Reviewer’s report

Title: Changes in cytokine production in healthy subjects practicing Guolin Qigong: A pilot study

Authors:
Brian M Jones (bmjones@ha.org.hk)

Version: 1 Date: 31 Aug 2001

Reviewer: Dr K.W. Kelley

Level of interest: A paper of considerable general medical or scientific interest

Advice on publication: Accept after revision, which I do not need to see

BMC Complementary and Alternative Medicine

Reviewers: Wenhong Shen and Keith W. Kelley

Title: CHANGES IN CYTOKINE PRODUCTION IN HEALTHY SUBJECTS PRACTICING GUOLIN QIGONG: A PILOT STUDY

Author: Brian M. Jones

The mystery of oriental medicine is finally receiving more than lip service, and its potential use in clinical medicine is rapidly growing in western countries. Oriental medicine is a mystery because the mechanisms involved in its functions are largely unknown. This manuscript applies a modern biomedical approach to investigate how Qigong might alter the number of cytokine secreting cells (CK-SC) derived from peripheral blood. Qigong is a type of exercise that emphasizes mind/body interventions. Its psychoneuroimmunological roles are being gradually documented. This pilot study was "designed to investigate effects of Qigong on in vitro cytokine production in 19 healthy volunteers and to determine whether further evaluation of its effects on the cytokine profiles of patients with cancer would be valuable." A significant increase in the IFNg:IL10 ratio was found after 3, 7 and 14 weeks of daily Qigong practice. At 3 and 14 weeks, but not 7 weeks, the practice of Qigong marginally but significantly reduced plasma cortisol, an inhibitor of type 1 cytokine production. If repeatable, this is a potentially important finding because IL-1 is well-documented to activate the hypothalamic-pituitary-adrenal axis. Indeed, the fact that these results are statistically significant with such a small number of subjects suggests that there may be real biological effects of Qigong. The authors conclude that Qigong pushes cytokine production in healthy subjects in the direction of type 1 responses. As a pilot study, this report is a positive beginning for further studies aimed at identifying immunological changes that are regulated by Qigong. This could be particularly relevant for patients with clinical diseases that are known to be associated with a predominance of type-2 cytokines.

Major concerns with this manuscript are listed below:

1. Self-controls were used to compare cytokine production before the volunteers were taught the practice of Qigong and after 3, 7 and 14 weeks of daily practice. An obvious advantage of this type of
experimental design is that each subject serves as its own control. However, the practice of Qigong shares properties with generic exercise training, such as the stimulation of body movements and a change in personal daily routines to account for time spent in Qigong. One could imagine that an exercise that requires similar physical movements and an identical training schedule, but without meditation and controlled breathing, might induce similar changes in cytokine production. In order to begin to dissect the specific component of Qigong that is responsible for changes in cytokine production, another control group is needed. This group would consist of subjects who are told to practice a similar exercise without the other components of Qigong. It is unrealistic to add this control to the present study, but a comparison between the effects of Qigong and other exercises on cytokine production should be addressed in the "Discussion".

2. Qigong caused only small changes in cytokine production that were not very impressive, even though statistical analyses showed these differences were not due to chance alone. The large variation in some groups, probably associated with the small number of experimental subjects, made it difficult to detect reliable differences (e.g., IL-10 production in PHA-stimulated cells (14 weeks in Fig. 4B) and LPS-stimulated IL-6 production (14 weeks in Fig. 2A)). In the latter figure, IL-6 production in the LPS treatment was almost the same as that in the SAC group, but statistical analysis showed significance for LPS but not for SAC stimulation. The author ignored the latter findings. However, the author realized that polarization towards type 1 responses was not found with all in vitro stimuli and that there were no noticeable effects of Qigong on the key inducer of type 1 cytokines (IL-12) and a central player in type 2 responses (IL-4). Since both negative data and a small number of subjects weaken the significance of this study, the author should temper some of the broad, sweeping interpretations that were presented in the discussion section of the manuscript.

3. Additional information is needed to explain the biological significance of the different stimuli that were used to induce cytokine synthesis. More importantly, the author needs to explain why data from unstimulated cultures were not presented (e.g., IFNg in Fig. 4A).

4. This objective of this study was to determine whether it would be useful to further evaluate the effects of Qigong on cytokine profiles of cancer patients. However, the discussion does not include these new results to address the issue of how cytokine secretion in cancer patients might be affected by the practice of Qigong.

5. Some important technical concerns should be addressed. These are: (a) Age of the subjects should be given in the abstract; (b) The author does not present convincing evidence that isotype-matched control antibodies were used in the ELISPOT assay. By substituting these control antibodies for the antigen-specific antibodies, the actual number of specific cytokine secreting cells could be determined; (c) The author should only reference peer-reviewed papers or edited books, not abstracts or proceedings from meetings. References 4, 6, 9, 10, 11, 15 do not appear to meet these criteria; (d) The figure legends need to be expanded so that they more clearly describe the data; and (e) The ordinates of all graphs are impossible to read.

Level of Interest

Data in this manuscript are of general medical and scientific interest. Since there have been few peer-reviewed studies on the relationship between Qigong and cytokines, this pilot study represents a positive beginning for identifying immunological events that may be regulated by the practice of Qigong.

Competing interests:
None declared.