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Complementary and alternative medicine in breast cancer patients

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ABSTRACT

Objective: Complementary and Alternative Medicine (CAM) is becoming increasingly popular among cancer patients, in particular those with breast cancer. It represents one of the fastest growing treatment modalities in the United States. Therefore, knowledge of CAM therapies is becoming necessary for physicians and other health care providers. CAM encompasses a wide range of modalities including special diet and nutrition, mind–body approaches, and traditional Chinese medicine.

Methods: We reviewed the biomedical literature on CAM use in breast cancer patients, using Medline search from 1975 until 2002. In addition, consensus reports and books on CAM and breast cancer were included in the review. We evaluated the prevalence of CAM use in breast cancer patients, the reasons cited for its use, the different available modalities, and the reported outcomes.

Results: Use of CAM in breast cancer patients ranges between 48% and 70% in the United States. The most commonly used CAM modalities include dietary supplements, mind–body approaches, and acupuncture. The reasons cited for using CAM were to boost the immune system, improve the quality of life, prevent recurrence of cancer, provide control over life, and treat breast cancer and the side effects of treatment. Several studies reported favorable results including improved survival, better pain control, reduced anxiety, improvement in coping strategies and significant efficacy in treating nausea and vomiting. Other less well-organized trials have reported either no benefit or negative effect of CAM and potential toxicity of some commercial products.

Significance of results: CAM is a growing field in health care and particularly among breast cancer patients. Knowledge of CAM by physicians, especially oncologists, is necessary. Oncologists should be willing to discuss the role of CAM with their patients and encourage patients to participate in well-organized research about CAM.

KEYWORDS: Breast cancer, Alternative therapy, Complementary treatment

INTRODUCTION

Breast cancer is the most frequently diagnosed cancer in American women, and the second most frequent cause of cancer death (Parker et al., 1997). Over the past several decades, the incidence of the disease has been steadily escalating; the lifetime probability of developing breast cancer is currently estimated to be 1 in 8 women (Hankey et al., 1993). Established prognostic predictors are the size of the tumor, the nodal status, estrogen receptor (ER) status, and the presence of metastatic disease at presentation. In addition to the biological predictors, psychological factors have long been reported to be important determinants in outcome and survival

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in cancer patients at different stages of their disease (Weeks, 1992). In patients with breast cancer, studies have shown that good quality of life scores before treatment predicted a better response to chemotherapy (Greer & Silberfarb, 1982; Coates et al., 1992; Fraser et al., 1993; Walker et al., 1999), and that the more cancer patients become involved in their care, the better the quality of life they experience, regardless of their cancer status (Bahnson, 1980; Greer & Silberfarb, 1982; Spiegel et al., 1989). Many cancer patients seek to be deeply involved emotionally and spiritually in the process of recovering from cancer. These patients want to be listened to, to have their fears addressed, to be empowered by having choices, and above all, to continue to feel hopeful throughout the course of their illness. From this perspective, Complementary and Alternative Medicine (CAM) is becoming increasingly popular among cancer patients, driven by a need for attention and compassion that many patients are not experiencing in this era of rapid modern biotechnological medical care. CAM has been defined in 1993 by Eisenberg et al. (1993, p. 246) as "medical interventions that are not taught widely in medical schools or generally available in hospitals." CAM encompasses a wide range of modalities including alternative systems of medical practice such as traditional Chinese medicine (acupuncture), mind–body approaches (meditation, prayer, yoga, and guided imagery), herbal medicine, diet and nutrition, manual healing methods (Reiki, massage, postural training such as the Alexander technique), bioelectromagnetic therapeutics (neuromagnetic stimulation and electroacupuncture), and detoxification and cleansing treatment. CAM has been advocated as whole-person medicine, because, unlike conventional therapy, it focuses on the patient rather than the disease. CAM may allow patients to cope with their illness by gradual control of pain, distress, negative emotions, and anxiety. The potential objectives of CAM in cancer management include the reduction of toxicities of conventional therapy, improvement in cancer-related symptoms, enhancement of the immune system, and even a direct anticancer effect (Tagliafferi et al., 2001). The literature suggests that cancer patients who use CAM are more optimistic (Wyatt et al., 1999), less fatalistic (Munstedt et al., 1996), believe stress and cancer are associated (Munstedt et al., 1996), and feel they have personal control over their situation (Downer et al., 1994; Weis, 2001). In this article, we review the biomedical literature on the use of CAM among breast cancer patients, the reasons cited for its use, the different CAM modalities, and the reported outcomes.

