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Acupuncture and Massage Therapy: Their Characteristics, Hypothetical Explanations, and Applications to Physical Therapy

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ABSTRACT

Physical therapy is a diverse field with many alternative healing methods. Two of these modalities are acupuncture and massage therapy. These alternative therapies are presently under scrutiny from the scientific community because their specific healing mechanisms can not be physiologically explained. Acupuncture is grounded in Chinese philosophy and is focused on the body as a whole, including the mind and spirit. Its goal is to maintain and restore a free flow of energy through the body. The Western scientific community has many hypotheses concerning how it works, but none have been effectively proven. Massage therapy is the manipulation of soft body tissues for therapeutic purposes. Massage therapy has various techniques that can be used to obtain specific results. These two alternative modalities have been shown to be effective through research and surveys. At the present time, definite physiological explanations for how these methods work are not available. Acupuncture and massage therapy are two modalities that are slowly becoming incorporated into physical therapy. As more scientific data is collected concerning the physiological mechanisms, these two methods will most likely become more accepted in the Western scientific community.

INTRODUCTION

Physical therapy is a very diverse field with many alternative healing methods. Several of these methods deal with manipulation of the body. Alternative therapies can range from basic medical methods to methods centered around spiritual and emotional needs. Two current alternative methods of healing are acupuncture and massage therapy. Both may be classified under physical therapy. The differences and similarities between acupuncture and massage therapy may be compared to physical therapy in terms of methods used and results of therapy.

In the scientific community, there is controversy over alternative methods such as acupuncture and massage therapy. Western medicine is focused on knowing exactly how a certain procedure works physiologically. Without this information, many scientists believe a practice to be invalid for use in treating patients. We do not have precise explanations for how many of the alternative methods work, but according to patients, these methods are effective. Research is still required to understand the physiological mechanisms of these alternative methods.

It would be beneficial to compare and contrast traditional medicine (Western) to the alternative practices. This may provide a better understanding of how both modalities could be combined to provide superior health care.

One difficulty in this type of research is that unconventional, alternative, or unorthodox therapies are difficult to define, because they encompass a broad spectrum of practices and beliefs (Eisenberg et al, 1993). A treatment method that may seem completely logical in one culture may appear to be silly and ineffective in another culture. The inability to explicitly define a therapy method as deviant from the norm makes this research more subjective than strictly scientific research about traditional medicine practices. Another difficulty is that several of the alternative healing modalities may be combined; for example massage therapists may use aromatic oils and intuitive counseling together with massage (Engebretson and Wardell, 1993). This inability to separate alternative methods may restrict the scope of research, so that general conclusions may have to be drawn about a grouping of alternative modalities, instead of one specific therapy. These factors make the research more challenging, but the condensation and evaluation of the information will be beneficial.

RESULTS and DISCUSSION

Acupuncture

There are vast differences between Western and Eastern medicine. Western medicine is more focused on the specifics, such as how intricate processes work. Eastern medicine, for example acupuncture, is more focused on the body as a whole, including the mind and spirit. As Eastern and Western medicine begin to converge in America, many scientists have a difficult time accepting acupuncture as a legitimate medical practice. Before that judgment is made, one must know what acupuncture is as well as the current hypotheses describing how acupuncture works physiologically.

The Eastern Practice and Beliefs

According to Chinese medical and philosophical teaching, a healthy body contains a free and uninterrupted flow of Tch'i or Qi, which may be

defined as 'vital energy' (Moss,1964). This balanced energy flows through the body in channels called meridians. The meridians run from the main organs, through the muscles, to areas just beneath the skin, creating an endless cycle of free-flowing energy (Wong and Fung,1991). The points at which the channels of energy emerge from the muscle to the skin are known as acupoints. Traditional Chinese thought regards acupoints to be specific points of energy exchange between the living organism and the surrounding environment (Wong and Fung,1991). If there is a blockage of the free-flowing energy, the energy may build up to the point where it cannot be contained. The energy may be transferred out of the normal cycle or pathway to another part of the body, which may cause pain, tension, or discomfort.

The goal of acupuncture is to restore the free flow of energy through the meridian. In other words, to break down the blockage of energy. This will improve the functioning of the organs and restore the patient's health (Moss,1964). The traditional method of acupuncture is to place a needle or needles at fixed points in one or several of the affected meridians. Heat, in the form of moxa, is also a traditional method of stimulating the acupoint. Presently, technological advances are deriving new methods to stimulate the acupoint, such as electrical impulses and lasers.

