

DEFEAT Cancer

CURRENT PEER-REVIEWED MEDICAL LITERATURE and MEDIA COMMENTS on EXERCISE & NUTRITION during/after CANCER June 2007

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Exercise

Randomized Trial of Exercise Therapy in Women Treated for Breast Cancer

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Purpose: To examine the effects of aerobic exercise therapy on quality of life (QoL) and associated outcomes in women treated for breast cancer. Evidence suggests that exercise may be beneficial, but no trial has included an exercise-placebo and a usual-care group to control for the attention effects that might be associated with aerobic exercise interventions in cancer patients.

Patients and Methods: A total of 108 women who had been treated for breast cancer 12 to 36 months previously were randomly assigned to supervised aerobic exercise therapy (n = 34), exercise-placebo (body conditioning; n = 36), or usual care (n = 38). Exercise therapy and exercise-placebo sessions took place three times per week for 8 weeks. Outcomes included QoL, depression, exercise behavior, aerobic fitness; outcomes were assessed at baseline and at the 8- and 24-week follow-up.

Results: Analyses of covariance revealed a significant mean difference of 9.8 units in Functional Assessment of Cancer Therapy–General (primary outcome) favoring aerobic exercise therapy at 8 weeks, relative to usual care. Significant differences that favored aerobic exercise therapy relative to usual care were recorded for Functional Assessment of Cancer Therapy–Breast, social/family well-being, functional well-being, and breast cancer subscale scores at 8-week follow-up. Psychological health outcomes improved modestly for both intervention groups; these improvements were sustained for several end points.

Conclusion: Exercise therapy had large, clinically meaningful, short-term beneficial effects on QoL in women treated for breast cancer; this finding cannot be attributable to attention, given that the exercise-placebo group did not report similar effects relative to usual care.

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Impact of physical activity on insulin levels in breast cancer survivors.

Journal of Clinical Oncology, 2007 Vol 25, No. 18S (June 20 Supplement), 2007: 555

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Abstract: Background: Accumulating data suggest that body weight and physical activity may affect breast cancer risk and outcomes. Biological mechanisms underlying these relationships are not clear. Studies have demonstrated that high levels of insulin, often seen in obese and sedentary individuals, are also associated with an increased risk of breast cancer recurrence and breast cancer-related death. We sought to analyze whether exercise lowers insulin levels in a population of breast cancer survivors.

Methods: Inactive women with early stage breast cancer who had completed adjuvant treatment were randomized to a 16 week, mixed cardiovascular and strength training exercise intervention, or to a normal care control group. Target exercise goals included 2 supervised strength training sessions and 90 minutes of unsupervised cardiovascular exercise each week. Fasting insulin and glucose levels, as well as measurement of weight, body composition, and circumference at the waist and hip, were collected at baseline and after 16 weeks in both groups, and changes in these measures were assessed. Results: One hundred and one women were randomized. Comparison of changes in anthropometric measures are presented in the Table. Baseline insulin levels were similar in the 2 groups. After the 16-week exercise or control period, insulin levels decreased by 2.86 μ IU/ml in the exercise group (p=0.03), and by 0.27 μ IU/ml in the control group (p=0.65). A comparison of the change in insulin levels across time in the 2 groups approached statistical significance (p=0.07). There was also a trend toward improvements in insulin sensitivity in the exercise group (p=0.09), with no change seen in fasting glucose levels.

Conclusions: Physical activity was associated with a **decrease in insulin levels and in hip circumference** in breast cancer survivors. The relationship between physical activity and breast cancer prognosis may be mediated, at least partially, through changes in insulin levels and/or changes in fat mass or deposition.

	Exercise Group vs. Control Group	95% CI
Weight (lbs)	-0.91	(-3.06, 1.25)
BMI (kg/m ²)	-0.15	(-0.52, 0.22)
% Body Fat	-0.43	(-1.19, 0.33)
Waist Circumference (in)*	-0.72	(-1.45, 0.02)
Hip Circumference (in)**	-0.71	(-1.28, -0.14)

*p=0.06, **p=0.02

Yoga gives immune boost to breast cancer survivors

ScientificAmerican.com

May 01, 2007

By Megan Rauscher

NEW YORK (Reuters Health) - In breast cancer survivors, the Iyengar method of yoga not only promotes psychological well-being, but seems to offer immune system benefits as well, according to research reported Monday.

The research was reported at the American Physiological Society meeting in Washington, DC.

The Iyengar method, created by B. K. S. Iyengar, "is considered to be one of the more active forms of yoga," lead researcher and presenter Pamela E. Schultz from Washington State University, Spokane, told Reuters Health.

"It still has the meditative component, but it's been shown to have a physical output equivalent to a moderate-intensity exercise," she explained.

Schultz and colleagues randomly assigned 10 breast cancer survivors to 8 weeks of Iyengar yoga (2 classes and 1 solo session at home per week) and 9 to a wait-list control group. The women had an average age of 61 years, were about 4 years out from initial cancer diagnosis and were being treated with hormone therapy. None of the women had any prior experience with Iyengar yoga.

Psychosocial tests showed that the "demands of illness," which reflects the burden of hardship of being a breast cancer survivor, fell in the yoga participants.

"Psychosocial variables indicated improved quality of life with Iyengar yoga," Schultz said.

Importantly, these improvements correlated with decreased activation of an important immune system protein called NF-kB, which is a marker of stress in the body.

"So it's possible," Schultz said, "that decreased activation of NF-kB indicates decreased stress in the body, which would be a positive thing. NF-kB can be activated by any type of stress in the body, like physical stress and mental stress."

Schultz plans to continue her research by looking at different immune system proteins to see if they too show changes for the better, "which would confirm immune and psychosocial benefits of Iyengar yoga."

Nutrition

The impact of dietary patterns on cancer recurrence and survival in patients with stage III colon cancer: Findings from CALGB 89803.