PREVALENCE OF CAM USE

The popularity of CAM among cancer patients is an international phenomenon. A review of surveys of cancer patients from around the world showed that the average prevalence of CAM use is 31% (Ernst & Cassileth, 1998). Use of CAM is especially prevalent among breast cancer patients who seek this form of therapy along with conventional treatment during different stages of their disease (Jacobson et al., 2000; Richardson et al., 2000; Tagliafferi et al., 2001). In Canada, a recent study reported that 66.7% of breast cancer patients use CAM (Boon et al., 2000). In the United States, the prevalence ranges between 48% and 70% (Adler, 1999; Lee et al., 2000). This clearly indicates an increasing trend of CAM use over time among breast cancer patients, as it was reported to be less than 10% in the 1980s (Lerner & Kennedy, 1992). In fact, CAM is currently the second fastest growing field in U.S. health care, second only to home health care (Government data proves it, 1995). Patients who are more likely to use CAM therapies are women of younger age, highly educated with higher income, and who engage in regular exercise or attend support groups (Astin, 1998; Crocetti et al., 1998; Burnstein et al., 1999; Richardson et al., 2000). Use of CAM by breast cancer patients does not seem to be affected by the stage of the disease or conventional treatment modalities (Lee et al., 2000; Richardson et al., 2000). However, patients who experience more symptoms and side effects from chemotherapy, particularly nausea, are more likely to use CAM (Burnstein et al., 1999).

CAM MODALITIES IN BREAST CANCER

The diagnosis and treatment of cancer are highly stressful events, and because stress has long been associated with reduced immunity, CAM therapists have adopted an integrative approach based on spiritual, psychological, nutritional, and physical methods to help patients improve the immune system, maintain function, and find healing (Sierpina, 2001). The National Institutes of Health categorize CAM into five major domains: alternative medical systems (methods focused on restoring innate harmony); mind–body interventions (meditation and hypnosis); biologically based therapies (herbal remedies and special diet); manipulative and body-based methods (chiropractic treatment); and energy therapies (Ernst & Cassileth, 1998). The CAM modalities used most commonly by breast cancer patients include dietary supplements (antioxidants, vitamins, micronutrients; Lee et al., 2000; Tagliaf-

feri et al., 2001); herbal therapy, metabolic therapy/detoxification; mind–body approaches, especially meditation and yoga; and acupuncture (Tagliafferi et al., 2001).

Dietary Modifications and Supplements

Dietary therapies, including vitamins and minerals, are the CAM approaches used most commonly by breast cancer patients (Boon et al., 2000; Lee et al., 2000; Tagliafferi et al., 2001). A role for diet in the development of breast cancer has been long suspected (Ziegler et al., 1993). High fat and high calorie diets have been reported to increase the risk of breast cancer (Pelton, 1995). However, other dietary lifestyles such as the vegetarian, Asian, Mediterranean, and microbiotic diet (consisting largely of whole grains, beans, and vegetables) have been found to lower cancer risk (Marti, 1995; Burton Goldberg Group, 1997; Cassileth, 1998). Hence, virtually all of the special dietary interventions offered to breast cancer patients focus on eating more fresh and freshly prepared vegetables, fruits, and whole grains with low fat not exceeding 10–20% of the diet's total calories (Burton Goldberg Group, 1997). In addition, specific supplements, vitamins and antioxidants, are used to enhance the activity of the immune system against tumor cells (Burton Goldberg Group, 1997). For example, vitamin A, vitamin E, and beta carotene were shown to decrease the risk of breast cancer development (Zhang et al., 1999), and are therefore recommended to prevent cancer recurrence.

A study by Kurbacher et al. (1996) suggested that vitamin C, in addition to its role in boosting the immune system (Burton Goldberg Group, 1997), may increase the effectiveness of several chemotherapy drugs in vitro, including Adriamycin, cisplatin, and paclitaxel. Vitamin C has also been shown to enhance the effects of radiation treatment and protect healthy tissues (skin and bone marrow) during such treatment (Koch & Bigalow, 1978).

