Vitamin D Deficiency Common in Osteoporosis

BY BRUCE JANCIN
Denver Bureau

VIENNA — More than half of postmenopausal women being treated for osteoporosis in the United States and the rest of the world have vitamin D levels that are inadequate for skeletal health, according to two recent cross-sectional surveys totalling 2,821 such women in 20 countries.

"Wherever we look in the world, patients are not getting enough vitamin D to maintain calcium homeostasis. … This is a missed opportunity. When we're giving bone-active drugs to patients with osteoporosis, if we don't think about vitamin D inadequacy then we miss the opportunity to ensure that our patients have optimal gains in bone mineral density. And these studies show that the problem is very, very common," David Hosking, M.D., declared at the annual European congress of rheumatology.

'Wherever we look in the world, patients are not getting enough vitamin D to maintain calcium homeostasis.'

DR. HOSKING

The North American survey involved 1,536 community-dwelling postmenopausal women being treated for osteoporosis. Of these, 52% were found to have a serum 25-hydroxyvitamin D [25(OH)D] level below 30 ng/mL, which most experts define as the cutoff for vitamin D inadequacy from the standpoint of facilitating calcium absorption in the intestine. Both surveys showed the prevalence of secondary hyperparathyroidism began rising as 25(OH)D dropped below 30 ng/mL.

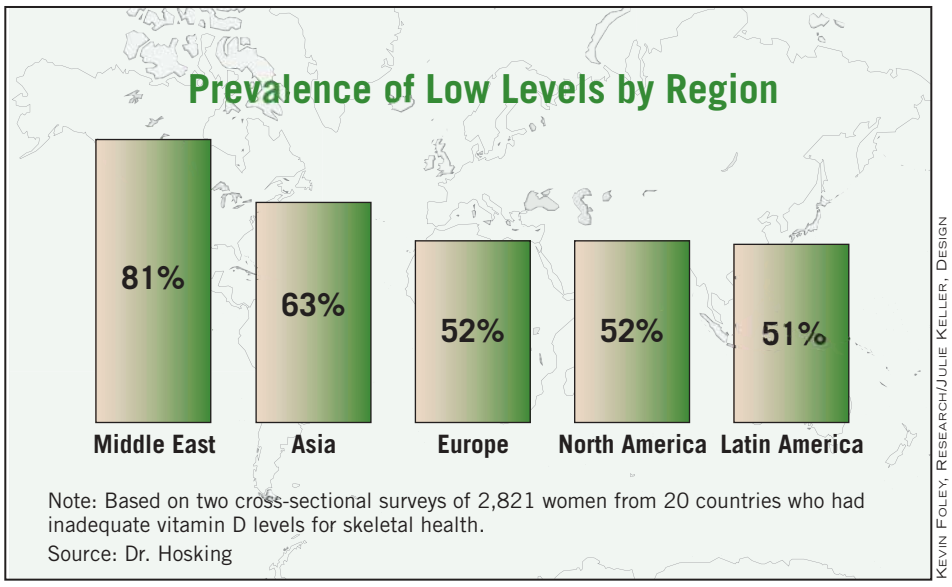
The body senses when intestinal calcium absorption is inadequate. It responds by triggering secondary hyperparathyroidism. The resultant increased parathyroid hormone production leads to greater bone remodeling.

"If you're young, that probably doesn't matter desperately much, but if you're elderly or you're a postmenopausal woman in negative calcium balance, then that amplifies your rate of bone loss," explained Dr. Hosking of Nottingham (England) City Hospital.

In the international survey, the overall prevalence of vitamin D inadequacy was 59%. (See box.)

"The Middle East was a real surprise. Here, where there's lots of sunshine, we'd imagine that all the patients would be able to make adequate levels of vitamin D. But because it's so searingly hot, hardly anybody goes out in the midday sun and the prevalence of vitamin D deficiency is very high," he observed at the meeting, which was sponsored by the European League Against Rheumatism.

The prevalence of vitamin D inadequacy in the two surveys was unaffected by latitude. This finding suggests that the casual, "let-the-sun-take-care-of-it" approach to vitamin D that's widespread in more equatorial areas is misplaced, he said.



KEVIN FOLEY, RESEARCH/JULIE KELLER, DESIGN

The Institute of Medicine's recommended daily vitamin D intake is 400 IU for individuals aged 51-70 years and 600 IU for those older than 70 years. Yet only 60% of postmenopausal osteoporosis patients in the U.S. survey claimed to be taking at least 400 IU/day. Their rate of vitamin D inadequacy was 45%, as compared with 63% in those not taking a daily supplement of at least 400 IU of vitamin D. But that 45% prevalence is still unacceptably high, Dr. Hosking said, adding that it probably reflects poor compliance with vitamin D therapy.

