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Acupuncture research methods

Abstract

Acupuncture as a method of non-traditional medical procedures and diagnostics, as well as being used for therapeutic purposes. Although this method has become the subject of mass research, a complete theory of the method has not yet been formed. The initial problem is related to the mechanism of action of acupuncture. Based on research, we can say that there are two approaches to explaining the mechanism of action. One is based on Chinese philosophy and the other on Western thought.One of the unexplored areas of acupuncture research is its application as a diagnostic tool.The fundamental basis of the application of diagnostics by scientists Foll, Nakatani and others has been explained experimentally. However, there are few studies involving acupuncture in the collection of diagnostic information. The article was analyzed by looking at the essence of the Acupuncture Diagnostic Method and the researches in this field. Basic analyzes and researches on acupuncture points were examined, indicators obtained in acupuncture research were determined.

Keywords: acupuncture, electropuncture, diagnostics, electrical conductivity, acupuncture points

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Introduction

Acupuncture is an ancient practice of medicine. It originated over 2,500 years ago. The procedure of acupuncture has been used to treat and relieve symptoms of a wide range of diseases and conditions. Acupuncture has been used throughout the world unlike other forms of alternative and traditional therapies that have been confined to their national or cultural context. Acupuncture has developed since the 1970s.

There are some known explanations of the effect of acupuncture:

a. Augmentation theory - Acupuncture raises the level of triglycerides, certain hormons, prostaglandins, leukocytes, gamma globulins, opsonins, and antibodies. (immunstimulating effect)

b. Endorphin theory - Acupuncture stimulates the production of endorphins (especially the enkephalins, and dynorphins) (analgesia)

c. Neurotransmitter theory - Acupuncture can influence on the production and secretion of several neurotransmitters (serotonine, noradrenaline) (depression and emotional diseases, the decreased level of serotonin may lead to weight loss)

d. Circulatory/vazomotoric theory - acupuncture liberating vasodilatant substances (especially histamin). (oedemas, neuropathy and post traumatic regenerative conditions)

e. Gate control theory - by acupuncture stimulated somatosensoric A-delta fibres on the level on interneurons of spine lock the thiner viscerosenzor C fibers transmitting the incomming pain information, by which they prevent its spreading into higher level center and prevent the perceiving of pain (anestesy, analgesy, Diffuse Noxious Inhibiting Control, -le Bars, 2003).

The word acupuncture is of Latin origin and consists of the words acus (needle) and punctura (dip, punch). Therefore, the word acupuncture used in the sense of needle immersion is used in modern medicine. In the modern approach, acupuncture is defined as the treatment of some characteristic points on the skin by applying a needle, vacuum, pressure, electric current, laser, or ultrasound. In some technical and medical literature, acupuncture is also used to refer to the Biologically Active Points (BAP).Acupuncture is one of the oldest treatment methods and it stated to be used in medical practice 2-3 thousand years ago. Although it is used in the treatment of many diseases today, it took hundreds of years to take its place in Western medicine due to the lack of physiological and clinical information.Several theories tried to explain the mechanism of action of acupuncture, but according to the traditional Chinese method, the main effect of acupuncture is the ability to heal oneself with a holistic concept. Therefore, every living thing is born, grows, and dies. In these natural stages, diseases are caused by interrelated factors. As long as disease factors do not affect these stages, living things continue to function in a balanced, healthy way, under the influence of the two opposing forces, Yin and Yang. When Yin and Yang's forces come together, a force called "Tao" arises.

When the current balance between Yin and Yang forces is disrupted, health status deteriorates and various diseases occur. The interaction between Yin and Yang forces produces Qi (chi). Qi provides a bipolar energy flow throughout the body and this energy spreads throughout the universe. There are needles used in acupuncture that affect the Qi. Qi can increase and become completely exhausted. This is to keep bilateral relations on balance, it means maintaining a healthy human.

Problem description

Electroacupuncture, which has made important strides in medical literature in recent years and is the subject of serious medical research, is a treatment based on the principle that traditional acupuncture can be used with a series of electronic devices using only needles. This method affects the secretion of various hormones through the brain and the whole nervous system, provided that special needles applied to certain irritating points on the body surface are applied at low frequencies and low intensity with electronic stimulation devices and as a result, the entire biological and psychological system is balanced, and thus the treatment of diseases is possible.

