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Neurophysiological Measurements of Pranic Healing Using Functional Magnetic Resonance Imaging (fMRI)

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Introduction

Medical imaging methods provide a unique tool for the quantitative evaluation of the healing process, even when brought about by non-conventional means, including the use of subtle energy methods and/or spirituality. Here we describe a series of preliminary studies in which functional magnetic resonance imaging (fMRI) has been used to measure neurophysiological changes in subjects treated by a healer, even from a distance. Specifically, two experienced Pranic Healers who were also experienced acupuncturists, were instructed to focus the subtle energy used during pranic healing on the acupoint UB₆₇, known to be related to vision, in a human subject undergoing fMRI studies of the visual cortex area of the brain. Focusing of the subtle energy (prana or Qi) onto the acupoint produced a stimulation of the visual cortex identical to that produced by needle stimulation of the acupoint. Initially, the Pranic Healers were immediately adjacent to the subject undergoing fMRI, with their hand, from which the subtle energy was said to emanate, only a few inches away from the skin surface above

UB₆₇. However, additional experiments in which the healers were located some distance from the subject produced identical results with fMRI, confirming the possibility for healing at a distance.

These preliminary studies using fMRI to observe the application of pranic healing methods provide a bridge between two rather disparate studies recently conducted by the author. The first is an investigation of acupuncture using fMRI. Here, correlations between specific brain cortices and corresponding acupoints were demonstrated. The second is an investigation of Pranic Healing using HeLa cells in culture subjected to gamma radiation. Here, we measured the effect of the healing modality in modifying the survival rates of cells subjected to radiation. In the present study we have used Pranic Healing methods to stimulate an acupoint with fMRI providing a measure of that stimulation. Since this bridging study is best understood in the context of our two earlier studies, we first describe our investigation of acupuncture using fMRI, then describe our investigation of Pranic Healing using cells subjected to radiation, and finally describe our preliminary investigation of Pranic Healing using fMRI.

Correlation Between Acupuncture and Direct Visual Stimulation

Using Functional MRI

Although the effectiveness of acupuncture has been well demonstrated, even in the Western literature (1 - 3), the practice of acupuncture, described in the classical literature of Oriental medicine (4), is based on millennia of experience with little or no scientific correlation. Historically, acupuncture is believed to treat the diseased organs or related disorders directly without intermediary control mechanisms. For example, the Urinary Bladder Channel, UB₆₇, is

believed to be an effective acupoint which directly treats eye-related disorders (5, 6). Various acupoints are related to corresponding specific organs rather than to the central nervous system (CNS).

In contrast, the major thrust of contemporary Western medicine has been to detail the complexities of the brain and to trace the connections between the brain and various disorders and diseases of the body. With the recent development of positron emission tomography (PET) (7, 8) and magnetic resonance imaging (MRI) (9, 10), many details of brain function have been revealed (11), although still in a more qualitative than quantitative manner. Now with the development of functional MRI (fMRI), basic relationships between the various organs and the corresponding brain cortical areas are being demonstrated (11 - 13) and visual, auditory, and motor functions correlated with brain activity (14 - 22).

These recent developments in fMRI can be used for the quantitative study of the correlation between various acupoints and specific functional areas of the brain with the hope of establishing a clear correlation between acupoints and various disorders and/or diseases. If such correlations are found to exist, then the treatment by acupuncture may be mediated via control of CNS mechanisms, not the direct interaction between acupoints and involved organs as traditionally believed. Empirical data and experience may also facilitate more accurate treatment of disorders and diseases. Recently, some acupuncture effects have been reported using fMRI (23, 24), but no direct brain-acupoint correlations have been shown.

In experiments conducted by this investigator and his associates (25), fMRI was conducted on each of 12 volunteers, first during direct visual stimulation of the eyes and then during the stimulation of a known visual-treatment acupuncture site on the foot. The volunteers,

each of whom gave informed consent in writing, were all healthy and ranged in age between 21 and 30 years.

