churchill Livingstone.

They can be summarised as:

- 1 The analgesic effect of needling
- 2 The regulatory effect of needling
- 3 The immune enhancing effect
- 4 The sedative and psychological effect

SCIENTIFIC BASIS OF ACUPUNCTURE

The majority of research into the mechanism of acupuncture has focused on acupuncture analgesia. It cannot be explained simply by the placebo effect or by stress-induced analgesia, as sham acupuncture is generally less effective than true acupuncture, though both should be equally stressful. Thus it must have some physiological basis. A number of theories as to the mechanism of acupuncture have been proposed including the following:

Neural mediation

There is little doubt that an intact functioning nervous system is required for acupuncture to produce analgesia or, for that matter, any physiological changes. If the nerve innervating a region is sectioned prior to needling, then acupuncture will have no analgesic effect. Transection of the spino-thalamic tract of the spinal cord above the level of the incoming acupuncture impulses will also stop acupuncture induced analgesia.

The first theory used to explain acupuncture analgesia was the gate control theory put forward by Melzack and Wall in 1965. According to this theory, the perception of pain is modulated by a functional " gate " within the central nervous system, and the main site of this gate is the substantia gelatinosa in the dorsal horns of the spinal cord. Pain impulses are carried by small diameter sensory nerve fibres, and impulses from large diameter fibres close the gate to pain. However later research demonstrated the limitations of this theory.

Pomeranz describes a three level pain modulatory system in which acupuncture impulses may activate inhibitory gates in the spinal cord, mid-brain and hypothalamus-pituitary to produce analgesia. In this multiple gate theory, there is both afferent and efferent inhibition of pain at various levels of the central nervous system; efferent inhibition of pain occurs as the result of the influence of descending pain modulatory pathways on the ascending pain impulses.

Neurohumoral mediation

Over 100 neurotransmitters have been identified in humans, and more than 20 of these have been found to be involved in the acupuncture effect. The earliest studies implicating the involvement of endorphins in acupuncture were those that showed that injection of the narcotic antagonist naloxone could antagonise acupuncture analgesia. Since these early papers, there have been numerous other studies which support them and implicate enkephalins, dynorphins, substance P, serotonin (5HT), adrenaline, noradrenaline and acetylcholine. Cholecystokinin behaves as an endogenous anti-opioid substance and has been found to act to suppress acupuncture analgesia. (Han et al 1985)

Han (1991) has demonstrated that with electro-acupuncture, the predominant neurotransmitter involved depends upon the frequency of stimulation. At low frequencies (2Hz), electro-acupuncture analgesia is mediated by beta endorphins and enkephalins, whereas high frequency stimulation (100Hz) acts via dynorphins. No additional benefit occurs at frequencies above 100 Hz but at 15 Hz synergism occurs between beta-endorphins, enkephalins and dynorphins.

Acupuncture analgesia is accompanied by a rise in plasma cortisol, ACTH and beta endorphin. Some of the physiological changes arising from this may explain the anti-inflammatory effects observed in the treatment of arthritis. Endorphins may play an important role, not only in mediating analgesia but also in several key homeostatic mechanisms, such as releasing regulators of other hormones, thermo-regulation and regulatory effects on the respiratory, gastro-intestinal and cardiovascular systems.

Bio-electric mediation

The bio-electric theory of action described by Benssusan (1991), maintains that acupoints and meridians are electrically distinct, that needling may induce electrical changes along the meridians and alter the electrical resistance of the points, and that these changes act as precursors to neural and neurohumoral changes.

De-activation of myofascial trigger points

Relief of musculo-skeletal pain may also involve simple deactivation of myofascial trigger points.

SCIENTIFIC EVALUATION OF ACUPUNCTURE

In evaluating acupuncture it is first necessary to define the word "acupuncture" as there are several different methods of carrying out the procedure, listed earlier. Then it is vital to be able to predict which physiological effect (or effects) will be the most likely mediator of the desired action.

A decision must be made as to the type of control required. For instance, use of sham needling, where the needle actually enters the skin, though not at designated acupoints, will be no use as a control if the effects of the intervention may be non point specific anyway.

A further problem encountered by researchers is that to use the same simple formula for every case is not evaluating acupuncture as it is normally applied in the traditional sense, since the choice of points should vary from patient to patient and from treatment to treatment. In order to conform to the protocol of a controlled trial it is sometimes necessary to impose an artificial rigidity on the acupuncture. All research needs to be carefully evaluated in the light of this.

Training and Organizations

Council for Acupuncture (or British Acupuncture Council)

Tel 0171 724 5756

British Medical Acupuncture Society (BMAS)

Tel 01925 730727

Acupuncture Association of Chartered Physiotherapists (AACP)

Tel 01747 861151

Further Reading

Baldry, P.E (1989) *Acupuncture, trigger points and musculoskeletal pain*. Churchill Livingstone. London

Bensoussan, A (1991) *The vital meridian*. Churchill Livingstone. London.

Cheng X (ed) (1987) *Chinese acupuncture and moxibustion*. Foreign Languages Press, Beijing.

Ernst ,E and White, A. (1999) *Acupuncture a scientific appraisal*. Butterwoth- Heinemann, Oxford.

Maciocia, G. (1989) *The foundations of Chinese medicine*. Churchill Livingstone, London.

Mann, F (1992) *Reinventing acupuncture: a new concept of ancient medicine*. Butterworth-Heinemann, Oxford.

Stux, G and Pomeranz P (1987) *Acupuncture: textbook and atlas*. Springer- Verlag, Heidelberg.