

AACR: High Vitamin D Serum Levels Lower Breast Cancer Risk

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WASHINGTON, Apr. 5 - Women who have a high serum concentration of vitamin D have a reduced risk of breast cancer, according to two studies reported here.

Both studies aimed to evaluate the hypothesis that serum 25-hydroxyvitamin D (25(OH)D) vitamin D might protect against breast cancer, as suggested by the observation that women living at higher latitudes have higher rates of the disease than do women at lower ones, even when diet and other variables are taken into account.

One of the investigations presented at the American Association for Cancer Research meeting was a meta-analysis and the other a case-control study.

In the meta-analysis, a team from the University of California at San Diego detected a dose-dependent reduction in breast cancer with increasing serum 25-hydroxyvitamin D (25(OH)D) levels, providing strong evidence for the hypothesis, said Cedric F. Garland, Ph.D.

"We think...it is time to take action based on the dose-response relationship seen in these studies," said Dr. Garland, Ph.D. His group recommended that American women increase their daily vitamin D intake by 1,000 IU. Currently a typical woman gets around 300 units a day, he said.

The team performed a meta-analysis of two papers that included 1,760 women, pooling them into quintiles based on their serum 25-hydroxyvitamin D (25(OH)D) level, 0-11 ng/ml, 12-25, 26-31, 32-45, and greater than 42 ng/ml. When the researchers compared the number of breast cancer cases in each quintile, the odds ratio dropped with increasing serum 25-hydroxyvitamin D (25(OH)D), from 1.00 in the lowest quintile, to 0.90, 0.70, 0.70, and 0.50 (P trend <0.0002).

Multiple regression analysis indicated that women with a serum 25-hydroxyvitamin D (25(OH)D) level higher than 52 ng/ml would reduce their risk by 50%, relative to those with a serum level of 12 ng/ml. The level needed for 50% reduction for colorectal cancer, by comparison, is only 33 ng/ml.

The amount of vitamin D3 intake needed to maintain this level is approximately than 2,700 IU/day. The median amount American women currently get is 320 IU per day. The vitamin becomes toxic above 3,800 IU per day, though the National Academy of Sciences sets the upper limit at 2,400 IU. However, the team noted that women living in Southern California with an outdoors lifestyle often have a vitamin D3 serum level around 55 ng/ml, so it is achievable.

Julia A. Knight, Ph.D., of Mount Sinai Hospital in Toronto presented preliminary data from a case-control study designed to look at the relationship between breast cancer and vitamin D. So far they have analyzed data from 576 women with breast cancer in the Toronto area and 813 age-matched controls. All women were interviewed by phone to determine their dietary intake of vitamin D and lifetime sun exposure.

They found evidence of a 40% reduction in breast cancer risk in women who had at one time worked outside (odds ratio=0.60, 95% CI, 0.48-0.75). Women who participated in six or more outdoor activities between the ages of 12 and 19 had a 45% reduction in risk compared with women who had four or fewer activities (OR=0.55, 95% CI 0.39-0.77). Women with five outdoor activities between the ages of 20 and 29 also had a risk reduction, relative to those who had fewer than three, but it was not as large as for the earlier years (OR= 0.72, 95% CI 0.52-1.00).

"It seems that exposure to vitamin D at the time breasts are developing, particularly around adolescence, might be important," Dr. Knight concluded.

Her group also found that dietary intake was important. Women who had taken cod liver oil for 10 or more years also had a reduced risk of breast cancer compared with those who did not (OR=0.64, 95% CI 0.4-1.00). Similarly drinking nine or more glasses of milk per week between the ages of 20 and 29 decreased a woman's breast cancer risk by 25% compared with those who consumed fewer than five glasses (OR=0.75, 95% CI, 0.58 to 0.99).

Action Points

Explain to women that case-control and meta-analyses suggest that increased serum levels of vitamin D are associated with a lower risk of breast cancer.

Be aware that vitamin D3 is a more active form of the vitamin than D2, but most supplements currently

on the market contain vitamin D2, which is a less effective form. The most active form of vitamin D is 1,25 OH Vitamin D which is formed after undergoing hydroxylation in the liver and kidney.

These studies were published as abstracts and presented orally at a conference. These data and conclusions should be considered to be preliminary as they have not yet been reviewed and published in a peer-reviewed publication

Primary source: ASCO/ASTRO Gastrointestinal Meeting

Source reference:

Garland CF, et al. 2006. Evidence of need for increased vitamin D fortification of food based on pooled analysis of studies of serum 25-hydroxyvitamin D and breast cancer. *ASCO/ASTRO Gastrointestinal Meeting*. Abstract 4008.

Additional source: ASCO/ASTRO Gastrointestinal Meeting

Source reference:

Knight JA, et al. 2006. Potential reduction in breast cancer risk associated with Vitamin D. *ASCO/ASTRO Gastrointestinal Meeting*. Abstract 4009.