Faint Praise, Imperfect Studies, and the Placebo Effect

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In ordinary conversation, it is axiomatic that "faint praise" is inherently derogatory. But even a disapproving comment can be made to sound flattering if it is skillfully quoted out of context. An ad praising an action movie for its "many thrills" may come from a review that complained: "It has as *many thrills* as a bowl of mashed potatoes." That is all innocent enough when the only thing at stake is the price of a movie ticket, but in medicine we deal with more weighty matters, and there can be serious consequences when a scientific study is quoted out of context, incompletely, or without attention to its flaws.

Some comparative studies are unavoidably imperfect, since creation of a suitable control group may not be possible. For example, when surgery is compared with medical therapy, sham operations are almost never ethical. The resulting studies are necessarily either non-randomized or non-blinded, and they pose the risk that inconclusive findings will be misinterpreted and disseminated widely despite their limitations. In an earlier issue of this *Journal*, and elsewhere, I have discussed the fact that even if randomized assignment to medical or surgical therapy is faithfully carried out, comparisons of such different treatments pose a host of subtle and unavoidable problems such as pre-randomization bias.[1,2]

A worse problem is the performance of a study that "proves" the benefit of a useless treatment because the study's design is intentionally flawed. A study that compares acetaminophen with a homeopathic treatment to reduce swelling after spraining an ankle could easily conclude that "homeopathy is better." (Neither treatment will have any effect on swelling, but an active drug like acetaminophen will likely cause side effects in some patients, while homeopathy, which has no pharmacologically active ingredients, will have no actual side effects.)[3]

Even less obvious, and therefore perhaps more problematic, is the issue I would like to address here—the study of relatively harmless therapies that affect primarily subjective symptoms that are difficult to assess objectively. Many complementary or alternative therapies fit this description. Poorly designed and/or inadequately controlled studies can mislead the public, and the public's belief in useless treatments is fostered by the lay press. (A distressingly high percentage of the American public has a poor understanding of science, reads a daily horoscope, and is fascinated by TV programs based on the supernatural. They are easily misled about the benefits of Echinacea for colds and other homeopathic remedies.)

TAI CHI AND FIBROMYALGIA

An entirely different aspect of this problem is illustrated by a carefully designed and meticulously analyzed study of tai chi for fibromyalgia, published recently in *The New England Journal of Medicine*.[4] Fibromyalgia is a poorly understood and complex clinical pain syndrome with no objective abnormalities on physical examination or standard blood or imaging studies. Investigators at Tufts Medical Center in Boston postulated that tai chi, a mind-body practice from China that combines meditation with rhythmic movements, ostensibly to redirect vital energy (qi) throughout the body, might be beneficial. Sixty-six patients who fulfilled the American College of Rheumatology 1990 diagnostic criteria for fibromyalgia* were randomly assigned to tai chi or to conventional stretching and wellness education twice weekly for 12 weeks. Physical and psychological improvement was assessed at 12 and 24 weeks by the Fibromyalgia Impact Questionnaire (FIQ), which is completed by patients as a subjective measure of their status. Assessments of global pain and physical

* A history of widespread musculoskeletal pain on both sides of the body above and below the waist, with a minimum duration of 3 months, and tenderness on pressure at 11 or more of 18 specific sites, with moderate or more severe tenderness on digital palpation.

capability were made by physicians who were blind to the therapeutic interventions. Scores for physical and mental quality of life were also compiled from the Medical Outcomes Study 36-item Short Form Survey. At 12 weeks there was "clinically significant improvement in the FIQ score and in the measures used to assess pain, sleep quality, depression, and quality of life, and these benefits were sustained at 24 weeks." The authors concluded that "tai chi is potentially a useful therapy for fibromyalgia."

In an accompanying editorial, Drs. Yeh, Kaptchuk, and Shmerling at Beth Israel Deaconess Medical Center/Harvard Medical School pointed out several weaknesses of the study, particularly uncertainty about what would be a credible sham or appropriate control for tai chi, and how much of its benefit is due to a placebo effect. It seems likely, they say, "that when a persuasive and enthusiastic teacher of tai chi first explained its potential benefits to the class, expectations in this group were heightened."[5] Further, how can we know which element of a "complex, multi-component therapy such as tai chi" is the active ingredient—"rhythmic exercise, deep breathing, contemplative concentration, group support, relaxing imagery, a charismatic teacher, or some synergistic combination of these elements?" For such a chronic and variable condition, whose very existence has been questioned, they call for replication of this study in larger groups over longer periods of time.[7] They conclude that "it is possible future studies will not replicate the dramatic findings of this small trial," but it is reasonable for physicians "to support patients' interest in exploring these types of exercises, even if it is too early to take out a prescription pad and write 'tai chi'."