Journal of Clinical Oncology, 2007 ASCO Annual Meeting 25(18S June 20 Supplement), 2007:4019

Author(s): J. A. Meyerhardt, D. Niedzwiecki, D. Hollis, L. Saltz, W. Willett, R. J. Mayer, C. S. Fuchs

Abstract: Background: Dietary factors have been associated with the risk of developing colon cancer; the influence of diet on pts with established disease is unknown. **Methods:** We conducted a prospective observational study of 1,009 patients with stage III colon cancer enrolled in a phase III adjuvant chemotherapy trial. Patients reported on dietary intake using a food frequency questionnaire during and 6 months after adjuvant chemotherapy. We identified two major dietary patterns, prudent and Western, by factor analysis. The prudent pattern was characterized by higher intake of fruits, vegetables, poultry and fish; the Western pattern by higher intake of red meat, fat, refined grains and desserts. Since there was no difference in efficacy between the 2 treatments, data for all pts were combined and analyzed according to quintiles of each dietary pattern. Patients were followed for cancer recurrence or death. **Results:** A higher intake of a Western pattern diet after cancer diagnosis was associated with a significantly worsened disease-free survival (DFS). After adjustment for gender, age, T and N stage, body mass index, physical activity level, weight change, baseline performance status, and treatment arm, patients in the highest quintile of Western pattern diet intake experienced a hazard ratio for DFS of 3.15 (95% confidence interval [CI], 1.76-5.63; p trend = <0.0001), compared to those in the lowest quintile. Western pattern diet was associated with a similar detriment in recurrence-free survival (adjusted p trend = 0.001) and overall survival (adjusted p trend = 0.0002). In contrast, prudent pattern diet did not significantly influence cancer recurrence or mortality. **Conclusions:** Higher intake of a Western pattern diet may increase the risk of recurrence and mortality among patients with stage III colon cancer patients treated with surgery and adjuvant chemotherapy. Further studies are needed to delineate which components of such a diet are most influential.

Adjusted Hazard Ratios by Quintile of Western Pattern Diet

	1	2	3	4	5	p-Value
DFS	Ref	1.16 (0.73-1.85)	1.79 (1.14-2.82)	1.80 (1.09-2.99)	3.15 (1.76- 5.63)	<0.0001
RFS	Ref	1.00 (0.62-1.63)	1.64 (1.04-2.10)	1.57 (0.94-2.65)	2.49 (1.36- 4.55)	0.001
OS	Ref	1.04 (0.57-1.90)	2.08 (1.18-3.69)	2.29 (1.23-4.27)	3.29 (1.60- 6.74)	0.0002

Barbecue lovers may have higher breast cancer risk

By Anne Harding

SOURCE: Epidemiology, May 2007.

NEW YORK (Reuters Health) - Postmenopausal women who like barbecued and smoked meat would be wise to eat plenty of fruit and vegetables too, a new study suggests.

Dr. Susan E. Steck of the University of South Carolina in Columbia and her colleagues found that postmenopausal women who consumed the most grilled, barbecued or smoked red meat over their lifetime have a 47 percent increased risk of breast cancer. Big meat-eaters who also skimped on fruit and vegetables had a 74 percent increased risk of the disease.

No relationship was detected between recent patterns of meat consumption and breast cancer in postmenopausal women. In addition, the investigators found no significant association between long- or short-term meat consumption and breast cancer in premenopausal women.

The findings "support the cancer prevention guidelines that are currently recommended" calling for people to eat more plant-based foods and limit processed or red meat consumption, Steck noted in an interview with Reuters Health.

However, she cautioned, the study found a close association, but didn't actually show that cooked meats caused breast cancer. Other related factors could be at work, she explained, such as high fat content in the diet of women who consume these types of meat products.

Polycyclic aromatic hydrocarbons and heterocyclic amines are known carcinogens produced by cooking meat at high temperatures, Steck and her team note in their report. Polycyclic aromatic hydrocarbons are found in grilled, barbecued and smoked meat (as well as many other foods), while pan-fried and grilled meat have particularly high heterocyclic amine content.

Steck and her colleagues compared the lifetime and recent consumption of cooked meat among 1,508 women with breast cancer and 1,556 healthy women. Postmenopausal women in the highest two thirds for lifetime consumption of smoked, grilled or barbecued meats -- more than once a week -- had a 47 percent greater risk of the disease compared with women who ate the least amount of meat -- once a week or less.

And postmenopausal women who ate plenty of barbecued or smoked meat but few fruits and vegetables (less than five servings per day) were at a 74 percent increased risk of breast cancer.

However, smoked, grilled or barbecued poultry or fish did not increase breast cancer risk when examined independently of red meat.

The finding that women who ate few fruits and vegetables were at greater risk supports lab and animal studies that have shown phytochemicals, which are found in fruits and vegetables, can protect against carcinogens, Steck noted.

Since the study is among the first to look at lifetime cooked meat consumption and breast cancer risk, she added, the findings need to be confirmed in other studies that examine lifetime dietary intake.

Red wine may reduce risk of prostate cancer: study

May 22, 2007

NEW YORK (Reuters Life!) - Red wine drinkers, raise your glasses! Another study extolling the health benefits of red wine was released on Tuesday, saying a glass a day may help prevent prostate cancer.

Researchers from Seattle's Fred Hutchinson Cancer Research Center found men who drink four to seven glasses of red wine a week are only 52 percent as likely to be diagnosed with prostate cancer as those who don't drink red wine.

The report, published in the June 2007 issue of Harvard Men's Health Watch, was based on a small study examining the risk of prostate cancer in 1,456 men aged between 40 and 64, including alcohol consumption.

"At first the results for alcohol consumption seemed similar to the findings of many earlier studies -- there was no relationship between overall consumption and risk," said the researchers in a statement.

"But the scientists went one step further by evaluating each type of alcoholic beverage independently.

Here the news was surprising -- wine drinking was linked to a reduced risk of prostate cancer."

When white wine was compared with red, red had the most benefit with even low amounts appearing to help.

But by contrast men who were heavy beer drinkers, consuming 35 or more a week for eight years or longer, were at greater risk of contracting prostate cancer.

The results also confirmed other studies' findings with the risk of prostate cancer higher for men with a family history of the disease, who were obese, smokers or African American.

The researchers speculated that the reason was chemical and could be linked to various flavonoids and resveratrol that were missing from other alcoholic beverages.

"These components have antioxidant properties, and some appear to counterbalance androgens, the male hormones that stimulate the prostate," the report said, adding this was a small study so too early to endorse red wine for the prostate.

But the study follows a string of research finding drinking wine in moderation can have health benefits. A Dutch study released in February found drinking a small amount of wine can extend men's life expectancy by a few years while a U.S. study last year found red wine could help protect the brain from damage after a stroke.

Many doctors, however, are unwilling to recommend drinking alcohol for health, fearing patients might assume that if a little is good then a lot might be better.

