

Prevention of Cancer? The Vitamin D Controversy

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Although I live in sunny central California, I was very surprised when my vitamin D level recently revealed I was “deficient.” After 12 weeks of supplementation with 50,000 units weekly of oral vitamin D my levels have normalized, but I continue to take daily supplements of this important vitamin. Vitamin

D plays an important role in bone health, and low levels have been linked to cardiovascular health and diabetes; the vitamin has also been touted as a potential tool in cancer prevention. Yet much of the data regarding vitamin D and cancer prevention have been inconsistent. What should advanced practitioners teach their patients with regard to vitamin D and adequate supplementation? How much vitamin D should we recommend to our patients? Will this vitamin reduce the risk of certain cancers?

Although numerous trials have examined the relationship between vitamin D and the development of specific cancers, the evidence has been inconsistent as to causality. Because vitamin D and calcium are so closely linked, it may be difficult to truly ascertain the activity of these supplements separate from one another. Vitamin D has been shown to promote cellular differentiation and inhibition of cellular proliferation in animal studies (Thacher & Clarke, 2011). Although the role of vitamin D has been studied in many different cancers, results have been conflicting. Deficiencies have been linked to colon and breast cancer (Khan & Fabian, 2010). Vitamin D may limit proliferation and neoangiogenesis in breast cancer, and has been shown to limit proliferation in response to bile acids and other carcinogens in patients with colon cancer, promoting cellular differentiation (Khan & Fabian, 2010).

Vitamin D Insufficiency and Cancer

According to Khan and Fabian (2010), vitamin D sufficiency is defined as a measure of the serum level of the prohormone 25-hydroxyvitamin D required for bone health (30–32 ng/mL). Approximately 15 to 20 minutes of daily sun exposure without sunscreen between 10:00 a.m. and 3:00 p.m. is usually adequate to synthesize vitamin D metabolites; vitamin D from food also contributes to individual levels. Recently, the Institute of Medicine (IOM) published a report entitled, “Dietary Reference Intakes for Calcium and Vitamin D” (Ross et al., 2011). The role of vitamin D and calcium was clearly important in the maintenance of bone health. However, the IOM Committee noted that evidence for the role of vitamin D or calcium in reducing the risk of cancer, cardiovascular disease, diabetes, and autoimmune disorders (among others) was inconclusive; randomized trial evidence was limited and inadequate (Ross et al., 2011).

The IOM Committee concluded that the prevalence of vitamin D inadequacy in North America has been overestimated due to use of inappropriate cut points that exceed the levels identified as accurate in their report. They recommended that further research and clinical priorities such as reassessment of lab ranges for 25-hydroxyvitamin D to guide further evaluation of vitamin D inadequacy and avoid problems of under- and overtreatment (Ross et al., 2011).

Current Recommendations

The IOM recommendations for adequate supplementation are 600 IU/d for people of ages 1 through 70 and 800 IU/d for those 71 and older (Ross et al., 2011). However, patients with cancer may receive additional therapies that impact vitamin D and calcium levels; testing for baseline levels and increased supplementation may be necessary (Khan & Fabian, 2010). Advanced practitioners should educate their patients on the need for supplementation when necessary. Testing for baseline vitamin D levels should be considered in selected patients. Vitamin D toxicity can occur, and usually manifests with renal stones and hypercalcemia when levels of 25-hydroxyvitamin D are greater than 150 ng/mL (Khan & Fabian, 2010).

Although a definite link between vitamin D and the prevention of cancer has not yet been made, ongoing studies continue to research this intriguing potential therapy. For now, communication with patients should reveal the level of evidence currently

available and the need for further research on the role of vitamin D in the cancer population.

Inside This Issue

In this issue of the *Journal of the Advanced Practitioner in Oncology (JADPRO)*, you’ll find the second installment in our series of review articles on treatment-related adverse events. Margot Sweed provides an in-depth look at treatment-related GI and hepatobiliary toxicities. Lacey Siekas investigates whether current knowledge and evidence support the creation of practice guidelines for screening HIV-infected men for anal dysplasia and cancer.

In *Grand Rounds*, Pamela Alizadeh shares the heartbreaking case study of a woman who lost her battle with inflammatory breast cancer—breast cancer without a lump. You’ll want to spread the word about the signs and symptoms of this aggressive malignancy.

Sarah Bertone and Kathy Diener Dasse tell us what we need to know about ipilimumab (Yervoy), the first drug indicated for unresectable or metastatic melanoma. Check out Lydia Madsen’s *Tools & Technology* piece—it’s a fantastic resource that gives the background on the Doctor of Nursing Practice (DNP) degree and lists over 135 DNP programs currently available in the United States. An abbreviated version of the table is shown in the print copy of *JADPRO*, but you can access an expanded version on our website (www.advancedpractitioner.com).

In *Translating Research Into Practice*, Terri Armstrong and Ibrahima Gning recap and contextualize an article on developing a new tool for measuring pain management from the patient’s point of view that was recently published by Beck et al. in the *Journal of Pain*.

If you’re planning to attend the ONS Institutes of Learning/APN Conference in Salt Lake City this November, please come see us in the exhibit hall!

REFERENCES

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