Whatever method is used, the acupoint is stimulated. Physiologically, the stimulation which is detected by the peripheral afferent fibers is transmitted via action potentials to the main nervous systems. The afferent fibers that seem to be most affected by stimulation in acupuncture are often in the alpha and beta range (Levin and Hui-Chan,1993). The output from acupoints via thin and thick nerve fibres is transmitted to almost all levels of the central nervous system and causes either a raising of the threshold for pain or a change in its modality. The various sensory inputs not only interact at the level of the dorsal horn of the spinal cord but also at numerous higher levels of the brain. This is an understanding based on general knowledge of how nerve impulses are transmitted.

The Western Explanations

Although acupuncture therapy has a long history of effectiveness, the specific mechanisms underlying these claimed successes are still obscure. This fact inevitably hampers its further development and the proper assessment of acupuncture as a therapeutic tool (Wu,1990). The practice of acupuncture is based on a theoretical system different from the Western understanding of human anatomy and physiology; it has developed through experience and observation (Wong and Fung,1991). In fact, it is thought that acupuncture is actually a compilation of at least three different philosophical concepts (Wu,1990).

Although the actual mechanisms of acupuncture are not known, scientists do have several hypotheses. One explanation may be that the energy found at the acupoints is an electrical potential that is produced by the cells of the body when they undergo biophysical and biochemical reactions (Wong and Fung,1991). The physiological effects of this electrical potential may include alteration in the permeability of the cellular membrane, increase of the pain threshold, and the induction of the release of endorphins (Wong and Fung,1991).

Another hypothesis is based on a study in which the participants reported propagated sensations. It was found that changes in electromyograms, decrease in skin resistance and changes in local blood flow accompanied the propagated sensation during acupuncture (Wu,1990). It was suggested that the perivascular autonomic plexus is involved in this propagation sensation. The sluggish conduction of the propagated sensation is suggestive for the involvement of this perivascular autonomic plexus which is a quasi-nervous structure that entwines blood vessels and is related with the neurilemma or the sheet of Henle (Wu,1990). The perivascular autonomic plexus is thought to be related to the sympathetic innervation of skeletal muscles. Another possibility is that the propagated sensation is the result of processes like the spread of excitation in the central nervous system (Wu,1990).

Another hypothesis is that signals evoked by acupuncture ascend in the ventrolateral column of the spinal cord to the brain stem and project to a wide variety of areas in the brain including the reticular formation, the raphe nuclei, the peri-aqueductal gray matter of the midbrain, the medial nuclei of the thalamus, the hypothalamus, the septal area, the cingulate gyrus and the cerebral cortex (Wu,1990). It is thought that stimulation of certain parts of the brain may cause or inhibit discharges of pain-sensitive neurons (Wu,1990). If this is the case, then neurotransmitters are essential elements in the mechanisms underlying acupuncture's ability to cause the patient to feel no pain (analgesia). Four neurotransmitters currently being researched are opioid peptides (OP), serotonin (5-HT), noradrenaline (NA), and acetylcholine (ACh). In scientific studies, when acupuncture successfully induces analgesia, the levels of these neurotransmitters are increased. When analgesia is not produced through acupuncture, no change in the levels of neurotransmitters is found. This information seems to indicate that neurotransmitters have a integral role in producing analgesia through acupuncture.

It is obvious that there are many possibilities as to how acupuncture works physiologically. The three hypotheses described above are not the only valid explanations. Currently, the majority of researchers in Western medicine attribute acupuncture's effectiveness to the needle's stimulation of the brain chemicals such as endorphin, the natural opiate that

induces euphoria and counteracts pain (Henig, 1994).

Massage Therapy

Massage is another alternative therapy that is becoming more popular. Massage is the systematic manipulation of soft tissues of the body for therapeutic purposes (deLateur and Geiringer, 1990). It has been used throughout history in attempts to treat innumerable disorders. The hands are the most common and effective way to deliver massage; the palpitation ability of the hands can help the massage therapist to assess the patient as well as to treat the patient.

Massage Techniques

Muscles are massaged using a variety of strokes and movements. With the recent rise in popularity, new methods of massage are arising. Massage therapy can range from Swedish massage, myotherapy, and sports-massage to other forms. However, there are basic types of massage. Effleurage massage is a stroking and gliding movement, petrissage is a kneading movement, and tapotement is a percussion movement (deLateur and Geiringer, 1990). Another type of massage is used as a soft tissue mobilization; friction massage is applied parallel or perpendicular to muscle, tendon, or ligament fibers (deLateur and Geiringer, 1990). Rolfing is a type of massage that was designed to counteract the effects of gravity on the balance of the body. Skilled manipulations are used to rebalance and align the body. Rolfing uses a deep massage with the knuckles to loosen the fascia and muscle and facilitate the return to their proper position (Engebretson and Wardell, 1993).

