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Prevalence of Vitamin D Deficiency in Patients Attending an Outpatient Cancer Care Clinic in Boston

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To the Editor

Vitamin D is the prehormone important for maintaining normal calcium homeostasis and mineralization of the skeleton. Epidemiologic studies and prospective studies have suggested that vitamin D may also be protective against many common cancers in humans, including prostate, breast, and colon cancer (1). Furthermore, studies in which cancer cell cultures and animal models of cancer were used have supported the protective role of vitamin D in inhibiting the growth of many types of cancer cells (2,3). Therefore, maintenance of adequate vitamin D nutrition in patients with cancer is important—not only for good bone health but also for its potential anticancer activity. In addition, patients with cancer frequently complain of muscle aches and bone pain, which may be symptoms of vitamin D deficiency (4,5).

We conducted a study to determine the prevalence of vitamin D deficiency in an outpatient cancer care clinic at Boston University Medical Center. After approval of the study by our institutional review board, patients who attended an outpatient cancer care clinic during the months of July, August, and September were enrolled in our study. A control group of healthy adults without cancer who were older than 40 years had been recruited the previous year during the same months. Study participants gave written informed consent for determination of 25-hydroxyvitamin D [25(OH)D] and completed a dietary questionnaire. The 25(OH)D assay was performed as previously described by Chen et al (6) and confirmed by the Nichols Advantage chemiluminescent assay. Vitamin D deficiency was defined as a 25(OH)D level of 20 ng/mL or less (7).

The mean ages of the two study groups were 59 ± 10 years for the patients with cancer in comparison with 51 ± 10 years for the healthy control subjects ($P < 0.05$, t test). The ethnicities of the subjects were similar in both study groups. Of the 56 patients with cancer, 27 (48%) had vitamin D deficiency; in comparison, only 6 (12%) of the 50 healthy control subjects had vitamin D deficiency ($P < 0.05$, χ^2 test) (Fig. 1). The mean 25(OH)D values were 21.3 ± 10 ng/mL for the patients with cancer versus 33.9 ± 10 ng/mL for the healthy control subjects ($P < 0.05$, t test).

This study revealed that a high percentage of patients with cancer had vitamin D deficiency during the summer, when this disorder should be less prevalent (8). Reasons for the high prevalence of vitamin D deficiency among patients with cancer include malnutrition due to illness, nausea from chemotherapy, or infrequent exposure to sunlight. Vitamin D deficiency is easily corrected in such patients by prescribing vitamin D, 50,000 IU once a week for 8 weeks, and then a daily multivitamin containing 400 IU of vitamin D (7). Restoration of

adequate vitamin D nutrition should diminish the muscle aches and bone pains of these patients (4,5,9) and potentially be beneficial in slowing the growth of some cancers.

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Fig. 1. Prevalence of vitamin D deficiency in patients with cancer in comparison with healthy adult subjects. Patients who attended a cancer care clinic at the end of summer in Boston, Massachusetts, had a significantly higher prevalence rate of vitamin D deficiency than did healthy control subjects ($P<0.05$).