In the North American survey, multivariate analysis identified eight variables as independent predictors of vitamin D inadequacy: age older than 80 years, obesity, nonwhite race, the use of drugs known to affect vitamin D metabolism, education less than 12th grade, lack of exercise, a daily vitamin D intake lower than 400 IU, and a lack of physician counseling regarding the importance of vitamin D. Patients with five or more risk factors had a 90% prevalence of inadequate vitamin D.

Failure to take an adequate daily vitamin D supplement and lack of physician counseling regarding vitamin D's importance to skeletal health are readily remediable through patient and physician education. That's the approach Dr. Hosking considers most effective.

His analysis of the survey data was funded by Merck Sharp & Dohme Ltd. He is a consultant to the company as well as a member of its speakers' bureau. ■

New Cutoff Value Identifies More Vitamin D Deficiency

BY MIRIAM E. TUCKER
Senior Writer

WASHINGTON — A serum 25-hydroxyvitamin D level below 30 ng/mL appears to define vitamin D deficiency, Paraskevi Sapountzi, M.D., reported at the annual meeting of the American Association of Clinical Endocrinologists.

Vitamin D deficiency can lead to secondary hyperparathyroidism, decreased calcium absorption, and poor response to therapy. But recent reports of assay variability have led to confusion about interpretation of the metabolite 25(OH)D levels, and not enough data are available to guide clinicians regarding when to initiate vitamin D therapy, said Dr. Sapountzi, of Loyola University, Chicago.

In a retrospective analysis of 143 female and 20 male patients who had been evaluated for low bone mass at the university's Osteoporosis and Metabolic Bone Disease Center, the patients had a mean age of 62.5 years, a mean 25(OH)D level of 29.8 ng/mL, a mean parathyroid hormone (PTH) level of 61.7 pg/mL, a mean urine calcium level of 215.7 mg/24 hours, and a mean spine T score of –1.9. None of the patients were on vitamin D therapy or had primary hyperparathyroidism, Dr. Sapountzi said.

Initially, vitamin D insufficiency was defined as a 25(OH)D level of less than 20 ng/mL, based on the laboratory's reference range and data from one study suggesting that 20 ng/mL represents the cutoff below which the risk for secondary hyperparathyroidism increases. Using that definition, 26.4% of the 163 patients had vitamin D insufficiency.

The 25(OH)D level was significantly correlated with PTH and with urinary calcium, with the difference between the means of PTH above and below a 25(OH)D level of 30 ng/mL being significant. At 35 ng/mL, the significance was lost. Using the new cutoff of 30 ng/mL for vitamin D deficiency raised the prevalence among the patients to 48%, she said.

A 25(OH)D level of 30 ng/mL also showed significant differences in the urinary calcium levels of patients with 25(OH)D above and below that threshold. This relationship also was significant at 35 ng/mL and was lost at 40 ng/mL.

The strong correlation between urinary calcium, PTH, and 25(OH)D emphasizes the importance of this test in the work-up of osteoporosis, she remarked. ■

Suboptimal Vitamin D Levels Seen In Women Treated for Osteoporosis

WASHINGTON — More than half of North American women receiving treatment for osteoporosis have suboptimal serum vitamin D levels, Anne E. de Papp, M.D., and her associates reported in a poster at the annual meeting of the American Association of Clinical Endocrinologists.

Inadequate vitamin D concentrations can lead to alterations in calcium and phosphate homeostasis, secondary hypoparathyroidism, bone loss, osteoporosis, and an increased fracture risk.

Yet, data from a cross-sectional study of 1,536 postmenopausal women seen at 61 North American sites suggest that the problem is often overlooked in patients being treated for osteoporosis, said Dr. de Papp, of Merck & Co. Inc., West Point, Pa., and her associates.

The patients had a mean age of 71 years (range, 47-103 years) and a mean BMI of 26.4 kg/m^2. A total of 92% were Caucasian and 35% resided at latitude greater than or equal to 42°N (Boston), while 24% lived below 35°N (Memphis). All had been taking medication to treat or prevent osteoporosis for at least 3 months.

Vitamin D supplementation at a dosage of 400 IU/day or more was reported by 59.5% of the women, while the rest were taking less.

For the entire group, the mean serum level of the active vitamin D metabolite 25-hydroxyvitamin D was 30.4 ng/mL. Most of the women (52%) had levels below 30 ng/mL, considered the minimum concentration necessary to maintain optimal serum parathyroid hormone levels (Osteoporos. Int. 1997;7:439-43), while 36% had 25-hydroxyvitamin D levels below 25 ng/mL, and 18% were below 20 ng/mL.

Suboptimal 25-hydroxyvitamin D concentrations were found in 63% of women taking less than 400 IU/day of vitamin D, compared with 45% of those receiving 400 IU or more per day. Other significant risk factors for vitamin D inadequacy were having less than a 12th grade education, no discussion about vitamin D supplementation with a physician, lack of exercise, concomitant medication use, BMI of 30 or higher, nonwhite race, and age over 80 years.

The study was funded by Merck.

—Miriam E. Tucker