

Vitamin D influences racial differences in breast cancer risk

April 4 2012

American women of African ancestry are more likely than European Americans to have estrogen receptor (ER) negative breast cancer. There continues to be discussion about the role of low levels of vitamin D in the development of breast cancer for these women. New research published in BioMed Central's open access journal *Breast Cancer Research* has shown that specific genetic variations in the vitamin D receptor (VDR) and in CYP24A1 (responsible for deactivating vitamin D) are associated with an increase in breast cancer risk, particularly for ER negative breast cancer, for African American women.

When a team of researchers led by Dr Song Yao and Dr Christine Ambrosone, from Roswell Park Cancer Institute, compared levels of vitamin D in the blood of women with or without breast cancer they found that severe [vitamin D deficiency](#) in [African American women](#) was almost six times more common than in European American women. However, because low levels of vitamin D can also be caused by disease, or by treatment, the researchers decided to focus their studies on genetic variations in VDR and the enzymes responsible for breaking down vitamin D in the body.

The results showed that African American women with the highest levels of vitamin D also had a specific variation in VDR. Although this variation was present in European Americans, it was not associated with alteration in their levels of vitamin D. African American women with the specific variation associated with the higher levels of vitamin D, had half the risk of breast cancer than the women without it.

When the researchers looked in detail at the patterns of [genetic variation](#) for women with ER negative breast cancer, they found that seven SNPs, in the gene coding for CYP24A1, were associated with ER negative [breast cancer risk](#), and that two of these seemed to account for the higher risk of ER negative breast cancer in African American women.

Dr Song Yao explained, "While it is difficult to determine the exact effect of low levels of vitamin D on the risk of developing breast cancer, our results show that these genetic variations, which contribute to the function of vitamin D, are strongly associated with ER negative breast cancer and may contribute to the more aggressive breast cancer features seen in African American women."

More information: Variants in the vitamin D pathway, serum levels of vitamin D, and estrogen receptor negative breast cancer among African-American women: a case-control study, Song Yao, Gary Zirpoli, Dana H Bovbjerg, Lina Jandorf, Chi-Chen Hong, Hua Zhao, Lara E Sucheston, Li Tang, Michelle Roberts, Gregory Ciupak, Warren Davis, Helena Hwang, Candace S Johnson, Donald L Trump, Susan E McCann, Foluso Ademuyiwa, Karen S Pawlish, Elisa V Bandera and Christine B Ambrosone, *Breast Cancer Research* (in press)

Provided by BioMed Central

Citation: Vitamin D influences racial differences in breast cancer risk (2012, April 4) retrieved 25 April 2024 from

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