The intake of soy products (found in soy beans and tofu) has been associated with a lower risk of breast cancer in premenopausal women (Lee et al., 1991; Clarke et al., 2001). These products contain Genistein, which is a powerful antioxidant and may also inhibit angiogenesis (Burton Goldberg Group, 1997).

Green tea has been reported to have anticancer properties if consumed on a regular basis (Klaunig, 1992; Gao et al., 1994). It contains a number of chemical compounds known as polyphenolic catechins, which are considered to be very strong antioxidants with powerful anticarcinogenic properties (Bu-Abbas et al., 1994; Mukhtar et al., 1994). Green tea has also been shown to increase the effectiveness of doxorubicin in drug-resistant cell lines in vitro (Stammler & Volm, 1997). In addition to possible antitumor effect, these dietary interventions may have beneficial effects in helping cancer patients tolerate the adverse effects of cancer treatment. For example, Valerian extracts may lessen anxiety, St. John's wort may help with depression, and peppermint tea may mitigate symptoms of diarrhea, indigestion, and nausea (Cassileth, 1998). Fish oil and vitamin E have been associated with increase in survival in patients with advanced cancer (Gogos et al., 1998). There was no benefit demonstrated with the use of shark cartilage (Miller et al., 1998). In summary, multiple dietary and vitamin products used in CAM therapies hold promise in breast cancer management. However, large prospective trials are needed to prove their beneficial effects. In the absence of such controlled data, firm recommendations cannot be made regarding the effectiveness and the safety of these dietary therapies (Tagliafferi et al., 2001).

Mind–Body Approaches

These modalities include a variety of psychologic methods using stress reduction, meditation, and relaxation techniques such as breathing and body exercises (yoga) as well as guided imagery and visualization methods. The main goal of these approaches is to give patients a sense of control over their illness (Lee et al., 2000). A retrospective analysis by Spiegel et al. (1989) found that patients with breast cancer who used guided imagery and other counseling techniques had a survival time that was twice that of control subjects who did not receive any such therapies. Spiritual healing is another form of mind–body meditation and is commonly used by breast cancer patients (Richardson et al., 2000).

Traditional Chinese Medicine

Herbal medicine, acupuncture, and moxibustion represent the major components of traditional Chinese medicine. Acupuncture involves the placing of tiny needles at specific points on the body meridian to direct the flow of energy (Chi) to certain organs in an attempt to restore health. Acupuncturists aim to help patients balance the Chi energy within and between the five major organ systems: the heart, lungs, liver, spleen, and kidneys (Lee et al., 2000). It is often used in combination with herb treatments. Acupuncture has been shown to have great efficacy in treating chemotherapy-induced nausea and vomiting (Tagliafferi et al., 2001).

This benefit was endorsed by the National Institutes of Health consensus panel on acupuncture held in 1997 (National Institutes of Health, 1997). Improving pain control was also associated with the use of acupuncture (Guo et al., 1995; Sellick & Zaza, 1998; He et al., 1999). The underlying mechanism of acupuncture-induced analgesia is thought to be the stimulation of small afferent sensory nerve fibers that are embedded in the musculature, which then send impulses to the spinal cord and ultimately affect the midbrain and pituitary. These three centers are activated and neurotransmitters such as endorphins, enkephalins, and monoamines are released to block the pain messages (Pomeran, 1998).

Acupuncture has also been reported to have an effect on the hematologic, immunologic, and hormonal functions of the body. This is manifested by restoration of white blood cells counts after chemotherapy (Zhou et al., 1999); increasing markers of immune function including IgG, IgA, IgM, C3 complement, and natural killer (NK) cells, as well as an increase in the CD4+/CD8+ ratio (Wu et al., 1999); and by helping control climacteric symptoms as a result of early menopause due to chemotherapy or tamoxifen (Wu & Zhou, 1998).

