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Low Vitamin D Levels Linked to High Risk of Premenopausal Breast Cancer

A prospective study led by researchers from the University of California, San Diego School of Medicine has found that low serum vitamin D levels in the months preceding diagnosis may predict a high risk of premenopausal breast cancer.

The study of blood levels of 1,200 healthy women found that women whose serum vitamin D level was low during the three-month period just before diagnosis had approximately three times the risk of breast cancer as women in the highest vitamin D group. The study is currently published online in advance of the print edition of the journal *Cancer Causes and Control*.

Several previous studies have shown that low serum levels of vitamin D are associated with a higher risk of premenopausal breast cancer. “While the mechanisms by which vitamin D could prevent breast cancer are not fully understood, this study suggests that the association with low vitamin D in the blood is strongest late in the development of the cancer,” said principal investigator Cedric Garland, DrPH, FACE, professor in the Department of Family and Preventive Medicine at UC San Diego.

Analyses of vitamin D levels measured more than 90 days before diagnosis have not conclusively established a relationship between serum levels and risk of premenopausal breast cancer in the present cohort. However, this new study points to the possibility of a relevant window of time for cancer prevention in the last three months preceding tumor diagnosis – a time physiologically critical to the growth of the tumor.

According to Garland, this is likely to be the point at which the tumor may be most actively recruiting blood vessels required for tumor growth. “Based on these data, further investigation of the role of vitamin D in reducing incidence of premenopausal breast cancer, particularly during the late phases of its development, is warranted,” he said.

The new study drew upon 9 million blood serum specimens frozen by the Department of Defense Serum Repository for routine disease surveillance. The researchers thawed and analyzed pre-diagnostic samples of serum from 1,200 women whose blood was drawn in the

same time frame – samples from 600 women who later developed breast cancer, and from 600 women who remained healthy.

A 2011 meta-analysis by Garland and colleagues estimated that a serum level of 50 ng/ml is associated with 50 percent lower risk of breast cancer. While there are some variations in absorption, those who consume 4000 IU per day of vitamin D from food or a supplement normally would reach a serum level of 50 ng/ml.

Garland added that a consensus of all available data has shown no known risk associated with this concentration of vitamin D, which is measured as serum 25-hydroxyvitamin D. But he urges patients to ask their health care provider to measure their serum 25(OH)D before substantially increasing vitamin D intake.

“Reliance should not be placed on different forms of vitamin D, such as vitamin D2, and megadoses should be avoided except those ordered by a doctor for short-term use,” Garland added.

Contributors to this study include first author Sharif B. Mohr, PhD, and Edward Gorham, PhD, Naval Health Research Center and UC San Diego; Christopher Kane, MD, J. Kellogg Parsons, MD, and Deborah L. Wingard, PhD, UC San Diego; John E. Alcaraz, PhD and Carolyn Macera, PhD, San Diego State University; and Ronald Horst, PhD, Heartland Assays, Ames, Iowa.

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