Effects on Patients

The effects of massage are interactive; they involve psychological aspects as well as the physiological manipulation. Nevertheless, more research has been conducted on the physiological aspect of massage. In one study, the effects of massage were observed when an edematous limb received massage. In this case, the results were improved venous return, increased superficial blood flow, sedation, muscle relaxation, arteriolar constriction or dilation, and the prevention or breaking up of adhesions with friction techniques (deLateur and Geiringer, 1990). A similar study found that massage may also reduce pain and tension as well as release 'muscle memory' from physical or psychological trauma (Engebretson and Wardell, 1993).

In another study, researchers examined the effects of therapeutic massage on perception of pain intensity, anxiety, and relaxation in patients with a cancer diagnosis (Ferrell-Torry and Glick, 1993). A variety of nursing interventions for modifying pain have been studied, such as relaxation techniques, music therapy, and therapeutic touch. However, these modalities had not been tested with cancer patients. Therapeutic massage is one alternative therapy that addresses the modification of myofascial and muscle tension types of pain and possibly other forms of cancer pain by reducing muscle tension and spasm (Ferrell-Torry and Glick, 1993). It is thought that these modalities may relax the patient, reduce anxiety, and modify pain to an acceptable level. In this study, therapeutic massage was defined as "A rhythmic, sensitive form of touch performed by a specially trained individual with a desire to communicate empathy to the recipient, thus producing positive psychological and physiological states of being" (Ferrell-Torrey and Glick, 1993). The researchers found that the use of therapeutic massage did improve cancer patients' self-reported perceptions of pain, anxiety, and relaxation. This positive effect was further indicated by decreases in sympathetic nervous system activity.

SUMMARY AND SYNTHESIS

Massage is not a new treatment; it has been used for a variety of illnesses for over 3000 years (Ferrell-Torry and Glick, 1993). However, it is closely related to physical therapy; they can actually be grouped together under the term manual therapy. Manual therapy may include massage, passive and active-assisted range of motion, joint distraction or traction, and joint mobilization and manipulation (Fitzgerald, et al., 1994). It is difficult to design experimental studies that examine the effectiveness of manual therapy for many reasons. There are philosophical differences in the outcome measures used to determine treatment effectiveness. For example, some therapists describe pain in response to passive motion as an important outcome, whereas others feel that the degree of motion available is the most important factor (Fitzgerald, et al., 1994). If accurate studies are to be completed, careful consideration of important issues such as operationally defining treatments, adequately describing clinical decision-making strategies, patient selection, and using logical measurement procedures for outcome assessment can enhance the quality of manual therapy research (Fitzgerald, et al., 1994). This is an issue that must be clarified for the research in the area of manual therapy to continue.

Both acupuncture and massage are modalities that have been used for years but have experienced an increase in popularity in the recent years. They both are alternative therapies and not widely used on a broad spectrum in the Western society due to lack of scientific knowledge. When acupuncture is used, a completely different belief system is in operation. The patient must have an open mind toward the beliefs and practices used. Massage therapy also has a psychological aspect to its effectiveness; but since it is more closely related to scientifically accepted

practices like physical therapy, the patient's attitude toward the treatment may have to be less open. People may be more prone to try massage therapy than acupuncture due to the nature of the therapy. If a person subscribes to acupuncture, then the Eastern philosophy about healing should be believed if the treatment is to be as successful as possible. For example, if a person tries acupuncture but believes that it is not a valid form of treatment, then the treatment may not be very effective for that person. This is an example of the psychological aspect of most alternative modalities.

Acupuncture and massage therapy are modalities that have demonstrated effectiveness through research. However, the scientific community and society may be slow in accepting them as valid healing practices until definite physiological explanations can be found. This is definitely a consideration, but if the treatment works, then who is to say it is not valid? Perhaps in the future, Eastern and Western medical practices will continue to become integrated, as they have begun to in the past few years. The wealth of knowledge that the Chinese have known for centuries about healing could be incorporated into Western knowledge. This would broaden the base of medical knowledge, that could eventually lead to more effective and more encompassing medical care, which would obviously be beneficial to the patients and to society.

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