REASONS FOR CAM USE IN BREAST CANCER PATIENTS

Breast cancer patients, like most other cancer patients, desire to remain hopeful throughout the course of their illness despite the toxicities and limitations of conventional cancer treatment. Some patients begin using CAM therapies in the wake of the diagnosis of breast cancer (Burnstein et al., 1999), but many more turn to CAM after experiencing the side effects of treatment (Jacobson et al., 2000). Multiple studies have shown that breast cancer patients seek different CAM measures to enhance their prospects of survival, reduce their risk of disease recurrence, relieve disease-related symptoms, and minimize the side effects associated with conventional treatment (Irvine et al., 1991; Newman et al., 1998; Risberg et al., 1998). In a recent study from Canada that included 411 patients with breast cancer (Boon et al., 2000), the most common reasons cited for using CAM were to boost the immune system (63%), improve quality of life (53%), prevent a recurrence of cancer (42.5%), provide a feeling of control over life (37.9%), aid conventional medical treatment (37.9%), treat breast cancer (27.9%), treat side effects of conventional treatments (21%), attempt to stabilize current condition (17.4%), and compensate for failed conventional medical treatments (5.0%).

RESULTS OF CAM USE

CAM's Favorable Outcome

Several studies on CAM treatments used in patients with breast cancer have reported favorable results (Spiegel & Bloom, 1983; Zanolla et al., 1984; Davis, 1986; Dundee et al., 1986; Spiegel et al., 1989; Arathuzik, 1994; Hornsby, 1995; Richardson et al., 1997; Jacobson et al., 2000; Goodwin et al., 2001; Tagliafferi et al., 2001). A recent population-based study of 379 patients found that about 50% of patients used at least one type of CAM therapy and more than 90% of these patients found these therapies helpful and would recommend them to their friends (Lee et al., 2000). A randomized clinical trial of supportive-expressive group therapy in 86 patients with metastatic breast cancer, using weekly 90-min sessions, showed improved mean survival by 18 months in the CAM group (Spiegel et al., 1989). However, the medical literature remains divided on the question of a survival benefit with a study by Goodwin et al. (2001) showing no prolongation in survival, but an improvement in mood and the perception of pain, particularly in women who were initially distressed. Other smaller randomized clinical trials using relaxation (Arathuzik, 1994), visualization (Arathuzik, 1994; Richardson et al., 1997), cognitive coping skills training (Arathuzik, 1994), hypnosis (Spiegel & Bloom, 1983; Richardson et al., 1997), and biofeedback (Davis, 1986) in breast cancer patients showed a significant difference in pain control (Spiegel & Bloom, 1983; Arathuzik, 1994) and improvement in anxiety (Davis, 1986) and coping strategies (Richardson et al., 1997) among CAM patients compared to control. Other randomized clinical trials showed that manual healing methods such as graduated compression and uniform or differential pneumatic manual massage, significantly reduced lymphedema in breast cancer patients following axillary lymph node dissection (Zanolla et al., 1984; Hornsby, 1995). In addition, a substantial amount of scientific literature supports the suggestion that acupuncture has significant efficacy in treating chemotherapy-induced nausea and vomiting (Dundee et al., 1986; National Institutes of Health, 1997; Tagliafferi et al., 2001). Multiple other nonrandomized trials, using special diet and vitamin supplements such as vitamin C, beta carotene, selenium, gammalinoleic acid, and coenzyme Q10, showed a beneficial effect in breast cancer patients manifested as decreased weight loss and reduced use of painkillers (Lockwood et al., 1994). No data is available about the efficacy of other popular treatments like Essiac, 714-x or macrobiotic diets (Jacobson et al., 2000).

CAM's Negative Outcome

Some cohort studies and nonrandomized clinical trials showed either no benefit or even a negative impact of certain CAM practices used by breast cancer patients (Bagenal et al., 1990; Miller et al., 1998; Burnstein et al., 1999). A large cohort study from England using diet, counseling, meditation, yoga, and orthomolecular medicine in 795 patients with breast cancer showed no significant survival benefit compared with control (Bagenal et al., 1990). This study has been widely criticized, as it failed to meet the criteria of adequacy of information (Jacobson et al., 2000). Another recent survey conducted by Burnstein et al. (1999) on the use of CAM in women with early-stage breast cancer, concluded that newly initiated use of alternative medicine is a marker of greater psychological distress and worse quality of life. This article has also been criticized because of the lack of baseline data for most of the variables used and the fact that the number of patients in the subgroups was small (Ernst, 1999). Other reports in the literature have suggested potential adverse effects associated with the use of commercial CAM products sold through health food stores (Drew & Myers, 1997; Gotay & Dumitriu, 2000). For example, shark cartilage, a popular and expensive product, has been reported to cause hepatotoxicity (Ashar & Vargo, 1996), and certain dietary supplements such as ginger, garlic, and wheat grass can interfere with anticoagulants, which can pose serious risks in cancer patients (Brinker, 1998). The intake of the Chinese herb Aristolochia Fangchi has been associated with the development of renal failure and urothelial cancer (Nortier et al., 2000; Markman, 2002); kava, a widely used "natural" sleep medication, has been associated with liver failure (Markman, 2002).