The electropuncture method is to affect biologically active points with different electrical currents. In 1825, the French scientist Sarlandjer gave the first information about this.He simply gave an electric current to metal needles injected into the body, resulting in analgesia. Currently, this method is widely used. Small-sized electrodes and small-amplitude electrical impulses in various ways affect the deeper layers of the skin with the help of biologically active points. Such currents affect biologically active points, causing excitation in nerve conductors, which leads to functional changes in tissues. BAPs retain their properties even after the body dies (approximately 10-12 hours). The sizes of BAPs (the areas they occupy) can change in a short time. For example, while the active point is 1 mm in a resting person, it grows up to about 1 cm in an active state. The biophysical parameters of BAPs are different from the surrounding points.[1-3] The differences are given below.

1. Electrical potentials are different. Thus, the potential of BAPs during illness increases;
2. Electric resistance is small;
3. The temperature is relatively high;
4. They are distinguished by their strong absorption of ultraviolet rays;
5. Causes pain during mechanical impact;

The distinguishing features of biologically active points became the basis for the use of electrical methods in research. Thus, the electropuncture method, which is a method of the research of biologically active points, was widely used. The unique (main) advantage of the electropuncture research method is the ability to assess the condition of the internal and external organs of the human body without the need for radiation, without the inclusion of probes and contrast agents.[1–4]

Literature research

Acupuncture is widely used by thousands of doctors in the United States to treat a variety of ailments. In clinical and basic scientific research, significant evidence has accumulated that acupuncture is measurable and reproducible in terms of various physiological processes. In addition to the therapeutic effect of acupuncture, several properties have also been described. A few years ago, Foll, Nakatani, and Niboyet emphasized that acupuncture points have electrical properties. These independent studies suggest the existence of unique electrical properties in the areas of the skin where acupuncture points are located. However, due to technical and methodological problems, it was not in the interest of the scientific community, and as a result of solving the problem mentioned in recent history, interest in research in this field has increased. Colbert and colleagues (include year) worked together to find three key evidences that are important for acupuncture points:

I. Acupuncture points and meridians have lower electrical skin resistance and higher capacity than surrounding tissues.

II. The higher or lower resistance of certain acupuncture points is associated with certain clinical diseases.

III. Clinical and laboratory data show that experimental physiological dysfunction and subsequent recovery are associated with increased or decreased electrical impedance at the respective acupuncture points.[5–7]

In a joint study by Colbert and colleagues it was suggested that the electrical skin impedance of acupoints is different from non-acupuncture skin points and that changes in the skin impedance of acupoints can be important for diagnostic, therapeutic, and research purposes. At present, different methods are applied to the acupuncture points studied in electropuncture diagnostics, which do not depend on each other depending on the operating parameters of the measuring devices and the data analysis system obtained. As with the advantages of each method, there are some disadvantages. Of these methods, and auricular diagnostic methods have a wide range of applications.

The method proposed by the Japanese scientist Nakatani uses the topology of biologically active points. This method proposed by Nakatani is based on the theory of Riodoaku. According to this theory, there is a relationship between the functional states of the internal organs and the associated meridian channels. Nakatani said that in the event of a change in the functional state of the organs associated with the meridians, the electrical conductivity changes at points located in these meridian channels, and divided these meridian channels into six channels connecting at two points: the hands and feet. In general, according to the Nakatani method, the way to assess the condition of the body is as follows: the value of electrical conductivity is measured at certain points on each meridian. The value of electrical conductivity at the acupuncture point where the measurement process is performed under the influence of a negative polar current indicates the average value of the meridian. This method of Nakatani is the basis for the development of other methods in this field. There are serious problems with this method to consider. Because the operating parameters used in the method (I = 200mkA; U = 10V) also have the potential to create additional effects.

Dr. Foll's method is a clinically reliable diagnostic method. The diagnostic process is carried out using an electric current with a positive potential, and in this case, the operating parameters of the method are I = 20mkA; U = 2V, ie the power is defined as 0.04 mW. As a result of the comparison of the Foll method with the Nakatani method, it can be stated that the Foll method has an additional irritating effect on acupuncture points, which is 50 times lower than the Nakatani method. The disadvantage of this method is the duration of the diagnostic process. The Foll method, which is used to obtain a detailed description of the functional status of all organs, takes two hours.