In my view, this kind of healthy discussion in the scientific literature assures that imperfect studies and incorrect results will rarely be willfully misinterpreted, and even when that happens, the mistake will be short-lived. There is generally a healthy tendency to stay with accepted approaches until new ones have stood the test of time, and the desire for medical truth will triumph in the end. As Carl Sagan famously said, "Science is a system of thought that actively encourages heresy and gives its highest commendation to those who convincingly disprove established beliefs."[8]

The problem is that the lay press and the public are less discerning. When *The New York Times* reported on this study on August 18, 2010[**] under the headline: "Tai Chi Reported to Ease Fibromyalgia," the reporter cited the study's positive findings, but did not quote the editorial, nor mention any of its concerns, even though she spoke with two of its authors, Shmerling and Yeh.

My own view of how the individual physician should handle this particular type of complicated situation is to focus on the patient, since I always feel that a physician must put the patient first. Since many diseases have an important psychological component, and we know that the placebo effect is a powerful one, should we not acknowledge that it can be used to advantage? Provided that a patient's condition will not worsen while a possibly ineffective therapy is tried (we are talking about chronic fibromyalgia here, not cancer), what harm is done, as long as the therapy is harmless and inexpensive? Tai chi is practiced by millions worldwide and appears to have many salutary effects. If a patient with fibromyalgia feels better practicing tai chi, even if only because of a placebo effect, hasn't the patient benefited?

What do you think? Let us hear from you.

IN THIS ISSUE

This issue of the *Journal* offers several informative articles, but two in particular address issues that have been much in the lay press lately as a result of controversial recommendations about screening for cancer by the U.S. Preventive Services Task Force (USPSTF), an independent panel of experts in primary care and preventive medicine. The title of the first, "Challenging the Conventional Wisdom on Colorectal and Prostate Cancer Screening," is self-explanatory. I have asked two members of our editorial board with expertise in these two specialties (Dr. Bruce Pokorney, Gastroenterology, and Dr. Paul Sieber, Urology) to add their comments, which are published at the end of the article by Dr. Kenneth Lin, a graduate of our Family Practice residency who is now on the faculty of Georgetown University School of Medicine. The other, by Dr. Nitin Tanna, who is Section Chief of Mammography and Breast Imaging at LGH, demonstrates the benefits of modern mammography with illustrative mammograms

** As is well known, the lay press receives advance copies of the weekly *New England Journal* so science writers can prepare their articles about important studies in advance, but they are embargoed from publishing them until Thursday each week when the print *Journal* appears.

and a cogent argument that refutes the recent controversial recommendations for less frequent breast cancer screening. Also note that our regular column from the administration returns with a description by Susan Wynne, V.P. of Planning and Business Development, and Kent Carr, MD, Senior VP of Physician Services, on the remarkably varied and successful experience of LGH Urgent Care and Retail Clinics.

Finally, a few words about the three remaining articles. Attorney and F&M faculty member Laurie T. Baulig, whose article "Is there a right to be fat?" explored the legal aspects of obesity in the Winter 2009 issue of the Journal, discusses now a question that I, a non-attorney, might innocently phrase as: "Do we own every part of our bodies?" Her article, "Are There Property Rights in Human Tissue?" launches from a discussion of the best selling book *The Immortal Life* of Henrietta Lacks, whose cervical cancer cells, used in tissue culture without permission, have remained viable for 6 decades as the eponymous HeLa cells. (Coincidentally, the book's author Rebecca Skloot, is the daughter of much-published poet and author Floyd Skloot, who is a 1969 alumnus of Franklin and Marshall College.)

Rounding out this issue are two important articles: a Clinical Update by Joseph Kontra, MD about progress in management of sepsis; and our regular informative and entertaining Top Tips from Family Practice by Alan Peterson, MD, who writes about the benefits of eating nuts, and the dangers of lead poisoning, which can really drive you nuts.

The Winter issue of the *Journal* will be devoted to progress in the management of trauma. Until then, drive safely!

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