Variants of vitamin D receptor linked to increased risk of breast cancer

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Genetic variations in the body's receptor for vitamin D could increase the risk of breast cancer in postmenopausal women, according to a study published today in the open access journal *Breast Cancer Research*.

Jenny Chang-Claude of the Division of Cancer Epidemiology, at the German Cancer Research Center, in Heidelberg, and colleagues there and at the Institute for Medical Biometrics and Epidemiology, University Clinic Hamburg-Eppendorf, Germany, undertook a population-based case-control study involving 1,408 patients and 2,612 control individuals.

The researchers explain that vitamin D intake and serum concentrations of its metabolites have been associated with a decreased risk of developing breast cancer. The vitamin plays a known role in controlling calcium levels and influences the differentiation of cells and so could play a part in preventing the runaway proliferation of cells characteristic with cancer.

Previous studies regarding the association between vitamin D and breast cancer have been inconsistent in their conclusions.

Chang-Claude and her colleagues have investigated variations in the gene encoding the vitamin D receptor protein. They found that there were no differences in the biomarker for vitamin D, 25-hydroxyvitamin D, between women with two well-known genetic variations, the polymorphisms FokI and TaqI, and two functional putative variants, VDR-5132 and Cdx2, in the gene for the receptor. Moreover, they found

no relationship between the presence of these polymorphisms and overall risk of postmenopausal breast cancer.

However, they found a significant increase in the risk of estrogen receptor (ER) positive tumours among women with the TaqI genetic variant. This suggests the involvement of estrogen metabolism in the anticancer activity of vitamin D.

“Further studies focusing on the influence of genetic variations on vitamin D receptor functionality, activity and concentration are now needed" says Chang-Claude.

Source: BioMed Central