Research is also beginning to reveal potentially dangerous interactions between certain CAM supplements and conventional cancer agents (Spaulding-Albright, 1997; Cassileth, 1999). This is of particular concern because a significant number of CAM users do not disclose this information to their physicians (Schimpff, 1997; Boon et al., 2000; Lee et al., 2000). High doses of antioxidants during chemotherapy can counteract the effects of some chemotherapeutic agents (Labriola, 2000). St. John's wort, through induction of the cytochrome P450 system, can increase the rate of metabolism of certain pharmaceutical agents, leading to reduced and potentially ineffective blood levels of these agents (Ruschitzka et al., 2000; Markman, 2002).

CONCLUSION

CAM is becoming a more popular and acceptable therapy among cancer patients, and particularly among those with breast cancer (Ernst & Cassileth, 1998; Adler, 1999; Boon et al., 2000; Jacobson et al., 2000; Lee et al., 2000; Richardson et al., 2000; Tagliafferi et al., 2001). Therefore, knowledge of CAM therapies is becoming essential for physicians and other health care providers. Many cancer patients believe that access to CAM should be part of standard cancer treatment (Coss et al., 1998). However, the majority of cancer patients who are CAM users do not disclose their use to their physicians possibly out of embarrassment or fear of rejection (Cassileth, 1999; Boon et al., 2000; Lee et al., 2000). Therefore, it is advisable that physicians initiate the discussion with their patients about the use of CAM as part of routine assessment. This will allow patients to make better informed decisions regarding CAM approaches that are potentially beneficial or harmful. Physicians who are willing to communicate openly and in a nonjudgmental style about CAM may avoid disrupting the patient–provider relationship, encourage compliance with conventional treatment, and, most importantly, be able to monitor possible adverse reactions (Richardson et al., 2000). In addition, they may protect their patients by steering them away from unproved, expensive, or dangerous therapies. Several studies have shown favorable outcome of CAM use in breast cancer patients. However, most of these studies involved small numbers of patients or were intended to collect preliminary data for larger studies (Jacobson et al., 2000). The current available data should stimulate more rigorous research to test the effectiveness and safety of CAM approaches, and to explore possible antitumor activity and survival benefit. Health industry and governmental agencies should be actively involved to regulate CAM products to pharmaceutical standards of quality and safety.

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REFERENCES

Adler, S.R. (1999). Complementary and alternative medicine use among women with breast cancer. *Medical Anthropology Q*, *13*, 214–222.

Arathuzik, D. (1994). Effects of cognitive behavioral strategies on pain in cancer patients. *Cancer Nursing*, *17*, 207–214.

Ashar, B. & Vargo, E. (1996). Shark cartilage induced hepatitis. *Annals of Internal Medicine*, *125*, 780–781.

