



CASE TEACHING NOTES for “A Need for Needles Acupuncture—Does it Really Work?”

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INTRODUCTION

This case is intended for an introductory, college level science course such as human biology. It does not require the students to have an in-depth knowledge of the medical procedures of acupuncture or the central nervous system. However, it would be helpful for the students to have a general knowledge of the systems of the body. The students should also be aware of some of the general scientific guidelines used in evaluating scientific data, which will help them evaluate the theories behind the acupuncture procedure.

Objectives

This case is intended to expose students to one of the procedures advocated by therapists of alternative medicine, acupuncture. Students are asked to take a skeptical look at the procedure in an effort to see where the boundaries may exist between the thoughts of the “believers” of these alternative therapies and the scientific facts. The overall objective of the case is to expose students to the possibilities of alternative medicine as well as encourage them to question their effectiveness.

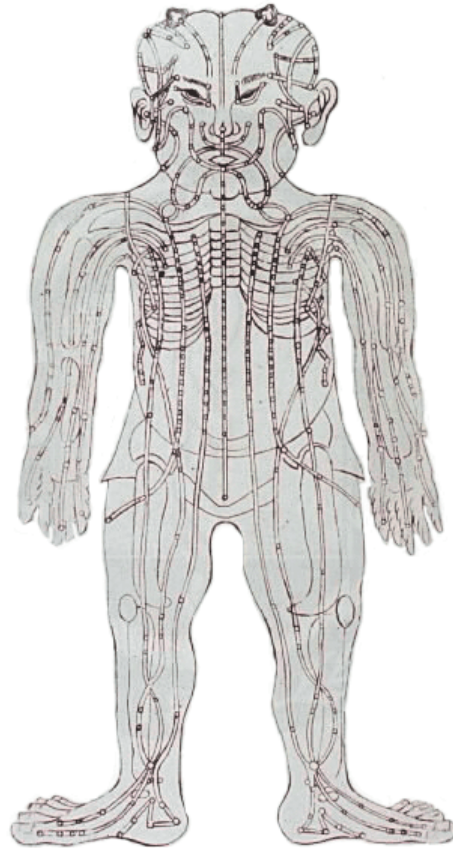


Figure 1: Acupuncture points on an old woodcut.

Students evaluate information on both sides of the issue to determine if there is adequate scientific information to conclude that acupuncture is a helpful method of treatment. During the case, students collect information from Internet sources or journal publications with an emphasis on carefully evaluating the credibility of information they collect.

The major blocks of analysis addressed by the case include:

- Theories of pain and the body (qi, yin, yang, meridians)
- Methods of applying acupuncture
- Needles, electroacupuncture, ear acupuncture
- Theories regarding how acupuncture works (gate theory, central nervous system, and endorphins)
- Side effects
- Ailments, trials that have been conducted on patients
- Criticisms, evaluations of the “believers”

CLASSROOM MANAGEMENT

The approach we suggest for teaching this case is described in the instructions to the students at the end of the case. Students working in groups of four are given the case to read in class. They are divided into pairs, with one pair assigned to research the “pro” side of the argument and the other the “con” position. The groups come together in a later class (perhaps a week later) and discuss the issues within their groups and try to come up with a consensus recommendation for Dr. Ramirez. The students might recommend a pro-acupuncture position, an anti-acupuncture position, or something in-between. The students then are called upon to share their views with the entire class. In this general discussion facilitated by the instructor, it is essential that the students cover the theory behind acupuncture, the different treatments that acupuncturists might use, the evidence or lack of it that suggests that acupuncture may work, and the possible complication of the placebo effect. An interesting question to ask the students would be, “Can you design an experiment to eliminate the placebo effect?” (What would happen if you placed the needles in places that are not specified by the Qi meridians?)

BLOCKS OF ANALYSIS

Background

Acupuncture is at least 2,000 years old. It is a form of therapy within the system of Asian medicine. This is a complete medical system that includes herbology, physical therapy, dietetics, special exercises and acupuncture. It is the most widely used healing system found on earth. It first appeared in China and its use has extended throughout Asia, Europe and America.

Qi (chee) is stated to be the energy force running through the body. It includes all essential life activities. Qi is composed of two opposites, yin and yang. These opposites must be kept in balance to sustain a healthy life. Yin represents the female, cold, dark, passive and medial part of the body. Yang is the opposite of the yin, encompassing male, light, active, warm and lateral aspects of the body. The Qi travels along special pathways of the body known as meridians. The meridians are 12 main pathways on each side of the body. The channels are named after 12 main organs; however, the pathways are not limited strictly to that organ. In acupuncture the needles are inserted at points along these pathways. The points are where the meridians come to the surface. The aim of acupuncture is to adjust the vital energy of the body so that the correct amount reaches the proper part of the body at the essential time. This aids in the body’s ability to heal itself.



Figure 2: Acupuncture points.

