

Experimental

MEDITATION, T-CELLS, ANXIETY, DEPRESSION AND HIV INFECTION

by William H. Koar, Ph.D.

ABSTRACT

The practice of meditation, specifically Qigong, was hypothesized as being potentially helpful to HIV-infected individuals. The intervention was assumed to be stress-reducing. Anxiety, depression and T-cell counts were measured. A statistically significant increase in T-cells and a statistically significant decrease in anxiety and depression were found. A control group was not included in this pilot study.

KEYWORDS: Meditation, Qigong, HIV, anxiety, depression

INTRODUCTION

Human Immunodeficiency Virus (HIV) infection is an incurable disease. Many people believe scientists will eventually find a cure. The infected person may well ask, how can I prolong my life until such an event occurs.

Meditation is thousands of years old and has been practiced in both Eastern and Western cultures. Traditionally, meditation was synonymous with a quest for enlightenment. In China, however, a religion called Taoism developed. Taoism equates spiritual enlightenment with longevity and uses meditation to try and obtain the perfect health necessary for a long life. Taoists call this practice Qigong.

This research project chose to use Qigong meditation, for a number of reasons: one, its emphasis on health; two, during the Cultural Revolution, the practice was stripped of all religious trappings, making it least likely to offend a participant's belief system; three, a qualified teacher was available and eager to participate.

It has been established that stress and emotions like anxiety and depression are associated with immune changes. Seyle elucidated some of the negative physiological consequences of a failure to adapt to prolonged stress in animals.¹

Stress may be a precursor to depression. Kronful, Turner, Nasrallah, and Winokur found blunted immune responses to mitogens and antigens in depressed psychiatric patients compared to non-depressed patients.² Schliefer *et. al.*, found lower numbers of thymus cells (T-cells) and bone marrow cells (B-cells) in a group of psychiatric patients diagnosed with major depression.³ Kemeny *et. al.*, found a steeper T-cell decline in chronically depressed HIV positive men compared to nondepressed HIV positive men.⁴

Stress may also be a precursor to anxiety. Medical school examinations have measured effects associated with anxiety. Glaser, Keicolt-Glaser, Speicher and Holliday found higher levels of antibodies to herpes simplex virus I, Epstein-Barr virus (EBV) and cytomegalovirus (CMV) in medical students during examinations as opposed to one month before examinations.⁵ The authors

speculated that anxiety inherent in these stressful examination periods allowed reactivation of dormant viruses in the students.

Ferguson and Gowan found lower levels of depression for meditators compared to controls.⁶ When they compared the depression levels of long time meditators to short time meditators, they found the longer a person meditated, the more their depression scores dropped. When Goleman and Schwartz showed subjects a movie of a gruesome industrial accident, they found meditators reported less anxiety before and after than did controls.⁷ In another meditation study, Deberry used a group of geriatric subjects who had recently lost a spouse.⁸ Depression and anxiety scores were lowered after meditation was incorporated into the subjects' daily routines.

Ader, Felten and Cohen suggested HIV is a necessary, but not sufficient cause of Acquired Immune Deficiency Syndrome (AIDS).⁹ Rinaldo postulated that HSV 1, EV and CMV have the potential to be initiating factors in HIV's progression to an AIDS diagnosis.¹⁰ Further, factors other than viral can lower T-cell counts.

The above outline suggests several things. One, stress, depression, and anxiety may be an additional burden to HIV-infected individuals. Two, meditation has been shown to be helpful in alleviating depression and anxiety and by inference, stress. Consequently, it was hypothesized that the practice of Qigong might lower depression and anxiety and enhance immunity, as measured by T-cells in the HIV infected. Qigong, as opposed to other forms of meditation, was chosen to modulate mood states for reasons already stated.

METHOD

Daniel Yu Wang of the Chinese Life Force Institute in Santa Monica, California, volunteered to teach the subjects Qigong meditation. The subjects, all volunteers, were gathered by placing advertisements in various newsletters devoted to people with HIV and AIDS. Word of mouth also played a significant part in this effort.