All studies were conducted on the KAIST 2.0 T whole - body MRI system using the conventional gradient echo sequence. Each volunteer was positioned and secured in the standard head coil to avoid misregistration artifacts. Initially, an inversion recovery T₁ weighted image was obtained for the reference anatomical image of the visual cortex. For the experimental study, the following MRI parameters were used: 60 ms repetition time, 27 ms echo time, 40 ° flip angle, 220 mm field of view, 10 mm slice thickness, and 10 s for single image acquisition. A total of 25 images were made for each stimulation study. The first five of these images were obtained in a resting state (without stimulation), the next five were obtained during stimulation, the next five without stimulation, and so forth, until 25 images were recorded.

For direct visual stimulation, a standard checker board pattern of lights was used which flashed randomly at a frequency of 8 Hz. For acupuncture stimulation the acupoint in the foot known as Urinary Bladder Channel UB₆₇ was initially selected since it is known as a treatment point for eye disorders. During acupuncture stimulation the acupuncture needle was continuously twisted; during periods of non-stimulation, the needle was removed. Figure 1 shows fMRI images of volunteer 1 under conditions of direct visual stimulation, acupuncture stimulation at acupoint UB₆₇, and acupuncture stimulation at a non-acupoint in the foot. Here the yellow highlights superimposed on the MRI image of the brain are fMRI responses to the applied stimulation. Note the clear correlation between the activity in the visual cortex under direct visual stimulation and the activity produced by the acupuncture stimulation of UB₆₇. Also note

that acupuncture stimulation at a non-acupoint produces no activity in the visual cortex but only signals that might best be characterized as random noise.

Evaluation of Pranic Healing Using Radiation of Cells in Culture

Next, we summarize our preliminary study of Pranic Healing using the radiation of cells in culture (26, 27). Now Pranic Healing is a so-called biofield therapy established in China thousands of years ago but rediscovered and reformulated in recent times by Master Mei Ling (6th Century AD) and Master Choa Kok Sui (20th Century AD). Pranic Healing is a type of “subtle energy” medicine in which the practitioners believe that they are able to tap into what is termed “prana” or “chi”, the “universal force” or “life force” and to use this “energy” to promote or enhance healing. Here “energy” is used metaphorically for processes we do not understand that seem to involve interactions above and beyond conventional energy.

The basis for Pranic Healing, as described by practitioners, stems from observations made by certain sensitive people who are said to perceive “energy fields” or “auras” of color surrounding the human body. This ability to see auras is known as clairvoyance. The colors in the “aura” and the “energy centers” or “charkas” are said to shift constantly reflecting the state of health of the body. By projecting “energy” of appropriate “colors” the healer is said to be able to change the colors of the “aura” and therefore the state of health. Pranic healers are trained to sense and project these “energies” even without being clairvoyant. The Pranic Healing process involves three steps or stages. First, the healer gives blessings and recognition to masters and teachers that have provided guidance. Second, the healer scans the energy or the aura of the subject to diagnose any abnormalities. And third, the healer cleans and energizes the body, the

charkas, and the aura of the subject with prana of appropriate colors to promote healing and balance.

The objective of our preliminary study was to critically evaluate Pranic Healing in a laboratory setting. For an experimental model we choose HeLa cells in culture subjected to gamma radiation. Specifically, we investigated possible mediation effects of Pranic Healing on HeLa cells in culture subjected to gamma radiation. Thus, we measured radiation survival rates for the cells with and without Pranic Healing. This laboratory model using a well known human cell line is well established and well characterized.

A single experiment used 10 identical petri dishes with HeLa cells in culture. The dishes were numbered: A1, A2, B1,, E2. Here, A1 and A2 served as controls; B1 and B2 were subjected to radiation only; C1 and C2 were given Pranic Healing after radiation; D1 and D2 were given Pranic Healing before radiation; and E1 and E2 were given pranic healing both before and after radiation. Radiation levels and exposure times were chosen to produce a 50% survival rate 24 hours post radiation. In this study we conducted 70 such single experiments using four different Pranic Healers. In one of the single experiments, a group of 24 healers worked on the cells. The results of this preliminary study are summarized in the table below.

