Diet, exercise reduce breast cancer biomarkers

For overweight women, another advantage of weight loss may be that it lowers their exposure to biomarkers associated with breast cancer, researchers say.

Weight loss, especially when achieved by kilojoules reduction plus exercise, significantly lowered serum estrogens and free testosterone in postmenopausal women who were the focus of a report in the *Journal of Clinical Oncology*.

"Just losing 5% of starting weight had a significant effect," said senior author Dr Anne McTiernan from the Fred Hutchinson Cancer Research Centre in Seattle, Washington. "That's really promising news for patients, I believe, because it's telling us that women don't have to be a Biggest Loser to get an important health benefit."

Dr McTiernan and colleagues used data from the randomised Nutrition and Exercise for Women trial to assess the independent and combined effects of reduced-kJ weight loss and moderate-to-vigorous aerobic exercise interventions on serum sex hormones (the primary outcome), fasting insulin, C-reactive protein, adiponectin, and leptin, all potential biomarkers of breast cancer risk.

Increase in sex hormone

The goal of the lifestyle intervention programmes was a 10% reduction in body weight by six months with maintenance to 12 months.

The study included 421 women ages 50 to 75 (mean age, 58; mean body mass index, 30.9 kg/m2).

Weight loss at 12 months ranged from 0.6% of body weight in women assigned to the control group, to 11.9% of body weight in the diet plus exercise group. Women in diet-only groups lost a mean of 10.8%, and the exercise-only groups lost an average of 3.3%.

Diet plus exercise brought the greatest decreases in estrone (11.1%), estradiol (20.3%), free estradiol (26.0%), and free testosterone (15.6%) and the greatest increase in sex hormone binding globulin (25.8%), but significant changes were also achieved with diet and to a smaller extent with exercise alone.

Fasting insulin and C-reactive protein decreased significantly in the diet and diet plus exercise groups. Leptin declined significantly in all intervention groups, and adiponectin increased significantly in the diet and diet plus exercise groups.

Not too late to make lifestyle changes

Greater degrees of weight loss resulted in larger reductions in estrone, estradiol, free estradiol, and free testosterone and larger increases in sex hormone binding globulin.

The incidence of musculoskeletal injuries did not differ between intervention groups and controls, but bone mineral density declined significantly in all intervention groups, with no change in controls.

"Weight loss in overweight or obese women therefore represents an additional option for long-term breast cancer risk reduction," the researchers conclude.

"One important point is that it's not too late for postmenopausal women to make lifestyle changes to reduce weight and alter their breast cancer risk factors such as estrogens and testosterone," Dr.

McTiernan said. "Furthermore, weight loss may be relevant even for women who opt to use breast cancer risk-reduction medications such as tamoxifen, raloxifene, or the aromatase inhibitor exemestane."

"I'd recommend the combined programme, both because we saw greater effect on these breast cancer biomarkers, but also because weight loss was a little higher, and because so many studies have shown that exercise helps maintain weight loss over time," Dr McTiernan said.

Risk markers are not endpoints

But risk markers, of course, are not the same as hard endpoints. "To determine breast cancer risk, you'd need about 40,000 women or more followed for 10 years or more to determine if the weight loss programme reduces breast cancer incidence," Dr McTiernan said. "This is because in this age group, the expected number of women developing breast cancer would be three per thousand per year. So, our study won't be able to look at disease risk."

Nevertheless, in an editorial, Dr Jennifer A. Ligibel from the Dana-Farber Cancer Institute, Boston, Massachusetts and Dr Pamela J Goodwin from the University of Toronto, Ontario, Canada call for well-designed trials, "particularly involving weight loss; such trials should be adequately powered for important cancer outcomes in breast cancer, and they should include embedded biologic correlative research to elucidate key biologic mechanisms."

"Such trials," they conclude, "would be practice changing if beneficial effects are identified and would help further unravel the complex pathways of breast carcinogenesis and tumour progression."

(David Douglas, Reuters Health, June 2012)