Flavonols and pancreatic cancer risk: The Multiethnic Cohort Study

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AACR Annual Meeting 2007 Abstract #856

Pancreatic cancer is usually fatal so prevention is particularly important. However, knowledge about lifestyle-associated risk factors is limited, with smoking being the only established risk factor so far. Flavonols are polyphenols that are ubiquitous in plant foods and may exert cancer preventive effects. However, few prospective studies have investigated the specific class of flavonols and cancer risk, and none has included pancreatic cancer as an outcome. We estimated intakes of three flavonols, quercetin, kaempferol and myricetin, for 183,518 participants in the Multiethnic Cohort Study (MEC) and examined the association of flavonol intake with incidence of pancreatic cancer. Baseline data for the MEC were collected in Hawaii and California in 1993-96. Diet was assessed using a quantitative food frequency questionnaire especially designed and validated for this multiethnic population. The food composition table included both analyzed and published flavonol values for foods commonly consumed by MEC participants. During 8-years of follow-up, 529 incident cases of exocrine pancreatic cancer occurred. Multivariate Cox regression models using age as the time metric were calculated to estimate relative risks (RR).

Intake of total flavonols was associated with a reduced pancreatic cancer risk (RR for the highest versus lowest quintile (95% Confidence interval (CI)) = 0.77 (0.58-1.03), p trend=0.046). Of the three individual flavonols, kaempferol was associated with the largest risk reduction (RR (95%CI) = 0.78 (0.58-1.05), p trend=0.017). Across quartiles of intake, total flavonols, quercetin, kaempferol and myricetin were all associated with a significant trend toward reduced pancreatic cancer risk in current smokers (RR for the highest versus the lowest quartile = 0.41, 0.55, 0.27, 0.55, respectively), but not in never or former smokers. The interaction with smoking status was significant at p <.10 for total flavonols, quercetin and kaempferol.

In conclusion, our study provides evidence for a preventive effect of flavonols on pancreatic cancer, particularly among current smokers.

Fruit and vegetable intake and head and neck cancer in a large United States prospective cohort study.

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Head and neck cancer is the sixth leading cause of cancer related mortality worldwide, resulting in more than 350,000 deaths annually. The main causes of head and neck cancer are thought to be alcohol and tobacco use. Diet may also play an etiological role, with fruit and vegetables protecting against disease incidence, and consumption of other foods such as meat increasing risk. However, few prospective studies have examined the role of diet in head and neck cancer. Therefore, we prospectively examined the association between fruit and vegetable intake and head and neck cancer risk in 490,802 participants of the NIH-AARP Diet and Health cohort study. We used Cox proportional hazard models adjusted for potential confounders, including categories of alcohol intake, smoking dose and current/former/never smoking status, body mass index, physical activity, education, and continuous variables for age and total energy intake. We report hazard ratios (HR) and 95% confidence intervals per serving per 1000 calories. During 2,193,751 person years of follow-up from 1995/1996-2000, 787 participants were diagnosed with head and neck cancer. We found an inverse association between combined fruit and vegetable intake and head and neck cancer risk (HR: 0.94, 0.89-0.99). In models mutually adjusted for fruit and vegetable intake, a significant protective association was observed for vegetables (HR: 0.89, 0.82-0.97) but not fruits (HR: 0.98, 0.91-1.06). The associations were similar in men and women. When we examined anatomic sub-sites of head and neck cancer, the association between vegetable consumption and cancer was significant for the oral cavity (319 cases, HR: 0.84, 0.73-0.95) and suggestive inverse associations were seen for cancers of the oro-hypopharynx (142 cases, HR: 0.90, 0.74-1.09) and larynx (279 cases, HR: 0.91, 0.79-1.05). We found no significant associations between fruit intake and individual head and neck cancer sub-sites. We further examined fruit and vegetable consumption by classifying foods into 13 separate botanical groups. Leguminosae (dried beans, string beans, and peas, HR: 0.66, 0.50-0.87), rosaceae (apples, peach, nectarines, plums, pears, and strawberries, HR: 0.62, 0.48-0.80), and umbelliferae (carrots, 0.54, 0.31-0.93) were among those botanical groups associated with decreased risk. Our results suggest that higher fruit and vegetable consumption is associated with reduced risk of head and neck cancer.

Dietary patterns and incident colorectal cancer among middle aged Americans: The NIH-AARP Diet and Health Study

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While many studies have estimated risks of colorectal cancer associated with consumption of individual foods and nutrients, a more comprehensive, diet patterns-based approach may prove informative in describing the relationship between diet and risk of disease. We conducted a diet patterns analysis using an updated data file and a more-complete set of exclusions to augment a previous report from the NIH-AARP cohort. The NIH-AARP cohort was assembled from respondents to a mailing to AARP members in 8 states. After excluding subjects with proxy respondents, prior history of cancer or end-stage renal failure, or extreme values on energy intake, 293,615 men and 198,767 women remained for analysis. We assessed diet using a 124-item food frequency questionnaire (FFQ) administered at baseline. Principal components factor analysis using all foods, adjusted for energy using the nutrient density method, identified three primary dietary patterns in both men and women. Among men, the foods that loaded heavily on the first factor were fruits and vegetables, in the second factor they were fat-reduced and diet foods, and in the third they were red meat and potatoes. Among women, the first three factors looked similar to those in men except that factors 2 and 3 were reversed. Using state cancer registries we identified 2,151 incident cases of colorectal cancer in men and 959 cases in women between enrollment in 1995 and end of follow-up in 2000. We performed proportional hazards regression adjusting for age,

ethnicity, smoking, physical activity, education, and hormone therapy (in women) to estimate relative risk of incident colorectal cancer by quintile of factor score for each of the three factors. Men with high factor scores on the fruit and vegetable factor were at decreased risk of colorectal cancer (RR for Q5 vs. Q1 = 0.81, 95% CI 0.71-0.93) as were men with high scores on the fat-reduced and diet foods factor (RR = 0.81, 95% CI 0.71-0.93). High scores on the red meat and potatoes factor were associated with an increased risk (RR = 1.18, 95% CI 1.02-1.35). Unlike the men, women with high scores on the fruit and vegetable factor did not experience any change in risk, but they did see a similar risk reduction on the fat-reduced, diet food factor (RR = 0.80, 95% CI 0.66-0.98). The women saw an even greater increase in risk than the men with high scores on the red meat and potatoes factor (RR = 1.48, 95% CI 1.20-1.83). The inverse association with the fat-reduced and diet foods pattern was consistent between men and women, but scores on this pattern were correlated with many "healthy" behaviors. While we did adjust for these in the multivariate models, we cannot rule out residual confounding by "healthy lifestyle."

Consumption of flavonol-rich vegetables, fruits, and tea may help reducing the risk of pancreatic cancer. Cruciferous veggies may ward off bladder cancer

SCIENCE NEWS May 25, 2007

NEW YORK (Reuters Health) - Substances found in cruciferous vegetables, like broccoli and cauliflower, may help protect people from bladder cancer, a new study shows.

