Breast Cancer Risk Falls as Serum Vitamin D Rises

BY FRAN LOWRY
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SAN DIEGO — A serum 25-hydroxyvitamin D level of 30 ng/mL or higher was associated with at least a 50% lower risk of breast cancer, according to the findings of a meta-analysis of three observational studies.

Together, the findings lend support for annually measuring serum vitamin D levels to better identify women at risk for breast cancer, according to the study's lead author, Dr. Cedric F. Garland, professor of family and preventive medicine at the University of California, San Diego.

Yet experts disagree on whether there is enough evidence to recommend any intervention that would inevitably result when a patient is found to have low levels of serum 25-hydroxyvitamin D (25[OH]D). "I don't care how many observational studies there are," they don't establish causality, said Dr. Gary G. Schwartz of the departments of cancer biology and public health sciences at Wake Forest University, Winston-Salem, N.C.

That said, "There are a lot of good reasons to be concerned about vitamin D," said Dr. Schwartz. "Low levels of the vitamin probably are related to a number of outcomes that we care about."

The meta-analysis of data from 2,274 women with breast cancer and 2,268 controls without breast cancer indicated a linear dose-response gradient between serum 25(OH)D levels and the risk of breast cancer, Dr. Garland indicated in his poster at the annual meeting of the American Association for Cancer Research.

Dr. Garland explained that four recent observational studies showed an inverse association between serum 25(OH)D and risk of breast cancer, but did not specify the 25(OH)D serum levels associated with specific levels of reduction in breast cancer incidence. The studies for his meta-analysis were chosen because they provided data on risk of breast cancer according to quintile of serum 25(OH)D.

In the first study, researchers recruited 179 breast cancer patients and 179 controls and found that women with low levels of serum 25(OH)D and a polymorphism in the vitamin D receptor gene were 6.25 times more likely to have breast cancer, compared with women who had higher levels and no genetic polymorphism (Eur. J. Cancer 2005;41:1164-9).

In the second study, blood samples were taken from 701 cases and 724 controls and women in the highest quintile of 25(OH)D had a relative risk of 0.73 for having breast cancer, compared with those in the lowest quintile (Cancer Epidemiol. Biomarkers Prev. 2005;14:1991-7).

In the third study, serum 25(OH)D levels were compared between 1,394 cases and 1,365 controls. Again, the researchers found that serum 25(OH)D concentrations were significantly inversely associated with postmenopausal breast cancer risk. The strongest inverse association was seen in women with levels below 50 nmol/L (20ng/mL) (Carcinogenesis 2008;29:93-9).

When the data were combined, a sigmoid dose-response gradient was observed between serum 25(OH)D and risk of breast cancer and was consistent across all studies, Dr. Garland said. He and his colleagues concluded that more cohort studies would be worthwhile but, in the meantime, public health action to raise serum 25(OH)D to 30 ng/mL or more should be started.

He commented that the pooled data from these trials add to the evidence for a link between low serum vitamin D and breast cancer, a link that he and his colleague, Dr. Edward D. Gorham, also of the University of California, San Diego, have long proposed.

"We're confident that we can prevent half the breast cancer in women in the United States, if we could raise serum vitamin D levels to 32 ng/mL," he said.

Dr. Rowan T. Chlebowski, professor of medicine at the University of California, Los Angeles, countered, however, that it is too soon to claim that upping the intake of vitamin D can ward off breast cancer.

In 2006, Dr. Chlebowski reported that a Women's Health Initiative trial found no reduced breast cancer risk in 18,000 women randomized to 1,000 mg of calcium carbonate and 400 IU/day of vitamin D when compared with 18,000 women given a matching placebo. The results from Dr. Garland's meta-analysis "require a much more cautious interpretation," he added. This is a selective meta-analysis. It's not comprehensive, and there are negative studies that were not included, he said. ■