

Follow-up period affects results of observational studies of cancer incidence

Posted on [December 23, 2011](#) by Dr William Grant

The paper by Chung et al. (1) found a 6% (95% CI, 3%-9%) reduction in risk of colorectal cancer for a 10-nmol/L increase in serum 25-hydroxyvitamin D [25(OH)D] concentration but no statistically significant reduction for breast or prostate cancer. The findings for colorectal and prostate cancer agree with other recent meta-analyses (2,3) but the finding for breast cancer differs. The reason for the difference for breast cancer is that the other two meta-analyses included case-control studies while (1) did not. The reason this is an important difference is that the usefulness of a single serum 25(OH)D concentration value from the time of enrollment in a cohort study decreases with time. A study in Norway found that the correlation coefficient for serum draws 14 years apart was 0.42 (4). For breast cancer, the adjusted probability of incidence decreases fairly rapidly with increasing follow-up time. When four case-control study results and five nested case-control study results were plotted vs. follow-up period, it was found that all five studies with follow-up period less than three years found significantly reduced relative risks for a 50-nmol/L change in 25(OH)D concentration, but none of those with longer follow-up periods did (5). The data were fit with a linear function that increased from 0.62 at zero years to 0.95 for seven years of follow up.

For colorectal cancer, there were statistically significant inverse correlations of incidence with respect to serum 25(OH)D concentration out to follow-up periods of 14 years (5).

All four studies (1-3,5) agree that there is no significant correlation between prediagnostic serum 25(OH)D concentration and incidence of prostate cancer out to follow-up times of 28 years. In (5) the linear fit to the relative risk declined from 1.09 at 3 years to 0.93 at 28 years. Prostate cancer is a very slow growing cancer, and it could be that risk of prostate cancer related to vitamin D occurs early in life.

Thus, the differences in findings from observational studies could be due to differences in rate of cancer development, from rapid for breast cancer to slow for prostate cancer.

As discussed in (2) and (5), the observational results for breast and colorectal cancer with respect to serum 25(OH)D concentration are consistent with findings from ecological studies based on indices of solar ultraviolet-B doses and corrected for confounding factors. Ecological

studies also find inverse correlations for about 15 other types of cancer incidence and/or mortality rate.

References

1. Chung M, Lee J, Terasawa T, Lau J, Trikalinos TA. Vitamin D With or Without Calcium Supplementation for Prevention of Cancer and Fractures: An Updated Meta-analysis for the U.S. Preventive Services Task Force. *Ann Intern Med.* 2011;155:827-38.
2. Grant WB. Relation between prediagnostic serum 25-hydroxyvitamin D level and incidence of breast, colorectal, and other cancers. *J Photochem Photobiol B.* 2010;101:130-6.
3. Gandini S, Boniol M, Haukka J, Byrnes G, Cox B, Sneyd MJ, et al. Meta-analysis of observational studies of serum 25-hydroxyvitamin D levels and colorectal, breast and prostate cancer and colorectal adenoma. *Int J Cancer.* 2011;128:1414-24.
4. Jorde R, Sneve M, Hutchinson M, Emaus N, Figenschau Y, Grimnes G. Tracking of serum 25-hydroxyvitamin D levels during 14 years in a population-based study and during 12 months in an intervention study. *Am J Epidemiol.* 2010;171:903-8.
5. Grant WB. Effect of interval between serum draw and follow-up period on relative risk of cancer incidence with respect to 25-hydroxyvitamin D level; implications for meta-analyses and setting vitamin D guidelines, *Deramato-Endocrinology.* 2011;3:3:199-204.



About Dr William Grant

Dr. William Grant is an epidemiologist and founder of the nonprofit organization Sunlight, Nutrition and Health Research Center (SUNARC). He has written over 140 peer-reviewed articles and editorials on vitamin D and health. Dr. Grant is the Science Director of the Vitamin D Council and also serves on their Board. He holds a Ph.D. in Physics from UC Berkeley.

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One Response to *Follow-up period affects results of observational studies of cancer incidence*

Brant Cebulla said on December 23, 2011 at 7:20 pm



The Chung et al study has been getting a lot of press, including this article here on CBS News:

“Are the benefits of vitamin D overhyped?” http://www.cbsnews.com/8301-500368_162-57345349/are-the-benefits-of-vitamin-d-overhyped/

I would say that vitamin D research has yet to even hit its climax. How can we call a vitamin overhyped if there is still quite a bit of research at physiologic doses (4000-5000 IU/day) and blood levels (40-80 ng/ml) needed to be done? Furthermore, I don't think anyone is hyping vitamin D at doses between 400-1400 IU/day.

WebMD opens up, “Another day, and another vitamin has failed to live up to all of its hype.” I would counter, “Another day, another lousy journalist that is unfamiliar with the topic of vitamin D.”

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