People who consumed the most of these substances, called isothiocyanates (ITCs), had a 29-percent lower risk of the disease than those who consumed the least, Dr. Hua Zhao and colleagues from the University of Texas M.D. Anderson Cancer Center in Houston found.

Studies in animals have found ITCs prevent tumor growth, while epidemiological studies suggest they may lower lung and colon cancer risk, Zhao and his team note in the *International Journal of Cancer*.

They point out that ITCs have detoxifying effects and can enhance the normal development of cells while promoting cell suicide in abnormal cells.

To investigate whether ITCs might protect against bladder cancer, the researchers compared ITC intake for 697 bladder cancer patients and 708 healthy controls. The average age of the subjects in both groups was 63 years old.

Diets high in meat boost skin cancer risk

May 31, 2007 *American Journal of Clinical Nutrition*, May 2007.

NEW YORK (Reuters Health) - An Australian study hints that diets with high amounts of meat and fat compared with those rich in vegetables and fruit appear to increase the risk of squamous cell carcinoma of the skin -- one of the most common forms of skin cancer.

"Our study," lead investigator Dr. Torukiri I. Ibiebele told Reuters Health, "shows that particularly for people who have a history of skin cancer, there is benefit in avoiding fatty foods, overly processed foods, and foods with high amounts of sugar."

Ibiebele, of the Queensland Institute of Medical Research, Brisbane and colleagues examined the dietary patterns of 1,360 people enrolled in a community-based skin cancer study. Using 38 food groups, the researchers established two major dietary types: a meat and fat pattern and a vegetable and fruit pattern. The meat and fat pattern diet was found to significantly increase the risk of squamous cell carcinoma. The risk was especially high in subjects with a history of skin cancer and who had greatest consumption of meat and fat.

Conversely, the risk of squamous cell carcinoma of the skin appeared to be significantly reduced among those who had a high consumption of fruit and vegetables. However, the investigators point out "this protective effect was mostly explained by the association with green leafy vegetables."

No association was seen between dietary patterns and cutaneous basal cell carcinoma -- another common form of skin cancer.

According to Ibiebele, this study is the "first to report on skin cancer risk in relation to the habitually eating of a variety of foods as opposed to the traditional focus on individual foods."

Diet can apparently reduce risk, Ibiebele concluded, as does "staying out of the sun during the peak hours, and use of sunscreen and protective clothing."

Intakes of Calcium and Vitamin D and Breast Cancer Risk in Women

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Arch Intern Med. 2007;167:1050-1059.

Background Animal data suggest the potential anticarcinogenic effects of calcium and vitamin D on breast cancer development. However, epidemiologic data relating calcium and vitamin D levels to breast cancer have been inconclusive.

Methods We prospectively evaluated total calcium and vitamin D intake in relation to breast cancer incidence among 10 578 premenopausal and 20 909 postmenopausal women 45 years or older who were free of cancer and cardiovascular disease at baseline in the Women's Health Study. Baseline dietary intake was assessed by a food frequency questionnaire. We used Cox proportional hazards regression to estimate hazard ratios and 95% confidence intervals.

Results During an average of 10 years of follow-up, 276 premenopausal and 743 postmenopausal women had a confirmed diagnosis of incident invasive breast cancer. Higher intakes of total calcium and vitamin D were moderately associated with a lower risk of premenopausal breast cancer; the hazard ratios in the group with the highest relative to the lowest quintile of intake were 0.61 (95% confidence interval, 0.40-0.92) for calcium ($P = .04$ for trend) and 0.65 (95% confidence interval, 0.42-1.00) for vitamin D intake ($P = .07$ for trend). The inverse association with both nutrients was also present for large or poorly differentiated breast tumors among premenopausal women ($P.04$ for trend). By contrast, intakes of both nutrients were not inversely associated with the risk of breast cancer among postmenopausal women.

Conclusions Findings from this study suggest that higher intakes of calcium and vitamin D may be associated with a lower risk of developing premenopausal breast cancer. The likely apparent protection in premenopausal women may be more pronounced for more aggressive breast tumors.

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Exercise & Nutrition

Obesity and Premenopausal Breast Cancer Survival

Review of Cancer Epidemiol Biomarkers Prev. 2006;15(10):1871-77.

Caring4Cancer Posted: 04/2007

Research strongly supports an association between obesity and poorer prognosis in postmenopausal breast cancer survivors. Less is known about obesity and premenopausal breast cancer survival. A study published in Cancer Epidemiology, Biomarkers & Prevention looked at how obesity affects survival among young women with breast cancer. The results of this study provide evidence that both general and abdominal obesity, at age 20 and at the time of diagnosis, adversely affect survival in younger women with a history of breast cancer. We provide practical information on what these findings mean, including tips and ideas to share with your patients on how to incorporate a healthy, cancer-fighting, weight management plan into their cancer care program. Factors such as age, family and personal history of cancer, and gender cannot be changed, but diet and nutrition can. A healthy diet and body weight can be powerful tools improving long term health of breast cancer survivors.

Background

Obesity is an established adverse prognostic factor in postmenopausal breast cancer (1-5). In other words, obese breast cancer survivors have poorer prognosis and higher likelihood of recurrence as compared to survivors who maintain a healthy body weight. However, less is known about how obesity may affect survival in younger women. For this reason, it is important that researchers continue to study the relationship between modifiable risk factors such as body weight and long term health outcomes. A study published in Cancer Epidemiology, Biomarkers & Prevention examined the relationship between general obesity, abdominal obesity and survival in young women with breast cancer (6). Age, gender, and personal history of cancer cannot be changed, but diet and nutrition can. Managing body weight may offer

a constructive way for young breast cancer survivors to take a more active role in their own health and decrease the likelihood of cancer recurrence.

What The Researchers Studied

For this study, researchers interviewed then followed 1,254 Atlanta and New Jersey area women aged 20 to 54 who were diagnosed with invasive breast cancer (6). Participants were weighed and waist and hip measurements collected along with information on weight at age 20 and usual adult weight prior to diagnosis. Interviews with study participants occurred on average, within 4 months of diagnosis. Information on other important factors, including contraceptive and reproductive history, lactation history, family history of breast cancer, physical activity, tobacco and alcohol use, diet (calories, fat, fruit and vegetable intake), menopausal status, co-morbid conditions, age at menarche, income and education levels, marital status, age at diagnosis, race, disease stage, estrogen and progesterone receptor status, treatment type, prior breast biopsies, and treatment center was collected and accounted for in the study. The women were followed for 8 to 10 years after diagnosis. The researchers used all of this information to examine possible associations between general and abdominal obesity and outcomes after breast cancer diagnosis in young women.

