



Drug Information Office / Jordan University of Science and Technology

Improved Survival in Cancer Patients with High Vitamin D Levels

Vitamin D affects a variety of biological processes in addition to helping the body absorb the calcium and phosphorus needed for healthy bones, by binding to a protein called a vitamin D receptor. This receptor is present in nearly every cell in the body.¹

Past studies have claimed that vitamin D may reduce the risk of heart disease, bone fractures and even depression. Now, new research suggests that cancer patients with high levels of vitamin D in their blood are more likely to survive the disease than patients with low levels.

A meta-analysis of vitamin D sufficiency for improving survival of patients with breast cancer showed that breast cancer patients with the highest concentration of 25(OH)D had approximately half the fatality rate compared to those with the lowest concentration.²

Another study showed that vitamin D deficiency was associated with more aggressive prostate cancer in both European American and African American men.³

A new meta-analysis looked at the results of 25 separate studies involving a total of 17,732 patients with cancer that measured vitamin D levels in cancer patients at the time of diagnosis and tracked survival rates. In most of the research, patients had their vitamin D levels tested before they underwent any treatment for cancer.

The study found a 10 nmol/L increase in vitamin D levels was tied to a 4 percent increase in survival among people with cancer.^{1,4}

Researchers found the strongest link between vitamin D levels and survival in breast cancer, lymphoma and colorectal cancer. There was less evidence of a connection in people with lung cancer, gastric cancer, prostate cancer, leukemia, melanoma or Merkel cell carcinoma, but the available data were positive.^{1,4}

The mechanisms by which vitamin D metabolites may prevent cancer may also explain the improved survival in patients with cancer who have higher serum 25(OH) D levels at the time of diagnosis. According to the vitamin D cancer prevention hypothesis, cancer occurs in several distinct phases that can be explained by a theoretical model termed the Disjunction-Initiation-Natural selection-Overgrowth-Metastasis-Involution-Transition (DINOMIT) model. Although this model has been applied primarily in the context of cancer prevention, several of the later stages that occur in vitamin D deficiency, such as Initiation, Natural Selection, Overgrowth, and Metastasis might help account for the effect of vitamin D metabolites on existing tumors. According to this hypothesis, the growth of a tumor may be arrested at almost any point in the DINOMIT model by restoring a high serum 25(OH) D concentration in the organism, resulting in up-regulation of E-cadherin and restoration of a well-differentiated state.²

In conclusion, cancer patients who have higher levels of vitamin D when they are diagnosed tend to have better survival rates and remain in remission longer than patients who are vitamin D-deficient.

Considering that vitamin D deficiency is a widespread issue all over the world, it is important to ensure that everyone has sufficient levels of this important nutrient. Physicians need to pay close attention to vitamin D levels in people who have been diagnosed with cancer.

Prepared by: Pharm.D : Eshraq Al-abweeny

7/5/2014

References:

- 1- Mian Li.et al . Review:The Impacts of Circulating 25-Hydroxyvitamin D Levels on Cancer Patient Outcomes: A Systematic Review and Meta-Analysis. *The Journal of Clinical Endocrinology & Metabolism*, 2014; jc.2013-4320 DOI: 10.1210/jc.2013-4320
- 2- Mohr SB. Et al. Meta-analysis of Vitamin D Sufficiency for Improving Survival of Patients with Breast Cancer. *Anticancer Res.* 2014 Mar;34(3):1163-6
- 3- Murphy AB.et al. Vitamin d deficiency predicts prostate biopsy outcomes. *Clin Cancer Res.* 2014 May 1;20(9):2289-99. doi: 10.1158/1078-0432.CCR-13-3085.
- 4- Improved Survival in Cancer Patients With High Vitamin D Levels, May 01, 2014.
<http://www.medscape.com/viewarticle/824462>