

Does a low-fat diet help prevent breast cancer?

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CLINICAL COMMENTARY

Losing weight is still a good strategy

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Women at risk for breast cancer – and cancer survivors – want to know about lifestyle changes that can reduce their risks for cancer or recurrence. There is growing evidence that obesity plays a role in cancer development and promotion.

A low-fat diet has been demonstrated as a successful strategy for weight loss. However, for most women, making these changes can be difficult without extensive instruction, support, and motivation. Limiting sweetened beverages, increasing consumption of fruits and vegetables, and limiting fat intake are 3 strategies women can use to achieve a healthy weight. If this turns out to reduce their risk of breast cancer, so much the better!

EVIDENCE-BASED ANSWER

No. Studies show no evidence that reducing dietary fat decreases a woman's risk of developing postmenopausal breast cancer within the subsequent 14 years (strength of recommendation [SOR]: B, based on large heterogeneous prospective cohort studies and appropriate meta-analyses of these studies). Overall, evidence is insufficient to recommend for or against reduction in dietary fat to reduce risk of breast cancer for women, although recommendations for prudent fat intake may be justified on other grounds.

EVIDENCE SUMMARY

Our Medline search retrieved 1114 English-language studies published from 1960 through October 2006. We limited this set to randomized controlled trials and cohort studies, leaving 212 articles. We then excluded articles that had small sample sizes, did not follow subjects for at least 5 years, did not include original data, included men, did not give prevalence or incidence rate of breast cancer in the subjects, or did not discuss diet assessment tools. Of the remaining articles, we selected the 11 best studies to include in the review.

Early studies evaluating national average dietary fat intake and breast cancer incidence rates showed an almost linear relationship between increased dietary fat and increased breast cancer incidence. (1) However, increased fat intake occurs primarily in industrialized nations, providing multiple possible confounders for increased rates of breast cancer, such as pollutants and increased consumption of preservatives, pesticides, and other chemicals.

FAST TRACK

Reducing a woman's dietary fat intake does not appear to reduce her risk of breast cancer.

Case-control studies have shown some minimally increased risk related to dietary fat consumption, but there is concern about recall bias in these studies. (2) Since the late 1970s, 7 large, well-designed prospective cohort studies

have examined the possible relationship between dietary fat and breast cancer. (1) The findings have been somewhat contradictory, with some studies showing statistically significant associations toward increased risk with higher fat intake. (3-5)

Since the late 1990s, several meta-analyses, a systematic review of these cohort studies, and the Women's Health Initiative Randomized Controlled Diet Initiative have largely concluded that there is no difference in breast cancer incidence between women with a low-fat diet (<20% of total calories from fat) and women with average or high-fat diets (>40% total calories from fat) (1,3,6,7).

The meta-analysis performed by Boyd et al did find a statistically significant difference, with relative risks ranging from 1.11 for overall to 1.19 for high-saturated-fat diets (8). The upper limit of all confidence intervals was no higher than 1.35, however, suggesting a lack of clinical significance. The best-designed studies also evaluated dietary composition with regard to key types of fat (saturated, mono- and poly-unsaturated; animal vs vegetable vs marine) and found no significant differences based on type of fat consumed (1).

Preliminary evidence indicates that lowering dietary fat consumption may help with secondary prevention of breast cancer, but no large studies have been performed to date (9). Recently, a nested study within the Women's Intervention Nutrition Study did show that

women with breast cancer who decreased their fat intake to a median of 33 g/day had a hazard ratio of 0.76 for relapse over 60 months (compared with controls who ate a median of 51 g/day) (10).

FAST TRACK

The WHI showed that women with breast cancer who reduced fat intake had a lower hazard ratio for relapse.

RECOMMENDATIONS FROM OTHERS

There are no evidence-based or specific recommendations for the primary prevention of postmenopausal breast cancer for women through dietary fat reduction. In particular, neither the American Academy of Family Physicians, American College of Surgeons, National Institutes of Health, American College of Obstetricians and Gynecologists, American College of Physicians, US Preventive Services Task Force, or the Centers for Disease Control and Prevention provide any guidelines on dietary fat restriction for primary prevention of postmenopausal breast cancer.

The American Heart Association does have guidelines for coronary artery disease prevention for women, which include a low-fat diet (11). The USPSTF has no specific guidelines regarding dietary fat consumption for the general population.

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Human stem cells heal the hearts of rats

By MAGGIE FOX, Health and Science Editor

WASHINGTON (Reuters) – A nutritious cocktail helped human embryonic stem cells thrive and repair the damaged hearts of rats, U.S. researchers reported on Sunday.

The experiment provides the best evidence yet that the powerful but controversial stem cells might be used to repair the ravages of heart attacks and heart failure, the researchers said.

Biotechnology company Geron Corp said it would try to develop the cells into a product. "We're developing our cardiomyocyte product, GRNCM1, to address the large unmet need in heart failure," said Dr. Thomas Okarma, president and chief executive officer of Geron.

Stem cells are the body's master cell, acting as a source for the various cells and tissues in the body. Those taken from days-old embryos, called embryonic stem cells, are the most malleable and can produce all of the cell types.

Their use is controversial because some people oppose the destruction of a human embryo. U.S. President George W. Bush has kept strict limits on federal funding of human embryonic stem cell research. There are no restrictions on privately funded researchers.

Okarma said embryonic stem cells were the only human stem cells that had been shown to form cardiomyocytes – heart muscle cells.

Because embryonic stem cells are so immature, it is very difficult to control what kinds of cells they produce, and the fear is that a tooth could grow inside a heart, for instance.

"We got stem cells to differentiate into mostly cardiac muscle cells, and then got those cardiac cells to survive and thrive in the damaged rat heart," said Dr. Chuck Murry of the University of Washington's Institute for Stem Cell and Regenerative Medicine, who worked on the study.

But the cells died when they injected them into the hearts of the rats, the researchers reported in the journal *Nature Biotechnology*.

COMMON PROBLEM

"This problem is not unique to our system. Death of transplanted cells is slowing research progress in cell therapy for diabetes, Parkinson's disease and muscular dystrophy, among other diseases," they wrote.

So the team developed what they dubbed a "survival cocktail" that included various proteins and other compounds to stop the cells from dying.

It worked. When they caused heart attacks in the rats and then injected the new heart muscle cells, every graft survived and integrated into the hearts of the rats.

They beat in rhythm and improved the heart function of the rats, they reported.

"This is one of the most successful attempts so far using cells to repair solid tissues – every one of the treated hearts had a well-developed tissue graft," Murry said.

This is key to treating someone after a heart attack, known medically as a myocardial infarction, said Dr. Michael Laflamme, who also worked on the study.

"This sort of treatment could help the heart rebound from an infarction and retain more of its function afterwards," Laflamme said in a statement.

An estimated 865,000 people have heart attacks in the United States every year and more than a third eventually develop heart failure, a chronic condition in which the heart fails to pump blood properly. A third of heart failure patients die within two years.

Source: REUTERS/HEALTH, Sunday, August 26, 2007

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