Obesity is defined as having a body mass index (BMI) > 30 kg/m². To determine BMI for various heights and weights, please see our Body Mass Index Calculator.

What The Study Found

First, women who were obese at the time of interview had 1.48 times the risk of death as compared to women of ideal weight at interview.

Second, women who were obese (self report) at age 20 had 2.49 times the risk of death as compared to women of ideal weight (self report) at age 20.

Third, women who were obese (self report) at age 20 and obese at the time of interview (measured) had 2.22 times the risk of death as compared to women of ideal weight (self report) at age 20 and ideal weight at the time of interview (measured).

Fourth, women in the highest quartile of waist-to-hip (WHR) ratio (WHR > 0.86) at the time of interview had 1.52 times the risk of death as compared to women in the lowest quartile of WHR (WHR < 0.76).

Finally, women with a waist circumference > 88 cm (approximately 35 inches) at the time of interview had 1.75 times the risk of death as compared to women with a waist circumference < 79 cm (approximately 31 inches).

What do these results mean?

If the women in this study are like most women, these results indicate that both general and abdominal obesity significantly increase the risk of death after breast cancer in younger women. But all research has flaws and this study is no exception. The major issue with this type of research is that it cannot prove cause and effect. The study only tells us that there is an association between obesity, high waist-to-hip ratio (WHR), high waist circumference, and risk of death after breast cancer in younger women. It is important to remember that an association is not causation (cause and effect).

However, this study does agree with the current medical literature indicating that overweight and obesity is not healthy, especially for women with a history of breast cancer (1). Research going back more than two decades affirms that obesity is an adverse prognostic factor among women diagnosed with breast cancer (7-16). Furthermore, this study is relatively large, had a long follow up period, and controlled for many potential confounding factors that can affect results. Most importantly, there are no downsides to maintaining a healthy body weight, while there are many downsides to being overweight and obese.

Managing Weight for Better Health in Cancer Survivors

The study reviewed here (6) supports that maintaining a healthy body weight is a very important part of reducing risk of recurrence and death, and increasing long term health and well being in women of all ages after a breast cancer diagnosis. In addition to reducing cancer risk, being at a healthy body weight will reduce risk of heart disease, hypertension, diabetes, and stroke (17-21) in cancer survivors, all of which are major causes of death in the United States.

Advice Physicians Should Share with Patients

The first thing to remember is that weight loss is not easy. Don't be hard on yourself if you've struggled with maintaining a healthy weight. This is a health concern for many people. If you've tried to lose weight in the past and have not succeeded, don't give up. Just because you haven't met your weight loss goals in the past does not mean you won't be able to succeed this time. Every time you embark on a weight loss plan, you learn a little more about what works for you, improving the odds that you can get it right the next time.

We know that many, many people struggle with weight loss. Nobody is immune from the difficulty of making healthy food choices when confronted with fast food restaurants and vending machines. However, by changing the way you think about food and health and improving a few habits, you can succeed at weight loss and healthy eating. Use the tips below to get started on the road to improving your diet and maintaining a healthy body weight.

Examine Your Risk

Look at your current height and weight and be honest with yourself about whether you are overweight. This may be harder than it sounds. Researchers have found that many overweight and obese adults do not know that they are above a healthy body weight (22-24). The first step toward a healthy body weight is accepting where you are so that you can focus on how to manage your weight and improve your health. Let go of self-blame and move onto self-care.

How do you know if you're overweight or obese? You can use a measure called Body Mass Index (BMI). BMI is a way to measure body weight, while taking into account a person's height. To determine your BMI, please see our Body Mass Index Calculator.

Be Easy With Yourself!

Being kind to yourself is very important, especially if you are dealing with a serious health issue such as cancer. You have a lot on your mind and you need to take care of yourself physically and emotionally.

Modify Your Views & Goals

One of the most important things you can do to increase your chances of success with weight loss is to view these changes as A GIFT!

Losing weight to improve your health is NOT a punishment. It is a gift.

Realize that weight loss won't be easy, but when you succeed, you will feel better, you will have a better quality of life, and you will decrease your risk of many serious diseases.

This is a gift to you, but it is also a gift to your family and friends. Anyone who cares about you will benefit from the gift of health that you give yourself by maintaining a healthy body weight.

Make your goal improved health, rather than simply "looking better". While improvements in appearance are a great benefit of weight loss, focusing on the health benefits of weight loss will help you meet your goals today and for the long term.

Health benefits can include anything that will help motivate you. This can include sleeping better; having less joint & muscle pain; having more energy; lowering your risk of cancer, heart disease, high blood pressure, diabetes, stroke and other serious conditions; improving your sense of well being and self-image; and just about any other health improvement you can think of. Weight loss will help with all of these goals.

Find A Supportive Health Care Provider!

This is one of the most important things you can do to help yourself succeed. Research tells us that many health care providers have a very negative view of men and women who are obese (25). When you want to lose weight and improve your health, the last thing you need is a health care provider who is critical and unsupportive!

Talk to your doctor honestly about your desire to lose weight and improve your health.

Tell him/her that you would like help with your goals.

Ask for a referral to a weight loss specialist such as a Registered Dietitian.

If your doctor is not supportive of your goals or places the focus on blaming you for being overweight, consider finding a more supportive health care provider.

Consult with a Registered Dietitian (RD)

Studies of breast cancer survivors tell us that working with a dietitian can significantly increase the likelihood that you lose weight and keep it off (26). Many people feel that they don't want to spend the money for individual weight management counseling with a dietitian. However, when it comes to successful weight loss, the research tells us that dietitians can help you get results.

To Find a Dietitian:

Request an appointment with the dietitian who works in the clinic where you are being treated for your cancer.

If the clinic or cancer center where you are being treated for your cancer does not have a dietitian available, ask if they are affiliated with a hospital or other health care center that does have a dietitian.

If you ask for a dietitian and still cannot obtain an appointment to see one, go the American Dietetic Association website and use the "Find A Nutrition Professional" feature.

Or you may contact the American Dietetic Association directly to request help by emailing knowledge@eatright.org or calling 1-800-366-1655.

Find Additional Support and Help

Receive support from a weight loss organization such as Weight Watchers®. A weight loss program with group meetings can help you develop a sensible and successful weight loss plan.

Try both a dietitian and a Weight Watchers® program. The more support and help you get with your weight management efforts, the more likely you will be to succeed. A recent study showed that women with a history of breast cancer who saw a dietitian and received coupons to attend Weight Watchers® meetings lost the most weight and lost the most body fat (26).

