ADVANCES IN ONCOLOGY

Current Developments in the Management of Solid Tumor Malignancies

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Breast Cancer In Focus

Diet and Exercise in Breast Cancer

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H&O Why are diet and exercise important for breast cancer patients?

JL Eating a healthy diet and exercising regularly are an important part of maintaining a healthy lifestyle for everyone, but emerging evidence suggests that diet and exercise may be especially important for breast cancer survivors. Observational evidence has shown that women who exercise after breast cancer diagnosis have a lower risk of recurrence, although this relationship has not yet been tested in randomized trials. A healthy diet has also been linked to a lower risk of recurrence in some, but not all, studies. Although more work is needed to determine if changing diet and exercise behaviors after breast cancer diagnosis will improve outcomes, this preliminary evidence is very exciting and may one day provide a way for women to further lower their risk of breast cancer recurrence.

H&O What kinds of studies have been conducted in breast cancer patients that concern diet and exercise?

JL There are 3 types of studies that are being done in this area. There are population-based (or observational) studies, randomized trials looking at changes in quality of life and other end points, and mechanistic work examining the biologic basis for the relationships among breast cancer, diet, and exercise. Many observational studies have looked at the relationship between the amount and type of exercise that women do after breast cancer diagnosis and rates of breast cancer recurrence. Most of these reports show that women who exercise regularly, such as those who walk for 3–5 hours per week at a moderate pace, have a lower risk of breast cancer recurrence compared to women who do not exercise at all. One such study from the Nurses Health Group asked women 2 years after they were diagnosed with breast cancer how often they were exercising. The study found that women who exercise for approximately 3–5 hours per week (most of these women were walking at a moderate pace) had a 50% lower risk of cancer recurrence or of dying from breast cancer compared to women who did not exercise. Since the publication of this study, there have been another 7 or 8 trials that also found that women who exercise after breast cancer seem to do better in terms of cancer recurrence and death compared to those who do not exercise. Since these are observational studies, it is not clear whether the decrease in recurrence can be attributed to exercise alone, or whether there were other factors that differentiated these women from those who were not exercising. However, the findings across the studies showed a consistent pattern, which now needs to be tested in randomized trials.

Dietary intake as a method of breast cancer prevention has also been widely researched. Studies of diets in Asia compared to those in the United States were initially done because cancer rates were much lower in Asian countries than they were in the United States. At this point, no link has been found between diet and breast cancer development or recurrence in these observational studies. Trials focusing on diet have analyzed the intake of

certain items, such as processed foods, fats, and red meat; no strong association between diet and cancer recurrence in breast cancer patients has been found.

Two randomized trials—the Women's Intervention Nutrition Study (WINS) and the Women's Healthy Eating and Living (WHEL) study—have looked at the impact of a change in diet upon breast cancer outcomes in women with early-stage breast cancer. Both studies enrolled between 2,000 and 3,000 women who had early stage (stage 1–3) breast cancer and who had completed therapy. Patients were randomized to continue eating their typical diet, or to go into a dietary change group. The WINS focused specifically on fat; in the study, fat was reduced from 30% (which is the average amount of fat in the US diet) to 20% over 5 years. The findings demonstrated a marginally significant 25% reduction in the risk of cancer recurrence. An unplanned subgroup analysis demonstrated that this effect was greatest in patients with estrogen receptor–negative tumors. The WHEL study looked not only at a diet low in fat, but also one that emphasized fruit and vegetable intake. Conversely, the results from the WHEL study showed no difference in women who were in the diet group versus those in the control group. These contrasting findings led many to ask whether diet matters in breast cancer recurrence. One of the differences seen in WINS and the WHEL study was that women who were on the low-fat diet in WINS lost weight, whereas women on the low-fat diet in the WHEL study did not.

A lot of data show that weight at the time of breast cancer diagnosis is also linked to the risk of recurrence, with heavier women (especially those who are obese) having a higher risk of cancer recurrence compared to leaner women. At this point, we do not have any direct evidence supporting the link between breast cancer and diet and exercise aside from the divergent results found in the WINS and the WHEL study.

Ongoing research in small studies has been looking at altering diet and exercise behaviors or evaluating weight loss after patients are diagnosed with breast cancer. These studies have uniformly showed that taking part in an exercise program made patients feel better, and resulted in less fatigue and a better quality of life. There is evidence that these changes can make patients feel better about themselves and lead to a better recovery from cancer treatment. However, we do not have any larger studies from a behavioral change program that can corroborate that these elements made a difference in cancer recurrence.