Aurikular diagnostic method is considered to be the founder of the franzis scientist Dr. P Nojier. The founder of the auricular diagnostics method Dr. Paul Nojier played a significant role in the acupuncture methods that were developed later on. His theory is based on the idea that the human body resembles an ear in its embryonic form, that the head resembles a lobule, and that the inner ear resembles an ear. The first electropuncture device was discovered during Nojier's research on this idea. Nojier showed that with this device, the electrical conductivity of the ear cavity of healthy people at the general acupuncture points is low. However, in the event of disease, spots with high permeability appear. As a result, we can say that the human body auricular method can be used for diagnostic purposes by using the reactions of the ear organs.

The disadvantage of this method is the high intensity of biologically active points from the ear cavity to certain organs and systems. At the same time, the application of this method in clinical practice requires professionalism. In addition to the above methods, it is necessary to look at the parameters and capabilities of the method and device proposed by the Russian scientist Ivan A. Lednev. In 1973, he proposed the use of the bipolar method to treat organs or systems that correspond to these points if the indices deviate from normal values. The essence of this method is if the electrical conductivity values of

the acupuncture points coincide with the electrical conductivity values of the points in the measurements made with the negative polarity electric current, the relevant organ or system is considered normal. In other words, it was determined that there was no pathology in the related organs and tissues. This definition of electrical conductivity is called "asymmetric density". Used in the treatment of more than 200 diseases, "I.A. Lednev's atlas. The parameters of the device used for the implementation of the method are close to the operating parameters of the Nakatani method ($I = 200mkA; U = 8V$).

Although the foundation of the acupuncture diagnostic method was laid by Nakatani, this method was developed by Foll, the method was further improved and the problems encountered in the Nakatani method were eliminated. Then we can say that it would be more appropriate to use the Foll method in the study of the use of acupuncture points for diagnosis. To do this, it is necessary to look at the essence of the Foll method, the history of its development, and practical application. Reinhold Foll was born on February 17, 1909, in Berlin. He was the son of an architect. Beginning in 1943, Foll administered prophylactic drugs in South Germany and was diagnosed with terminal bladder cancer without hope of a cure from Western medicine. He was able to treat himself with acupuncture. Beginning in the 1950s, acupuncture became the center of his medical career. During the struggle to combine Meridian theory with Western medical knowledge, he discovered that the electrical resistance measured on the skin at acupuncture points on the skin surface using a modified galvanometer were different. The first electrodermal test instrument was developed in 1953; he called it Dermatron. After years of research, he developed his instrument and published his findings in 1975. There are 850 electropuncture measurement points (MP) on the surface of the body. Foll used the term "measuring points" instead of the term "acupuncture points".

The basis of the impedance tester is an ohmmeter equipped with a battery that provides a current of $6-12mkA$ at $1-1.25volts$ (V). The main components of an impedance tester are a test device and a combined measuring electrode (probe) and a metallic indifferent electrode, a computer connected to the device. When measuring a typical impedance, the patient is connected to the negative port of the device via an indifferent electrode. At the same time, the researchers[8] closes the circuit by contacting the acupuncture point where the probe measurement is required. The mkV data coming from the acupuncture point in the probe is transmitted to the device, where it is read on a voltmeter. Due to the very low voltage in the device, the patient does not feel any electric shock. Modern impedance testers are equipped with a computer that is always connected to the device via a USB port to display, print, and store test results.

In his research to determine the relationship between disease conditions and changes in the electrical impedance of different acupuncture points, Fall successfully identified many acupuncture points associated with certain conditions and published extensive information on the use of acupuncture points as a diagnostic window. The greatest discovery of the impedance test method is the association of acupuncture points with the physiological functions of certain organs, systems, and tissue types. Before Folla, these points were mainly used for therapeutic purposes.[9–11]

Conclusion

From the issues discussed, we can conclude that due to practical advantage, informativeness, and minimal side effects (according to the operating parameters), our future goal is to apply the Foll method in the study of the use of acupuncture points for diagnosis. A summary of research in the field of acupuncture, a comparative analysis of the research was made, and a preliminary direction was set for investigating the diagnostic properties of acupuncture.

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Conflicts of interest

No conflict of interest was reported by the authors.

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