SUBJECTS

All subjects were required to meet three criteria. They had to be HIV positive, they had to be willing to provide, at their own expense, pre- and post-T-cell counts and they had to be over 18 years of age.

Thirty people volunteered for the study. Twenty-six people completed the study. Only 21 of the 26 provided post-T-cell counts.

The subjects ranged in age from 27 to 56 years old; the average age was 38. Of the 26 who completed the study, four were female and 22 were male. Of the 21 who handed in post-T-cell counts, three were female and 18 were male. Thirteen of the 26 had a T-cell count below 200, giving them an official AIDS diagnosis by definition. No attempt was made, however, to classify subjects in terms of their symptoms.

INSTRUMENTATION

T-cell counts, the absolute number of a subset of lymphocytes, called T helpers or T4 cells, were provided by the subjects using various laboratories throughout the Los Angeles, California, area. Two psychological tests were used to measure emotional states. The Beck Depression Inventory and the Beck Anxiety Inventory.^{11,12}

PROCEDURE

The duration of the study was three months. During the first month, practice was held three times a week; during the second month, practice was held five times a week; and during the third month, practice was held three times a week. Each class lasted approximately two hours. (Variation in schedule was due to difficulty in finding practice space).

Each session began with a series of gentle warm-up exercises. The Qigong was done standing. The participants were asked to relax and assume a meditative state of mind. Energy and different colors were visualized as flowing through the body.

DESIGN

A one-group, pretest-posttest design was used. T-cells counts and psychological measures were collected at the beginning, at the half-way point, and again at the end of the study.

RESULTS

A number of subjects failed to provide a third T-cell count and a lesser number failed to provide a third depression or anxiety score. When this occurred, their second score was used in lieu of the missing third score.

As can be seen in Table I, the T-cell means gradually increased as the study progressed. The standard deviation initially increased and then decreased by the end of the study. A t-test for dependent samples found no significant differences between the first and second T-cell counts, but did find a significant difference between the first and third T-cell counts.

One subject's depression score was eliminated from the statistical analysis. He marked every box on his third Beck Depression Inventory (BDI), giving him the highest possible score. On questioning, the subject reported that he was upset the study was ending and he disliked psychological tests in general. As can be seen in Table I, the means and standard deviations of the BDI scores decreased as the study progressed. No difference was found between the first and second BDI scores, but a significant difference was found between the first and third scores.

Finally, as again can be seen in Table I, the means and standard deviations of the Beck Anxiety Inventory (BAI) scores also decreased as the study progressed. No difference was found between the first and second BAI scores. A significant difference was found between the first and third BAI scores.

DISCUSSION

The criticisms of using a one-group, pretest-posttest design are legion. I will not discuss them here, except to say that the ideals of science and the reality

Table I

Comparison of Results Across Time Periods.

	First Month	Second Month	Third Month
T-cells			
T-statistic		$t(20) = 1.58$ $p < .05$	$t(20) = -2.30$ • $p < .05$
Means	271.43	301.95	303.62
Std. Deviations	227.25	263.95	255.77
BDI			
T-statistic		$t(24) = 1.55$ $p < .05$	$t(24) = 2.21$ • $p < .05$
Means	9.08	7.28	6.56
Std. Deviations	6.47	6.83	6.25
BAI			
T-statistic		$t(25) = 1.49$ $p < .05$	$t(25) = 2.44$ • $p < .05$
Means	7.62	5.96	4.85
Std. Deviations	7.67	5.02	3.75

of working with people sometimes fail to coincide. This project was primarily meant as a pilot study. It is hoped the results will encourage other researchers to explore similar questions. As with many such studies there are dropouts at the second and third assessment points making unequal N's at all three assessments. Thus an overall one-way analysis of variance cannot be used without sacrificing sample size, which would be disadvantageous since the overall sample size is small anyway. Therefore, separate t-tests comparing the first and mid way assessments and the first and end assessments need to be done. Although this is less desirable statistically, it is necessary because of the missing data and the need to utilize as much existing data as possible.