TREATMENT OF CELLS BY INDIVIDUAL PRANIC HEALERS

<u>Designation</u>	<u>Survival Rate, 1 Day Post Radiation</u>
A (control)	~ 100%
B (radiation only)	~ 50% (range: 49.4% - 50.7%)
C (PH after radiation)	~ 70% (range: 67.4% - 71.8%)
D (PH before radiation)	~ 80% (range: 78.1% - 82.9%)
E (PH before and after radiation)	~ 90% (range: 87.8% - 93.4%)

These results indicate that treatment of the cells with Pranic Healing produces a major change in cell survival rate. It should be noted, however, that this table is based on 61 single experiments where the Pranic Healer produced a positive results. In 8 single experiments or about 12% of the total runs, the Healer produced no effect whatever. The reasons for these failures remains unclear and is still under investigation. It would seem that Pranic Healing produces an effect at a certain level or produces no effect at all.

In a final single experiment (the 70th run), Pranic Healing was applied by a group of 24 healers. Treating the cells both before and after radiation produced a cell survival rate of 97%. This remarkable result suggests that the Pranic Healing effect is enhanced by group healing.

Although a second and more extensive publication (27) will provide a detailed analysis for these and many additional experiments, we can summarize some of our findings here. First, the distance between the healer and the cells was unimportant. Initially, each healer worked on the cells in my laboratory at UCI. Additional experiments were done with the healer at a distance (in some cases, 6000 miles). The separation between cells and healer had no effect on the result.

Secondly, the shielding of cells from EMF and gamma radiation had no effect on the results. In one extreme case, both the healer and the cells were shielded and separated by a distance of some 6000 miles. These results were indistinguishable from those in which the cells and healer were in the same room and without shielding.

Thirdly, the experience of the healer was found to be slightly important. However, even a beginning student could produce a positive result.

As a final note to this study of Pranic Healing we can only conclude that these findings are difficult (if not impossible) to explain in terms of the standard scientific paradigm.

Evaluation of Pranic Healing Using fMRI

Finally, we bring together the two rather diverse studies of Pranic Healing and of acupuncture using fMRI and use medical imaging (in the form of fMRI) to study Pranic Healing. Two healers used in our previous HeLa cell study were also experienced in acupuncture and had participated in our studies of acupuncture using fMRI. Each of these healers were instructed to focus the subtle energy used during pranic healing on the acupoint UB₆₇, known to be related to vision, in a human subject undergoing fMRI studies of the visual cortex area of the brain. Focusing of the subtle energy (prana or Qi) onto the acupoint produced a stimulation of the visual cortex identical to that produced by needle stimulation of the acupoint (see Figure 2). Initially, the Pranic Healers were immediately adjacent to the subject undergoing fMRI, with their hand, from which the subtle energy was said to emanate, only a few inches away from the skin surface above UB₆₇. However, additional experiments in which the healers were located some distance from the subject produced identical results with fMRI, confirming the possibility for healing at a distance. These preliminary studies suggest that medical imaging methods could play an important role in the investigation of a variety of healing modalities.

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Figure Captions

Figure 1. fMRI images through the visual cortex of a volunteer under conditions of (a) direct visual stimulation, (b) acupuncture stimulation at acupoint UB₆₇, and (c) acupuncture stimulation at a non-acupoint in the foot.

Figure 2. fMRI images through the visual cortex of a volunteer under conditions of (a) standard acupuncture stimulation at acupoint UB₆₇ using needles, (b) stimulation of the same acupoint by a Pranic Healer focusing energy or prana onto the point, (c) stimulation of a non-acupoint by a Pranic Healer.