Astin, J.A. (1998). Why patients use alternative medicine: Results of a national study. *Journal of the American Medical Association*, *279*, 1548–1553.
Bagenal, F.S., Easton, D.F., Harris, E., et al. (1990). Survival of patients with breast cancer attending Bristol Cancer Help Center. *Lancet*, *336*, 606–610.
Bahnson, C.B. (1980). Stress and cancer: The state of the art. *Psychosomatics*, *21*(12), 975–981.
Boon, H., Stewart, M., Kennard, M.A., et al. (2000). Use of complementary/alternative medicine by breast cancer survivors in Ontario: Prevalence and perceptions. *Journal of Clinical Oncology*, *18*(13), 2515–2521.
Brinker, F. (1998). *Herb Contraindications and Drug Interactions*. Sandy, OR: Eclectic Medical Publishers.
Bu-Abbas, A., Clifford, M.N., Walker, R., et al. (1994). Marked antimutagenic potential of aqueous green tea extracts: Mechanism of action. *Mutagenesis*, *9*, 325–331.
Burnstein, H.J., Gelber, S., Guadagnoli, E., et al. (1999). Use of alternative medicine by women with early stage breast cancer. *New England Journal of Medicine*, *340*, 1733–1739.
Burton Goldberg Group (ed.) (1997). *Alternative medicine: The definitive guide*. Fife, WA: Future Medicine Publishing Inc.
Cassileth, B.R. (ed.) (1998). *The Alternative Medicine Handbook: The Complete Reference Guide to Alternative and Complementary Therapies*. New York, NY: Norton.
Cassileth, B.R. (1999). Evaluating complementary and alternative therapies for cancer patients. *CA Cancer Journal for Clinicians*, *49*, 362–375.
Clarke, R., Hilakivi-Clarke, L., & Trock, B. (2001). Breast cancer: Dietary and environmental Oestrogens. *Biologist*, *48*, 21–26.
Coates, A., Gebski, V., Signorini, D., et al. (1992). Prognostic value of quality of life scores during chemotherapy for advanced breast cancer. *Journal of Clinical Oncology*, *10*, 1833–1838.
Coss, R.A., McGrath, P., & Caggiano, V. (1998). Alternative care: Patient choices for adjunct therapies within a cancer center. *Cancer Practices*, *6*, 176–181.
Crocetti, E., Crotti, N., Feltrin, A., et al. (1998). The use of complementary therapies by breast cancer patients attending conventional treatment. *European Journal of Cancer*, *34*, 324–328.
Davis, H. (1986). Effects of biofeedback and cognitive therapy on stress in patients with breast cancer. *Psychological Reports*, *59*, 967–974.
Downer, S.M., Cody, M.M., McCluskey, P., et al. (1994). Pursuit and practice of complementary therapies by cancer patients receiving conventional treatment. *British Medical Journal*, *309*, 86–89.
Drew, A.K. & Myers, S.P. (1997). Safety issues in herbal medicine: Implications for the health professions. *Medical Journal of Australia*, *166*, 538–541.
Dundee, J.W., Chestnut, W.N., Ghaly, R.G., et al. (1986). Traditional Chinese acupuncture: A potentially useful antiemetic? *British Medical Journal*, *293*, 583–584.
Eisenberg, D.M., Kessler, R.C., Foster, C., et al. (1993). Unconventional medicine in the United States: Prevalence, costs, and patterns of use. *New England Journal of Medicine*, *328*, 246–252.
Ernst, E. (1999). Use of alternative medicine by women with breast cancer. *New England Journal of Medicine*, *341*(15), 1155–1157.
Ernst, E. & Cassileth, B.R. (1998). The prevalence of complementary/alternative medicine in cancer: A systematic review. *Cancer*, *83*, 777–782.
Fraser, S.C., Ramirez, A.J., Ebbs, S.R., et al. (1993). A daily diary for quality of life measurement in advanced breast cancer trials. *British Journal of Cancer*, *67*, 341–346.
Gao, Y.T., McLaughlin, J.K., Blot, W.J., et al. (1994). Reduced risk of esophageal cancer associated with green tea consumption. *Journal of the National Cancer Institute*, *86*, 855–858.
Gogos, C.A., Giropoulous, P., Salsa, B., et al. (1998). Dietary omega 3 polyunsaturated fatty acids plus vitamin E restore immunodeficiency and prolong survival for severely ill patients with generalized malignancy: A randomized control trial. *Cancer*, *82*, 395–402.
Goodwin, P.J., Leszcz, M., Ennis, M., et al. (2001). The effect of group psychosocial support on survival in metastatic breast cancer. *New England Journal of Medicine*, *345*, 1719–1726.
Gotay, C.C. & Dumitriu, D. (2000). Health food recommendations for breast cancer patients. *Archives in Family Medicine*, *9*, 692–698.
Government data proves it: Alternative medicine is growing? (1995). *Alternative Medicine Digest*, *9*, 42.
Greer, S. & Silberfarb, P.M. (1982). Psychological concomitants of cancer: Current state of research. *Psychologic Medicine*, *12*, 563–573.
Guo, R., Zhang, L., Gong, Y., et al. (1995). The treatment of pain in bone metastasis of cancer with the analgesic decoction of cancer and the acupoint therapeutic apparatus. *Journal of Traditional Chinese Medicine*, *15*, 262–264.
Hankey, B.F., Miller, B., Curtis, R., et al. (1994). Trends in breast cancer in younger women in contrast to older women. *Journal of the National Cancer Institute*, *16*, 7–14.
He, J.P., Friederich, M., Ertan, A.K., et al. (1999). Pain relief and movement improvement by acupuncture after ablation and axillary lymphadenectomy in patients with mammary cancer. *Clinical Experts in Obstetrics and Gynecology*, *26*, 81–84.
Hornsby, R. (1995). The use of compression to treat lymphedema. *Professional Nursing*, *11*, 127–128.
Irvine, D., Brown, B., Crooks, D., et al. (1991). Psychosocial adjustment in women with breast cancer. *Cancer*, *67*, 1097–1117.
Jacobson, J.S., Workman, S.B., & Kronenberg, F. (2000). Research on complementary/alternative medicine for patients with breast cancer: A review of the biomedical literature. *Journal of Clinical Oncology*, *18*(13), 668–683.
Klaunig, J.E. (1992). Chemopreventive effects of green tea components on hepatic carcinogenesis. *Preventive Medicine*, *21*, 510–519.
Koch, C.J. & Bigalow, J.E. (1978). Toxicity, radiation sensitivity modification, and metabolic effects of Dehydroascobate and Ascorbate in mammalian cells. *Journal of Cell Physiology*, *94*, 299–306.
Kurbacher, C.M., Wagner, U., Kolster, B., et al. (1996). Ascorbic acid (vitamin C) improves the antineoplastic activity of doxorubicin, cisplatin, and paclitaxel in human breast cancer cell lines in vitro. *Cancer Letters*, *103*, 183–189.
Labriola, D. (2000). *Complementary Cancer Therapies*. Roseville, CA: Prima Publishing.

