Lack of vitamin D: More evidence connected to breast, colon cancer

October 21 2010

(PhysOrg.com) -- Two new vitamin D studies from the University of Rochester Medical Center suggest intriguing ties between a deficiency of D and breast and colon cancer, particularly among African Americans.

The research adds to mounting evidence that some connection exists between vitamin D and cancer, although it is not yet known how vitamin D modifies or contributes to cancer risk. Evidence is also inconsistent as to whether vitamin D might be used for cancer prevention. Scientists believe it is possible that some of the benefits attributed to vitamin D may have more to do with body mass index or activity levels.

Still, in a retrospective study of 224 women being treated for breast cancer at the URMC James P. Wilmot Cancer Center, researchers found that 66 percent were either severely deficient or moderately deficient of vitamin D.

The deficiency was particularly high among non-Caucasians and women with later-stage disease, said Alissa Huston, M.D., assistant professor of Medicine at URMC. She presented the data Oct. 16, 2010, at the American Society of Bone and Mineral Research meeting in Toronto.

African American women had the lowest mean levels of vitamin D, as compared to white or Hispanic patients, although the study population was small. Black women can be prone to more aggressive breast cancer, but it is not known whether vitamin D plays a role in this, Huston said, adding that further study is needed.

“Our data certainly suggests that it is important to test patients for serum vitamin D levels, and if necessary, treat the deficiency along with the disease,” said Huston, a specialist in Wilmot’s Comprehensive Breast Cancer Program. “In some cases, weekly high doses of vitamin D are needed to bring the patient up to sufficient levels.”

Huston’s study also described the effect of various vitamin D supplementation regimens on deficiency. Weekly doses of 50,000 IU resulted in significant increases in vitamin D levels for those women whose baseline status was severely deficient. Lower levels of vitamin D were associated with reduced spinal bone mineral density and patients undergoing radiation therapy.

“Currently, we recommend a minimum 1000 IU of vitamin D3 daily (in addition to calcium) to our patients,” Huston said, “but in most instances this dose needs to be individualized to the patient’s specific level.”

In a separate study led by Kevin Fiscella, M.D., M.P.H., reported online Oct. 13, 2010, by the journal, Cancer, investigators found that vitamin D deficiency among African Americans may explain a persistent mystery in colorectal cancer: why black people die of this disease far more often than whites.

He constructed an epidemiology study of American adults, using a publicly available health data. Among 91 deaths from colorectal cancer during the study period, researchers assessed a range of factors that could contribute to death, from age and race, to smoking status and weight, to history of colorectal cancer and access to medical care through health insurance.

Researchers found that simply being African American doubled the risk of dying from colorectal cancer. Furthermore, vitamin D deficiency based on a blood test explained about 40 percent of the risk associated

with being African American.

Earlier this year, using similar data from the National Health and Nutrition Examination Survey, Fiscella also showed that vitamin D deficiency may contribute to a higher number of heart and stroke-related deaths among blacks compared to whites.

“Together these findings are very provocative and suggest that vitamin D may partly explain two of the leading causes of death in African Americans where there are major disparities – cardiovascular and cancer,” said Fiscella, a professor of Family Medicine, Community and Preventive Medicine, and Oncology at URMC.

Fiscella has been investigating the reasons behind racial disparities in health care for years, and noted that vitamin D is not the sole explanation. For example in the cardiovascular study, poverty also contributed to disparities in deaths. In the colorectal cancer study, lack of health insurance was a contributor to disparities in deaths.

New Vitamin D Guidelines to Come

Many of the body’s tissues and cells have vitamin D receptors, making it a potent regulator of cell activity and growth. Researchers report vitamin D might generally improve DNA repair, reduce inflammation, and promote the death of potentially malignant cells.

Vitamin D is mostly produced by the skin in response to sunlight and metabolized in the liver where it is converted to 25 hydroxyvitamin D or 25(OH) D, the form used to determine a person’s vitamin D status through a blood test. Severe deficiency is usually defined as less than 20 nanograms per milliliter, whereas lower than 15 ng/ml is inadequate to maintain bone health and normal calcium metabolism; 30 ng/ml is viewed as sufficient.

However, these levels are being re-examined by the Institute of Medicine (IOM), an independent group of esteemed scientists who frequently advise the government. The IOM panel is expected to release new guidelines on vitamin D supplementation sometime this fall, Fiscella said.

Following the IOM recommendations, the Monroe County Medical Society in Rochester, which also convened a task force recently to evaluate the evidence around vitamin D, will make recommendations to local patients, Fiscella said.

Many people around the world have low concentrations of vitamin D. Genetic factors common to blacks, such as darker skin, reduce vitamin D synthesis. In addition, certain foods can be a good source of vitamin D (milk, some yogurts and juices, eggs, fatty fish and fortified breakfast cereals) but a higher incidence of lactose intolerance among African Americans can also contribute to lower dietary intake of vitamin D, previous research has shown.

Provided by University of Rochester Medical Center