Be sure you think about weight loss and healthy eating as a lifestyle rather than a temporary diet. This is important! For long-term weight loss success, you must change your eating and exercise habits permanently.

Eliminate High Calorie/Low Nutrition Foods

New research is telling us that certain parts of our diet might be contributing a lot to the problem of obesity. One potential obesity contributor is high fructose corn syrup. Studies tell us that the eating a lot of high fructose corn syrup may be making the obesity problem worse (27,28).

What is high fructose corn syrup?

High fructose corn syrup is a sweetener found in many commonly eaten foods and beverages. One of the biggest contributors to the higher levels of high fructose corn syrup in our diets is soda pop. There are many other sources of high fructose corn syrup too. To address this problem...

DROP THE POP habit. Soda pop contains a large amount of high fructose corn syrup. This includes both "brown" and "clear" regular soda pops.

When you switch from regular soda pop to water, decrease the amount of soda pop you drink slowly. This will help prevent symptoms of caffeine withdrawal, such as headaches.

If you do not like plain water, try carbonated water that does not contain high fructose corn syrup. Look at the label. If the water contains calories, it contains sugar or high fructose corn syrup. Instead pick a brand that does not contain calories. Plain, flavored, or carbonated water will not contain calories.

Small amounts of diet sodas are ok, but they do not add anything of nutritional benefit to your diet. For this reason, think of a diet soda as a treat, not a daily necessity.

Other sources of high fructose corn syrup include fruit punches (6 ounces of 100% fruit juice is ok to count as one serving of fruit per day); baked goods such as doughnuts, cookies, cakes, candy bars, hard candy, and other desserts; jams; jellies; sauces and dressings; and many other highly processed foods such as instant meals and snack foods.

Avoid or limit processed food. Instead focus on foods that are as close to their "natural form" as possible, such as fresh vegetables and fruit.

Make dessert an OCCASSIONAL treat. There is nothing wrong with having a sweet treat now and then. Just make sure 'now and then' only means 2-3 times per week.

Watch Portion Sizes

If you do eat in restaurants, watch your portion sizes. Instead of eating everything on your plate, ask for a "to go" box at the beginning of your meal and place a portion of the food into it.

When eating at home, try measuring your portion sizes for a while. For example, a serving of pasta is 1/2 cup cooked. Try measuring this out to see what it looks like. If you want more than one serving, this can be ok, just be sure you know you are eating more than one serving. Sometimes, just being aware of what you are eating can help you make better choices.

Get Moving

This is a very important point. Physical activity is a key component of long term wellness. Furthermore, exercise is a necessary part of any healthy weight management plan.

Talk to your health care provider about a good exercise plan for you and receive clearance from your doctor before beginning any regular physical activity.

Exercise does not have to be fancy or difficult. Simply taking a long, brisk walk each day can be enough to aid with weight loss and make you healthier.

Find an exercise buddy such as a family member or co-worker. It is harder to skip exercise when you plan to meet someone for it.

Schedule exercise, even 10 minutes, into your day. Write it on your calendar. If you don't make time for it, you won't do it.

NOTE: If you are in cancer treatment, these diet changes may not be right for you.

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Healthy Diet, Exercise Might Lower Chances of Cancer's Return

June 3 (HealthDay News) -- In an era of highly complex medications with highly complex mechanisms and even more complicated names, take comfort that some basic (and pronounceable) lifestyle changes can have an impact on cancer outcomes.

Diet and exercise still matter, according to two studies that were presented Saturday at the American Society of Clinical Oncology annual meeting in Chicago.

One study found that individuals with stage III colon cancer who had undergone surgery and chemotherapy had higher odds of relapsing or dying if they followed a predominantly "Western" diet of red meat, fat, refined grains and dessert.

"This is the first large amount of data to look at whether diet affects colon cancer survivors, and the suggestion is that dietary factors may have an effect," said study author Dr. Jeffrey Meyerhardt, an assistant professor of medicine at Dana-Farber Cancer Institute and Harvard Medical School, both in Boston. "Certainly we need more studies to understand the patterns. We also need to emphasize that diet is not a substitute for standard treatment."

Dr. Neal Meropol, director of the Gastrointestinal Cancer Program at Fox Chase Cancer Center in Philadelphia, added: "This suggests that diet can influence not only the development of cancer, but the chance that your colon cancer will come back. This is a very important result because it suggests that one can make a behavioral adjustment that could reduce their risk of dying from colon cancer."

Meropol emphasized, however, that the issue of diet and cancer development or recurrence is an extremely complex one.

People with stage III colon cancers have positive lymph nodes, although the cancer does not indicate any evidence of spreading outside of the local colon area. Standard treatment is surgery followed by chemotherapy.

More than 1,000 patients with stage III colon cancer who were participating in a trial of adjuvant chemotherapy were asked to complete questionnaires on their diet for six months after the chemotherapy ended. Researchers then tracked the participants to see if their cancer recurred or if they died.

Dietary patterns fell into two categories: "Western," which involved a high intake of red meat, fat and dessert, and "prudent," meaning high fruit, vegetable, poultry and fish consumption.

The two dietary patterns did not necessarily preclude each other. "Everyone has some score for each of those patterns," Meyerhardt stated. "Someone might eat a lot of hamburger and a lot of vegetables."

People who consumed the highest levels of the Western diet had almost quadruple the risk of recurrence or death compared with those who consumed the least in this category.

"Those who had a higher intake of a Western-pattern diet characteristic of more red meat and dessert had a significantly higher risk of recurrence and mortality, about four times as high," Meyerhardt said.

What's interesting is that the dietary pattern seemed to have an effect in a relatively short period of time -- years, as opposed to a lifetime. Why? One hypothesis is that this type of diet stimulates some growth factors that allow the growth of microscopic disease, Meyerhardt said.

But it also raises the question of whether the study participants had modified their diet after their diagnosis or whether this was a continuation of past patterns. "Future research should be geared toward answering that very question, whether changing a diet from Western to prudent would in fact reduce the risk of dying from colon cancer," Meropol said.

A second study, also from Dana-Farber, found that previously sedentary breast cancer survivors who exercised reduced the amount of insulin in their blood. It was unclear, however, what effect this might have on cancer recurrence, but the suggestion is that insulin levels may explain why physical activity has been associated with better outcomes.

Previous studies have shown that women who shed extra pounds and became more physically active had a lower risk of breast cancer recurrence. Women who are obese at the time of diagnosis, by contrast, have a higher level of recurrence.