Lee, H.P., Gourley, L., Duffee, S.W., et al. (1991). Dietary effects on breast cancer risk in Singapore. *Lancet*, *337*, 1197–1200.

Lee, M.M., Lin, S.S., Wrensch, M.R., et al. (2000). Alternative therapies used by women with breast cancer in four ethnic populations. *Journal of the National Cancer Institute*, *92*(1), 42–47.

Lerner, I.J. & Kennedy, B.J. (1992). The prevalence of questionable methods of cancer treatment in the United States. *CA Cancer Journal for Clinicians*, *42*, 181–191.

Lockwood, K., Moesgaard, S., Hanioka, T., et al. (1994). Apparent partial remission of breast cancer in "high risk" patients supplemented with nutritional oxidants, essential fatty acids and coenzyme Q10. *Molecular Aspects of Medicine*, *15*, S231–S240.

Markman, M. (2002). Safety issues in using Complementary and Alternative Medicine. *Journal of Clinical Oncology*, *20*(18), 39s–41s.

Marti, J. (ed.) (1995). *The Alternative Health and Medicine Encyclopedia*. Detroit, MI: Invisible Ink Press.

Miller, D.R., Anderson, G.T., Stark, J.J., et al. (1998). Phase I/II trial of the safety and efficacy of shark cartilage in the treatment of advanced cancer. *Journal of Clinical Oncology*, *16*, 3649–3655.

Mukhtar, H., Katiyar, S.K., & Agarwal, R. (1994). Green tea and skin-anticarcinogenic effects. *Journal of Investigational Dermatology*, *102*, 3–7.

Munstedt, K., Kirsh, K., Milch, W., et al. (1996). Unconventional cancer therapy: Survey of patients with gynecological malignancy. *Archives in Gynecology and Obstetrics*, *258*, 81–88.

National Institutes of Health. (1997). *Acupuncture*. NIH consensus statement. *15*, 1–34.

Newman, V., Rock, C.L., Faerber, S., et al. (1998). Dietary supplements used by women at risk of breast cancer recurrence. The women's healthy eating and living study group. *Journal of the American Diet Association*, *98*, 285–292.

Nortier, J.L., Martinez, M.C., Schmeiser, H.H., et al. (2000). Urothelial carcinoma associated with the use of a Chinese herb (Aristolochia fangchi). *New England Journal of Medicine*, *342*, 1686–1692.

Parker, S.L., Tong, T., Bolden, S., et al. (1997). Cancer statistics. *CA Cancer Journal for Clinicians*, *47*, 5–27.

Pelton, R. (1995). *Dietary Fat—The 20 Percent Solution, How to Prevent Breast Cancer*, pp. 145–158. New York: Simon & Schuster.