The third type of study in this area is one that investigated whether it is possible to biologically connect diet and exercise to breast cancer. A number of such studies have looked at the factors that change when a person modifies her diet or starts to exercise (eg, how do her hormone levels change), and what types of conditions could influence breast cancer. These studies have shown that increased exercise leads to a decrease in levels of metabolic hormones and inflammatory mediators. These hormones have in turn been linked to breast cancer recurrence, providing some preliminary information about the biologic pathways that could link diet and exercise to breast cancer. This work is in the early stages of development, but ongoing studies will hopefully determine whether a connection can be established from a biologic standpoint.

H&O What are the recommendations for physical activity in breast cancer patients?

JL The American Cancer Society (ACS) published recommendations for physical activity several years ago. The guidelines suggested that cancer survivors follow the recommendations for activity for the general US adult population, which is approximately 150 minutes of aerobic activity per week. They also stressed that people should stay active during and after their cancer treatment. The American College of Sports Medicine (ACSM) also recently released physical activity recommendations for cancer survivors. The ACSM recommends that people stay active during their cancer treatment. They also suggest that patients start exercising slowly, and that activities like walking are safe for most people during and after cancer treatment. The goal is 150–180 minutes of aerobic activity per week. The ACSM also recommended strength training for patients in order to avoid loss of muscle mass and to retain bone density. They did caution that for breast cancer survivors who had surgery in their lymph node area, upper body strength training, although safe, should be done under the care of a professional (supported by the research of Dr. Kathryn Schmitz).

H&O What are the dietary recommendations?

JL There has been a lot of research looking at supplements and diets low in certain foods or sugars. Other than the WINS study (described above), which suggested that a low-fat diet could help reduce the risk of cancer recurrence (at least in some women), there has not been anything in the diet (either good or bad) that has been shown to be helpful or harmful to breast cancer. I tell my patients that, although not every meal should consist of sugar, it is not necessary to remove all sugar from their diets. Furthermore, taking supplements has also not been proven to be beneficial. In fact, we recommend that patients have a good balanced diet that includes fruits and vegetables, and that they get most of their nutrients from their diet rather than from supplements. Many women with early-stage breast cancer will

not die from their cancer, but they may develop heart disease, diabetes, or other medical problems over time, which is one of the reasons that we stress the importance of maintaining a balanced diet.

The topic of alcohol has been a controversial issue. There is a lot of literature that links alcohol to the risk of developing postmenopausal breast cancer. However, there is not much evidence that links alcohol to the risk of cancer recurrence, and the few reports that have looked at this correlation had mixed results. Therefore, although we certainly do not encourage patients to drink significant amounts of alcohol, the literature does not suggest that having a glass of wine, or other alcoholic beverage, once in a while will be harmful in terms of breast cancer recurrence.

H&O What resources are available for breast cancer patients?

JL There are many resources to help patients change their diet and exercise patterns after breast cancer diagnosis. I always recommend that patients start by asking their doctors for advice, both to make sure that starting a diet or exercise program is safe given the patient's medical issues, and to find out what resources are available at the hospital or clinic where the patient is receiving care. Many hospitals provide nutrition counseling to help with weight loss or to improve dietary quality. Increasingly, cancer centers are also offering exercise programs, including yoga classes, walking groups, strength training classes, and other types of physical activities, for cancer survivors.

There are also community-based resources for survivors of breast and other cancers, such as the LIVESTRONG Program, which is a joint endeavor from the YMCA and the Lance Armstrong Foundation. This free program helps cancer survivors increase physical activity after diagnosis. Survivors can check with their local YMCA to see if the program is being offered. There are also many other exercise and weight loss programs being developed for cancer survivors; they should check advertisements from local gyms and fitness organizations for programs.

Finally, the ACSM has developed a certification program for trainers and exercise professionals who work with cancer patients. A list of certified individuals can be found on the ACSM website (www.ACSM.org). Working with a professional trainer can be helpful for a patient who wants to start exercising but is not sure how to start. Consultation with a professional is also helpful for women who want to start strength training exercises that focus on the upper body. Several studies have suggested that weight lifting exercises can be safe for breast cancer survivors, but the ACSM and other groups recommend that women consult with a trainer who has expertise in working with cancer patients before getting started, in order to lower the risk of injury.

Suggested Readings

Bragg R. Exercise and breast cancer recurrence. http://www.LIVESTRONG.com.

Schmitz KH. Exercise for secondary prevention of breast cancer: moving from evidence to changing clinical practice. *Cancer Prev Res* (Phila). 2011;4:476-480.

Hoy MK, Winters BL, Chlebowski RT, et al. Implementing a low-fat eating plan in the Women's Intervention Nutrition Study. *J Am Diet Assoc.* 2009;109:688-696.

Pierce JP, Natarajan L, Caan BJ, et al. Influence of a diet very high in vegetables, fruit, and fiber and low in fat on prognosis following treatment for breast cancer: the Women's Healthy Eating and Living (WHEL) randomized trial. *JAMA*. 2007;298:289-298.