For this study, researchers assigned 101 women with breast cancer to a 16-week program of cardiovascular exercise and strength training or to "normal" care. All women had their insulin and blood glucose levels measured, as well as their weight, body composition, and waist and hip circumference. Participants had already completed chemotherapy and/or radiation but had not started on any hormonal therapies, said study author Dr. Jennifer Ligibel, an instructor of medicine at Dana-Farber and Harvard. Women in the exercise group lowered their insulin levels by about 20 percent, Ligibel said, an amount that approached statistical significance. These women also had a trend toward improved insulin sensitivity, meaning how their body responds to the hormone insulin.

"The ultimate goal is to look at exercise vs. not exercising and see what happens to women's breast cancer," Ligibel said.

Body mass index and mortality in men treated for locally advanced prostate cancer: An analysis of RTOG 85-31.

Journal of Clinical Oncology, 2007 ASCO Annual Meeting Proceedings Part I. Vol 25, No. 18S (June 20 Supplement), 2007: 5128

J. A. Efstathiou, K. Bae, W. U. Shipley, G. E. Hanks, M. V. Pilepich, H. M. Sandler, M. R. Smith

Background: Greater body mass index (BMI) is associated with shorter time to prostate-specific antigen (PSA) failure following radical prostatectomy. We investigated whether BMI is associated with prostate cancer-specific mortality (PCSM) in a large randomized trial of men treated with radiation therapy (RT) and androgen deprivation therapy (ADT) for locally advanced prostate cancer. **Methods:** Between 1987

and 1992, 945 eligible men with locally advanced prostate cancer were enrolled on a phase III trial (RTOG 85-31) and randomized to RT and immediate goserelin (Arm I) or RT alone followed by goserelin at relapse (Arm II). Height and weight data were available at baseline for 788 (83%) subjects. Cox regression analyses were performed to evaluate the relationships between BMI and all-cause mortality, PCSM, and non-prostate cancer mortality. Covariates included age, race, treatment arm, history of prostatectomy, nodal involvement, Gleason score, clinical stage, and BMI.

Results: The 5-year PCSM rate for men with BMI<25kg/m² was 6.5%, compared to 13.1% and 12.2% in men with BMI=25-<30 and BMI=30, respectively (Gray's p=0.005). In multivariable analyses, as shown in the Table, greater BMI was significantly associated with higher PCSM [for BMI=25-<30, hazard ratio (HR) 1.52, 95% confidence interval (CI) 1.02-2.27, p=0.04; for BMI=30, HR 1.65, 95% CI 1.02-2.66, p=0.04]. BMI was not associated with non-prostate cancer or all-cause mortality.

Conclusions: Greater baseline BMI is independently associated with higher PCSM in men with locally advanced prostate cancer. Further studies are warranted to evaluate the mechanism(s) for increased mortality and to assess whether weight loss after prostate cancer diagnosis alters disease course.

Multivariable Analysis of PCSM

Covariate	Comparison	No. Men	HR	95% CI	p-value
Age	< 70 vs. = 70	372 416	1.21	0.86, 1.70	0.27
Race	Black vs. Other	72 716	0.9	0.52, 1.56	0.72
Treatment arm	Arm II vs. Arm I	385 403	0.57	0.41, 0.78	0.0004
Prostatectomy	No vs. Yes	662 126 -	0.51	0.30, 0.87	0.013
Nodal involvement	No vs. Yes	568 220	2.22	1.46, 3.37	0.0002
Gleason score (Central review)	2-6 vs. 7-10	203 519	3.47	2.19, 5.49	<0.0001
Clinical stage	A-B vs.C	228 560	1.28	0.82, 2.02	0.28
BMI	< 25 =25,< 30 = 30	241 402 145	1.52 1.64	1.02, 2.28 1.01, 2.66	0.041 0.043

HR=Hazard ratio, CI=confidence interval

Endometrial cancer survivorship in obese patients: A lifestyle intervention program

Journal of Clinical Oncology, 2007 ASCO Annual Meeting Proceedings Part I. Vol 25, No. 18S (June 20 Supplement), 2007: 5596

Author(s): V. E. Von Gruenigen, S. Waggoner, H. Gibbons, M. Kavanagh, K. Courneya, E. Lerner

Abstract: Background: The majority of early stage endometrial cancer (EC) survivors are obese, have cardiovascular disease and are at significant risk of death from causes other than cancer. The purpose of this study was to examine outcomes at 6 and 12 months in obese EC survivors enrolled in a randomized trial of a nutrition and exercise counseling program. Methods: Patients (pts) with early stage (I or II) EC with a body mass index > 25 diagnosed from 1999-2005 were invited to participate. The intervention (I) group received 6 months of nutritional and exercise counseling while the control (C) group received an informational brochure only. Primary outcome variable was weight loss. Quality of life (QoL) was measured by the Functional Assessment of Cancer Therapy-General (FACT-G) and Medical Outcomes Short-form (SF-36) survey. Exercise [leisure score index (LSI)] and eating patterns (quantitative food records) were assessed at baseline, 3, 6 and 12 mos. Repeated measures ANOVA and independent samples t-test were used for analysis. A sample size of 50 pts with a type 1=0.05 and type 2=0.20 error rate was used to test the hypothesis that pts in the I group would lose weight as compared to the C group. Results: 45 pts were enrolled and 23 were randomized to I and 22 to the C group, stratified by BMI.

Baseline QoL was decreased in morbidly obese pts (BMI > 40) as compared to pts with a BMI < 40 (FACT-G: 78.0 vs. 83.7; p=0.140; physical SF-36: 40.6 vs. 49.1 p=0.008). Women in the I group lost weight and increased exercise over the 12 mos as compared to controls (Table). Repeated measures ANOVA demonstrated a borderline significant interaction effect for weight (F=2.7, p=.074) and a significant interaction effect for exercise (F=5.0; p=.005) over time. The I group had lower intake of calories and total fat during the intervention. Conclusions: Obese EC survivors can undergo and maintain positive lifestyle changes. Future studies will examine long-term changes in co-morbidities and mortality.

Clinical outcomes by group at six and twelve months

	Intervention Group (n=23)	Control Group (n=22)	Mean Group Difference (95% CI)	p value*
Weight change from 0 to 6 mos	3.3 ± 1.2 kg	-0.8 ± 1.3 kg	-2.5 (-6.2, 1.1)	.168
Weight change from 0 to 12 mos	-3.5 ± 1.5 kg	1.4 ± 1.3 kg	4.9 (-9.0, -0.9)	.018
Exercise (LSI) change from 0 to 6 mos	17.7 ± 4.0	2.1 ± 2.7	5.6 (4.4, 23.1)	.005
Exercise (LSI) change from 0 to 12 mos	16.4 ± 4.5	-1.3 ± 2.7	17.8 (3.3, 25.8)	.013

*independent samples t-test

Sense of Inevitability Hurts Cancer Prevention

Washington Post, May, 2007-05-18

Many Americans fear they can do nothing to protect themselves from cancer, and they may be creating a self-fulfilling prophecy, researchers said yesterday.