The hypothesis that lowering depression and anxiety would result in an increase in immunity was somewhat substantiated. Sixty-four per cent of the subjects who experienced an increase in T-cell counts also experienced a decrease in their BDI and/or BAI scores. However, 36% either remained unchanged or increased on the above measures of depression and/or anxiety.

A more accurate hypothesis might have been: Using meditation as an adjunct therapy in HIV infection may be helpful in terms of immunity, depression, and anxiety management. Since all three dependent variables showed a statistically significant difference in the desirable direction, this statement seems tentatively valuable.

If one accepts the intervention as helpful, how are the results to be explained? A Western trained psychologist might say they are due to the placebo effect, stress reduction, or social support. A Chinese health practitioner might say they are due to increased levels of energy or Qi.

A clinical observation is worth noting at this point. Many of the subjects reported an increase in energy. Unfortunately, this was an unforeseen event and no attempt was made to measure energy levels. Future researchers might consider including such a measurement in their design. The results of increased energy may be just an unimportant artifact, or it may confirm a fundamental tenet of Eastern medical theory. The tenet holds that health and healing require abundant energy or Qi, and disease results from a lack or stagnation of same.

There are a number of alternative explanations for the results. The increase in T-cell counts could have been due to the use of medication or be part of the variation inherent in measurement. The study did not ask subjects whether they had used or were using antivirals or any other kinds of medication. It was felt that to do so might encourage the perception that the researchers endorsed one particular course of action over another. On the other hand, any randomly selected sample of HIV infected individuals would no doubt include persons taking and not taking medication, especially in an alternative-health conscious population as found in Los Angeles, which speaks to the issue of generalizability. Ideally, one wants an intervention that is helpful in as many different situations as possible.

Again, a clinical observation is worth noting. One subject, with an initial T-cell count of 175, reported he had never taken antivirals and that his T-cell count had always fallen since he became HIV-positive. This same individual was one of the first to register an increase in T-cells, 175 to 272. Other subjects said they were no longer taking antivirals because of their unpleasant side effects. It is also conceivable that antivirals could interfere with the presumed beneficial effects of Qigong, rather than account for them.

Surprisingly, T-cell counts increased for all the subjects who handed in a third report at the end of the study. Typically, Qigong teachers say it takes a long-term, concerted effort before one begins to see results from the practice.

In conclusion, T-cell counts are a very important piece of information to HIV-infected individuals. When they go up, elation follows; when they go down, discouragement and fatalism can ensue. An increase of 32 T-cells, on the average, may not be entirely trivial. From an emotional standpoint, decreases in depression and anxiety, should, at the very least, improve quality of life. If HIV-infected people are indeed condemned to shorter lives, this improvement seems all the more relevant.

A longer or differently designed study might have found a stronger relationship between emotions and immunity. The BAI, when analyzed for factors, contains two.¹² The first factor is comprised of physical symptoms, and the second factor is comprised of anxiety and panic symptoms. The overall reduction in BAI scores supports belief in a relationship between thoughts, feelings, symptoms, and health.

A pilot study attempts to answer whether a project is feasible and in this case, whether the intervention is potentially helpful or harmful. With regard to feasibility, this pilot study had the advantage of being conducted in Los Angeles. This city provided a large pool of HIV-positive persons from which to draw, and a population perhaps more amenable to a meditational type approach. The practice of Qigong is difficult and time consuming. Westerners are not accustomed to standing in one spot for two hours doing internal work. Without the above advantages, the study might not have been possible. With regard to helpful or harmful effects, the results support a helpful interpretation. It is hoped these findings will spur other researchers with greater resources to consider similar studies.

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