



## Brief Commentary

## Biofield therapies and psychoneuroimmunology

Paul J. Mills<sup>a,b,\*</sup>, Shamini Jain<sup>c</sup><sup>a</sup> Department of Psychiatry, University of California at San Diego (UCSD), La Jolla, CA, USA<sup>b</sup> Symptom Control Group, UCSD Moores Cancer Center, La Jolla, CA, USA<sup>c</sup> Division of Cancer Prevention and Control Research, University of California at Los Angeles, Los Angeles, CA, USA

In this issue of *Brain, Behavior, and Immunity*, Lutgendorf et al. (this issue) report on a prospective randomized clinical trial that examined the effects of a biofield therapy (versus relaxation therapy or standard care) on natural killer cell cytotoxicity (NKCC), depression and quality of life in cervical cancer patients receiving chemoradiation. Biofield therapy? This type of *Complementary and Alternative Medicine* (CAM) therapy includes practices such as Healing Touch, Therapeutic Touch, Qi gong, and Reiki. The National Institutes of Health (NIH) National Center for Complementary and Alternative Medicine (NCCAM) describes biofield therapies as “intended to affect energy fields that purportedly surround and penetrate the human body” (NCCAM Publication No. D347). Biofield therapies seek to work with the human body’s putative vital energy field, which has been described across cultures as *chi*, *qi*, *ki*, and *prana*, such that changes in the field interact with and lead to changes in physiology as well as mood. This theory has its roots in traditional medical practices such as Ayurveda and Chinese Medicine.

Among all of the CAM modalities, biofield practices are without doubt the most controversial. They do not fit conceptually with the traditional allopathic medical understanding of the human body or with broader Western scientific concepts of physiological and biochemical systems, although there are increasing efforts to understand and describe such interfaces (e.g., Brown, 2009; Tafur et al., 2010). The use of biofield therapies, particularly in cancer patients, has increased significantly in recent years and hence presents a need for more rigorous evaluation of their potential effectiveness.

Lutgendorf et al.’s study is noteworthy for several reasons. First, the design represents how biofield practices are generally used as complementary therapies in cancer (i.e., patients use these approaches in conjunction with, as opposed to as an alternative to, standard treatment). The findings suggest the need to further investigate these and other complementary strategies as part of an Integrative Medicine model. Integrative Medicine refers to the integration of conventional, allopathic medicine with complementary medicine modalities that have demonstrated strong scientific evidence of safety and effectiveness. Integrative Medicine is a more

holistic approach to medicine, taking into account the whole person and also emphasizing the therapeutic relationship in conjunction with the therapies themselves. In the USA, there are currently at least 44 academic Integrative Medicine centers (Consortium of Academic Health Centers for Integrative Medicine; <http://www.ahc.umn.edu/cahcim>) which seek to conduct high-quality research on complementary/integrative medicine and advance the principles and practices of integrative healthcare within academic institutions.

Second, Lutgendorf et al.’s findings are important because they show clinically and statistically significant reductions in depressed mood for the Healing Touch group (but not the relaxation or standard care groups), indicating promise for this intervention for reducing this all-too common and debilitating cancer symptom. Mitigating depression in cancer is of utmost clinical relevance. Given our current understandings on the linkages between depression and inflammation as well as depression as a possible risk factor for cancer disease progression (see, e.g., Miller et al., 2008), Lutgendorf et al.’s study highlights the potential value of and need for further investigation of biofield therapy approaches in reducing depression and related symptomatology in cancer care.

Third, Lutgendorf et al. showed that over the 6-week chemoradiation treatment period, women in the Healing Touch group showed no significant loss of NKCC whereas women in the relaxation and standard care groups showed a sharp and significant decline of approximately 55%. We find the NKCC results striking, intriguing and potentially clinically important (Beano et al., 2008). While the reductions in depression were not found to mediate the NKCC results in this small sample of treated patients, investigating potential mechanisms driving these immune changes warrant further investigation in larger studies. Lutgendorf et al. explore several possible non-biofield (e.g., social support, expectation and touch) as well as biofield explanations. Regarding the latter hypothesis – that Healing Touch practitioners were able to successfully manipulate the participant’s biofields in such a way as to preserve NK function – is highly controversial. However, several recent and well-controlled studies in cellular models suggest the possibility of a direct effect of biofield-based therapies on cellular signaling mechanisms in cancer and other models (e.g., Jhaveri et al., 2008; Yan et al., 2008), although not all studies have reported positive effects (e.g., Hall et al., 2007). While we have a long way to go in understanding potential mechanisms of such effects, there has been progress in developing the conceptual

\* Corresponding author at: Department of Psychiatry, University of California at San Diego (UCSD), 9500 Gilman Drive, La Jolla, CA 92093-0804, USA. Fax: +1 619 543 7517.