Their survey of more than 6,000 people found that nearly half -- 47 percent -- agreed that "nearly everything causes cancer" and that more than a quarter felt there was little they could do about it.

Yet an estimated two-thirds of cancer cases can be prevented with common-sense measures, such as not smoking, eating plenty of fruits and vegetables, and avoiding too much sun, according to the American Association of Cancer Research and the National Cancer Institute.

"They say, 'Well, there is nothing much you can do about it,' and, as our survey shows, they indeed do nothing about it," said Jeff Niederdeppe of the University of Wisconsin, who helped lead the study. "Yet we know that approximately 30 percent of cancer deaths are attributed to smoking, while 15 to 20 percent are linked to overweight and obesity. Clearly, there are very specific things we can do to reduce our personal risk for getting cancer."

Niederdeppe and colleagues analyzed a National Cancer Institute survey that asked people whether they agreed with three statements about cancer. About 47 percent agreed that "it seems like almost everything causes cancer," while 27 percent agreed that "there's not much people can do to lower their chances of getting cancer."

Most of all, Americans are confused, with 71.5 percent agreeing that "there are so many recommendations about preventing cancer, it's hard to know which ones to follow," researchers wrote in the journal *Cancer Epidemiology, Biomarkers & Prevention*.

People who agreed with at least one of the three statements were less likely than others to exercise weekly and eat five daily servings of fruits and vegetables.

Hyperglycemia and obesity in patients (pts) with acute lymphoblastic leukemia (ALL): Association with prevalence, response, and survival.

Journal of Clinical Oncology, 2007 Vol 25, No. 18S (June 20 Supplement), 2007: 7074

K. D. Vu, V. R. Lavis, S. Strom, S. H. Faderl, M. Konopleva, D. A. Thomas, S. Gruschkus, M. Andreeff, H. Kantarjian

Abstract: Increasing evidence suggests associations between obesity, diabetes and/or hyperglycemia (DM/HG) and solid tumors. Less is known about the relationship of these metabolic factors to the hematologic malignancies. To determine the prevalence of DM/HG and obesity in pts with ALL and whether these are predictors of response and survival, we conducted a retrospective chart review of 299 pts with newly diagnosed ALL, who were evaluated at our institution between November 1999 and May 2005 and received hyper-CVAD therapy: fractionated cyclophosphamide, vincristine, doxorubicin, dexamethasone alternating with methotrexate and high-dose cytarabine. Median age was 43 yrs (range

15-83). Sixty-one percent of pts were male, and 39% female. Seventy-four percent had a diagnosis (dx) of precursor B cell ALL (22% Ph+), 18% Burkitt's ALL, 6% lymphoblastic lymphoma, 2% other. Prior to therapy, the overall prevalence of DM/HG (diabetes based on reported dx prior to ALL-dx, and hyperglycemia based on baseline serum glucose >200 mg/dL) was 16%. Pts with DM/HG were significantly older than those without DM/HG (median age 57 yrs vs. 40 yrs, $p < 0.001$). Complete remission (CR) rate and the CR duration (CRD) were similar in the DM/HG vs. non-DM/HG group. However, the mean CRD was 80 wks in the HG separately group and 121 wks in the non-HG group ($p = 0.04$). The mean CRD was 102 wks in the obese pts and 124 wks in the non-obese pts ($p = 0.04$). In univariate analysis, DM/HG, obesity, and older age were associated with shorter overall survival (OS). Mean OS of pts with DM/HG was 134 vs. 194 wks for pts without DM/HG, ($p = 0.2$). Mean OS of obese pts was 136 vs. 199 wks for non-obese pts, ($p = 0.01$). In a multivariable Cox regression model, the only factors that remained significant for survival were age, obesity, and white blood cell count (WBC). There was no significant difference in OS by leukemia diagnosis. In conclusion, the prevalence data suggests that DM/HG may be involved in the development of ALL. However, DM/HG has no impact on survival, probably because of its strong correlation with age. The association of obesity with shorter OS warrants further investigation.

Body mass index and response to neoadjuvant chemotherapy in breast cancer patients.

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Abstract: Background: Obesity in breast cancer patients is associated with increased risk of poor outcome. One possible mechanism is that obesity may affect metabolism of chemotherapeutic agents, influencing tumor response to chemotherapy. To test this hypothesis, we evaluated the relationship between body mass index (BMI, weight kg/height m²) and response to neoadjuvant chemotherapy in women diagnosed with operable breast cancer. Methods: From May 1990 - July 2004, 1169 patients diagnosed with invasive breast cancer at our institution, received neoadjuvant chemotherapy (anthracycline and/or taxane) followed by definitive surgery. Based on BMI, patients were categorized as obese (BMI >30), overweight (BMI 25 to <30), normal weight (18.5 to <25) and underweight (BMI <18.5). We used logistic regression to examine associations between BMI and pathologic response to therapy (complete= no invasive carcinoma, and partial) as well as tumor characteristics. Kaplan-Meier survival curves for BMI groups were compared using the log-rank test. Results: Median patient age was 50 (range 23 - 84) years; 30% were obese, 32% overweight, 36% normal weight and 1% underweight. BMI was not significantly associated with pathologic response to neoadjuvant chemotherapy even after adjusting for relevant clinical factors (OR 1.00; 95% CI 0.96-1.03, $p = 0.8$). Compared to patients not overweight, obese patients had higher odds of having ER negative tumors (OR 1.5; 95% CI 1.1-2.0; $p = 0.01$) and T3 or T4 lesions (OR 1.7; 95% CI 1.3-2.4, $p < 0.001$) adjusting for age, race and menopausal status. At a median follow up of 4.1 (range 0.2-14.3) years, obesity was significantly associated with poorer overall survival ($p = 0.006$) but not progression-free survival. Conclusions: Obese patients presented with more aggressive tumor characteristics and had worse overall survival compared to patients not overweight. However, BMI was not related to lower tumor response to anthracycline and/or taxane based neoadjuvant chemotherapy suggesting a role for other co-morbidities in influencing outcome. Understanding specific components through which overweight and obesity contribute to breast cancer outcome is essential to individualize and improve care of overweight/obese breast cancer patients.