Letters to the Editor

Vitamin D and Cancer Risk among American Indians

To the Editors: A recent article reported higher cancer rates for American Indians living in Alaska compared with those living in New Mexico (1). For all sites, the ratios for those living in Alaska to those living in New Mexico were 2.4 (95% confidence interval, 2.2-2.7) for males and 2.8 (95% confidence interval, 2.5-3.0) for females. The authors concluded that differences in tobacco use explained some but not all of the differences.

It is proposed here that differences in serum 25-hydroxyvitamin D (calcidiol) levels may explain much of the unexplained differences in cancer rates. Solar UVB and/or vitamin D have been reported as risk reduction factors in observational studies for all of the major cancers for which a significant difference between the two states was found, including bladder, breast, colorectal, esophageal, lung, oral/pharyngeal, pancreatic, prostate, and renal cancer, melanoma, and non–Hodgkin's lymphoma (2-4). These associations persist even after controlling for smoking (4). Interestingly, one of the cancers for which the rates are higher for men in New Mexico, liver cancer, is not a UVB/vitamin D–sensitive cancer (4).

Indians in both Alaska and New Mexico probably derive much of their vitamin D from solar UVB irradiance, with additional contributions from diet and supplements. A recent study found that 31% of the Indian infants tested in Alaska had serum calcidiol levels of <25 ng/mL (5). It is reasonable to assume that these levels may also be indicative of those in the adults. Serum calcidiol levels of 33 ng/mL have been associated with reduced risk for colorectal cancer risk by 50% (2), with this or higher levels likely required for similar effects for other cancers (3). Thus, many adult Alaskan Indians likely have serum calcidiol levels too low to provide adequate protection against cancer. Similar results were found at PubMed for Canadian Indians. Fish, such as salmon, may have supplied a large part of the vitamin D for Alaskan Indians in the past. Although calcidiol data were not found for New Mexican Indians, solar UVB doses are two to three times higher in summer and cancer rates for white Americans in New Mexico are among the lowest in the United States (4).

It would be simple to test this hypothesis by measuring serum calcidiol levels among older adult Indians in both Alaska and New Mexico.

William B. Grant
Sunlight, Nutrition, and Health Research Center, San Francisco, California

References

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