E-mail address: [pmills@ucsd.edu](mailto:pmills@ucsd.edu) (P.J. Mills).

foundations of how a human bioelectromagnetic energy body might interact with known biochemical and physiological systems, including the immune system (Brown, 2009; Movaffaghi and Farsi, 2009).

Looking more broadly at the human literature, we recently conducted a quality assessment and best evidence synthesis of 66 clinical studies that examined biofield therapies in diverse clinical populations (Jain and Mills, 2010). Within cancer populations, there was a surprising dearth of studies given the amount of patient demand and use of biofield and related therapies. There was moderate evidence for biofield therapies' effects on reducing acute pain intensity in cancer, equivocal evidence for effects on fatigue and quality of life, and no studies in cancer that had specifically examined depression or immune function. Lutgendorf et al.'s study helps to fill this latter need in the context of high-quality studies.

To try to put these findings in a historical perspective, 25–30 years ago studies on meditation were just gaining momentum and were considered a “fringe” area of research. However, because of the increased opportunities over time to study such interventions, currently its mechanisms of action are increasingly understood and its efficacy in reducing symptomatology and improving quality of life in many populations has been demonstrated. The study of biofield and other so-called “energy therapies” might be found to be fruitful in better understanding psychoneuroimmunological mechanisms that drive healing responses. Whether these effects are due to placebo factors (or the contextual healing effects of positive expectations), energy effects and/or other unknown mechanisms remains to be seen. Given

the results presented by Lutgendorf et al., as well as by others, further study of biofield therapies appears worth pursuing.

## References

- Beano, A., Signorino, E., Evangelista, A., Brusa, D., Mistrangelo, M., Polimeni, M.A., Spadi, R., Donadio, M., Ciuffreda, L., Matera, L., 2008. Correlation between NK function and response to trastuzumab in metastatic breast cancer patients. *J. Transl. Med.* 6, 25.
- Brown, D., 2009. The energy body and its functions: immunosurveillance, longevity, and regeneration. *Ann. N. Y. Acad. Sci.* 1172, 312–337.
- Hall, Z., Luu, T., Moore, D., Yount, G., 2007. Radiation response of cultured human cells is unaffected by johrei. *Evid. Based Complement. Altern. Med.* 4, 191–194.
- Jain, S., Mills, P.J., 2010. Biofield therapies: helpful or full of hype? A best evidence synthesis. *Int. J. Behav. Med.* 17, 1–16.
- Jhaveri, A., Walsh, S.J., Wang, Y., McCarthy, M., Gronowicz, G., 2008. Therapeutic touch affects DNA synthesis and mineralization of human osteoblasts in culture. *J. Orthop. Res.* 26, 1541–1546.
- Lutgendorf, S.K., Mullen-Houser, E., Russell, D., Degeest, K., Jacobson, G., Hart, L., Bender, D., Anderson, B., Buekers, T.E., Goodheart, M.J., Antoni, M.H., Sood, A.K., Lubaroff, D.M., 2010. Preservation of immune function in cervical cancer patients during chemoradiation using a novel integrative approach. *Brain Behav. Immun.* 24, 1231–1240.
- Miller, A.H., Ancoli-Israel, S., Bower, J.E., Capuron, L., Irwin, M.R., 2008. Neuroendocrine-immune mechanisms of behavioral comorbidities in patients with cancer. *J. Clin. Oncol.* 26, 971–982.
- Movaffaghi, Z., Farsi, M., 2009. Biofield therapies: biophysical basis and biological regulations? *Complement. Ther. Clin. Pract.* 15, 35–37.
- Tafur, J., Van Wijk, E.P., Van Wijk, R., Mills, P.J., 2010. Biophoton detection and low-intensity light therapy: a potential clinical partnership. *Photomed. Laser Surg.* 28, 23–30.
- Yan, X., Shen, H., Jiang, H., Zhang, C., Hu, D., Wang, J., Wu, X., 2008. External Qi of Yan Xin Qigong induces G2/M arrest and apoptosis of androgen-independent prostate cancer cells by inhibiting Akt and NF-kappa B pathways. *Mol. Cell. Biochem.* 310, 227–234.