Methods

Needles and Insertions

There are nine types of needles used in acupuncture; however, only six are commonly used. The needles are disposable or are disinfected and sterilized in an autoclave after each use. They are inserted at points from 15 to 90 degrees in relation to the skin’s surface. Once the needle has been inserted there are a variety of techniques that aid in the stimulation and sensation. Often the technique used will depend on the ailment that

is being treated. Some of the techniques are raising, thrusting, twirling, plucking and scraping. The sensation from the patient is termed deqi.

Electroacupuncture

Electroacupuncture is a more modern form of acupuncture. It entails sending electrical impulses through the acupuncture needles. The amount of power sent through the needles is usually only a few microamperes. The frequency of the current used varies from five to 2,000 HZ. Electroacupuncture is generally used for relieving or preventing pain, as an analgesic. The frequency and the amount of power used in electroacupuncture tend to vary to a great degree depending on the patient's condition and the practitioner.

Ear Acupuncture

In the 1950s, a French neurologist, Paul Nogier, developed ear acupuncture, or auricular acupuncture. Nogier mapped the ear and studied its connections to the rest of the body. In general there are two perspectives you can take when approaching auricular acupuncture. One view focuses on the idea that six meridians directly access the ear. These meridians are the conduits of the effects of auricular acupuncture. The other view is that the ear is a distinct, self-contained microenvironment that corresponds with the body. Regardless as to which view you take, it has been seen that auricular acupuncture has many positive effects on the body. The ear has a rich blood and nerve supply and thus has numerous connections to other parts of the body. Auricular acupuncture has been used for many afflictions including as a way to counter the effects of obesity, alcoholism and drug addiction.

Moxibustion

Moxibustion is a complementary procedure to acupuncture. It involves applying heat to specific acupuncture points through the process of burning tightly bound bundles of herbs. This bundle, or moxa preparation, is a small cone-like shaped bundle of mugwort and wormwood. Practitioners have found that the heat penetrates into the body and aids to increase the blood flow and restore the balance of the Qi. When the method was first used the cone was applied directly to the skin. This often resulted in scarring or burning. Currently a method of indirect moxibustion is practiced. The heat is often applied to an acupuncture needle, either through the use of the cone, or an electrical source.

Cupping

Cupping is another method used to stimulate the acupuncture points. Suction is applied to the points to cause stimulation. A metal, wood or glass jar is used to create a partial vacuum. The suction produces blood congestion at the point, thus causing stimulation. Cupping is used to treat backaches, sprains, soft tissue injuries, chronic bronchitis and a variety of other ailments.

Theories

There are many theories as to how acupuncture may work on the human body. The theory of augmentation of immunity states that levels of triglycerides, prostaglandins, white blood counts, gamma globulins, opsonins and antibody levels are raised during treatment and this stimulates the response. Another theory is the endorphin theory. According to this theory the endorphins such as enkaphalins are stimulated through acupuncture. The neurotransmitter theory posits that neurotransmitters such as serotonin and nor-adrenaline whose levels have been proven to be affected in treatment are involved. The circulatory theory involves the release of vasodilators, which cause the blood vessels to constrict and dilate. One of the more common theories is called the gate-control theory. This states that the perception of pain is regulated by part of the central nervous system that regulates impulses. When too many impulses occur, that part of the CNS shuts

down. The part of the CNS that carries these impulses is nerve fibers such as C fibers; they have been found to close during acupuncture.

Uses

Acupuncture has been used to treat a variety of ailments including, for example, lower backache, cervical spondylosis, condylitis, arthritic conditions, headaches and allergic reactions. Acupuncture has also been seen to be helpful in reducing addictions. Many other conditions are still being studied which use acupuncture as a treatment beyond pain reduction. These conditions include endocrine disorders, mental disturbances, heart failure, attention deficit hyperactive disorder and immune disorders. Acupuncture has even been used to reduce the rate of breech births, as well as to treat carpal tunnel syndrome, cerebral palsy, hay fever and menopause.

Rheumatoid arthritis, which is the focus of this case, is the inflammation of the lining of joints. It varies in severity and can involve periods of remission and flare-ups. The inflammation often results in stiffness, pain, redness and warmth. The cause is unknown; however, it is known to be an autoimmune disease. Early treatment is usually critical and many options exist for treatment. Non-steroidal anti-inflammatory drugs (NSAIDs), analgesics, and glucocorticoids are used to reduce joint pain, stiffness and swelling. There is also a variety of disease-modifying medications. Among these are methotrexate, minocycline, cyclosporine and many others. Along with medication, treatment involves exercise, rest, joint protection and physical therapy. In addition to these treatments and medications, many alternative treatments have been practiced. These include acupuncture, preventative medicine and focusing on such areas as diet and exercise.

Criticisms

There is no solid answer as to how might acupuncture work. This leads many people to question acupuncture's purported abilities to treat different ailments. Many of the theories regarding acupuncture deal with Qi, or energy patterns. These hypothetical energy patterns have not been demonstrated nor have they been studied to a great extent in Western medicine. This leaves the theoretical foundation of acupuncture very much in question.

In tests where acupuncture has been evaluated, it has been difficult to set up proper control groups. People undergoing acupuncture know what is supposed to happen. Thus, any positive results from the procedure may be due to the placebo effect.

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