Pomeran, Z.B. (ed.) (1998). *The Scientific Basis of Acupuncture: Basis of Acupuncture*, pp. 6–17. New York, NY: Springer-Verlag.

Richardson, M.A., Post-White, J., Grimm, E.A., et al. (1997). Coping, life attitudes, and immune responses to imagery and group support after breast cancer treatment. *Alternative Therapies in Health Medicine*, *3*, 62–70.

Richardson, M.A., Sanders, T., Palmer, J.L., et al. (2000). Complementary/alternative medicine use in a comprehensive cancer center and the implications for oncology. *Journal of Clinical Oncology*, *18*(13), 2505–2514.

Risberg, T., Lund, E., Wist, E., et al. (1998). Cancer patients use of unproven therapy: A 5-year follow up study. *Journal of Clinical Oncology*, *16*, 6–12.

Ruschitzka, F., Meier, P.J., Turina, M., et al. (2000). Acute heart transplant rejection due to Saint John's wort. *Lancet*, *355*, 548–549.

Schimpff, S.C. (1997). Complementary medicine. *Current Opinions in Oncology*, *9*, 327–331.

Sellick, S.M. & Zaza, C. (1998). Critical review of 5 nonpharmacologic strategies for managing cancer pain. *Cancer Prevention and Control*, *2*, 7–14.

Sierpina, V. (ed.) (2001). *Integrative Health Care*, pp. 256–269. Philadelphia, PA: F.A. Davis Company.

Spaulding-Albright, N. (1997). A review of some herbal and related products commonly used in cancer patients. *Journal of the American Diet Association*, *97*, S208–S215.

Spiegel, D. & Bloom, J.R. (1983). Group therapy and hypnosis reduce metastatic breast carcinoma pain. *Psychosomatic Medicine*, *45*, 333–339.

Spiegel, D., Bloom, J.R., Kraemer, H.C., et al. (1989). Effect of psychosocial treatment on survival of patients with metastatic breast cancer. *Lancet*, *2*, 888–891.

Stammler, G. & Volm, M. (1997). Green tea catechins have modulating effects on the activity of doxorubicin in drug resistant cell lines. *Anticancer Drugs*, *8*, 265–268.

Tagliafferi, M., Cohen, I., & Tripathy, D. (2001). Complementary and alternative medicine in early stage breast cancer. *Seminars in Oncology*, *28*(1), 121–134.

Walker, L.G., Heys, S.D., Walker, M.B., et al. (1999). Psychological factors can predict the response to primary chemotherapy in patients with locally advanced breast cancer. *European Journal of Cancer*, *35*(13), 1783–1788.

Weeks, J. (1992). Quality of life assessment: Performance status upstaged? *Journal of Clinical Oncology*, *10*, 1827–1829.

Weis, J. (2001). Psycho-oncology and its importance in oncology: Actual trends and future tasks of research. *Onkologie*, *24*, 74–79.

Wu, B., Zhou, R., & He, J. (1999). Current situation and prospect of researches on acupuncture mediating immunoresponses. *Shanghai Journal of Acupuncture Moxibustion*, *1*, 73–76.

Wu, L. & Zhou, X. (1998). 300 cases of menopausal syndrome treated by acupuncture. *Journal of Traditional Chinese Medicine*, *18*, 259–262.

Wyatt, G.K., Friedman, L.L., Given, C.W., et al. (1999). Complementary therapy use among older cancer patients. *Cancer Practices*, *7*(3), 136–144.

Zanolla, R., Monzeglio, C., Balzarini, A., et al. (1984). Evaluation of the results of 3 different methods of postmastectomy lymphedema. *Journal of Surgical Oncology*, *26*, 210–213.

Zhang, S., Hunter, D.J., Forman, M.R., et al. (1999). Dietary carotenoids and vitamins A, C, and E and risk of breast cancer. *Journal of the National Cancer Institute*, *91*, 547–556.

Zhou, J., Li, Z., & Jin, P. (1999). A clinical study on acupuncture for prevention and treatment of toxic side effects during radiotherapy and chemotherapy. *Journal of Traditional Chinese Medicine*, *19*, 16–21.

Ziegler, R.G., Hoover, R.N., Pike, M.C., et al. (1993). Migration patterns and breast cancer risk in Asia-American women. *Journal of the National Cancer Institute*, *85*, 1819–1827.