61% of Young People Have Low Vitamin D Levels

BY SHERRY BOSCHERT

Reports of a high prevalence of low vitamin D levels in adolescents and children—and the potential multiorgan effects of vitamin D deficiency—have raised concerns and some confusion among physicians.

The alarm is prompting some to consider screening more teenagers and children for vitamin D deficiency, but physicians would do better to screen for proper nutrition to ensure vitamin D intake, suggested Dr. Jatinder Bhatia, chair of the committee on nutrition of the American Academy of Pediatrics (AAP). "If you can't get them to eat right, then do the testing."

Dr. Bhatia, professor and chief of neonatology at the Medical College of Georgia, Augusta, said he heard little concern when the AAP updated its 2003 guidelines in 2008 to double the recommended daily intake of vitamin D to 400 IU. But recent studies have caused "a hue and cry" about low vitamin D levels, he added.

Other physicians interviewed for this article argued that physicians should focus on universal, empiric vitamin D supplementation. One expert suggested that the alarm may be unwarranted because the recent studies raise more questions than they answer. Everyone agreed that no one really knows how to define adequate vitamin D levels in adolescents and children, and that much more study is needed.

A report by a committee of the Institute of Medicine on what constitutes adequate intakes of vitamin D is expected to be released in the spring of 2010 and is "eagerly awaited," said Dr. Frank Greer, professor of pediatrics at the Uni-

versity of Wisconsin, Madison, and a coauthor of the AAP's 2008 guidelines on vitamin D intake.

In the United States, 9% of U.S. children and adolescents (7.6 million people) have 25-hydroxyvitamin D (25[OH]D) deficiency and 61% (50.8 million) have insufficient 25(OH)D levels in serum tests, according to a study by Dr. Juhi Kumar and associates (Pediatrics 2009 Sept. 3; doi:10.1542/peds.2009-0051). Only 4% were taking daily vitamin D supplementation (400 IU).

The researchers calculated prevalence using data on 9,757 children and adolescents from the 2001-2004 National Health and Nutrition Examination Survey (NHANES), defining 25(OH)D deficiency as a serum level below 15 ng/mL and insufficiency as 15-29 ng/mL.

Evidence is accumulating that bone health may not be the only issue related to vitamin D levels. After adjustment for confounding variables, analyses of data on 6,275 of the NHANES participants found that deficiency in 25(OH)D was associated with more than a threefold increased risk for elevated parathyroid hormone levels, a more than doubled risk for higher systolic blood pressure, and reduced levels of serum calcium and HDL cholesterol, compared with children and adolescents whose 25(OH)D levels were at least 30 ng/mL, wrote Dr. Kumar of Albert Einstein College of Medicine, New York, and his colleagues.

A separate analysis of data on 3,528 adolescents from NHANES 2001-2004 found that those with low serum 25(OH)D levels (less than 15 ng/mL) had roughly a doubling in risk for hypertension and fasting hyperglycemia and nearly a quadrupled risk for metabolic syndrome, compared with adolescents with levels above 26 ng/mL, reported Jared P. Reis, Ph.D., of the National Heart, Lung, and Blood Institute, and his associates (Pediatrics 2009 Sept. 3; doi:10.1542/peds.2009-0213).

"These are staggering numbers" that are supported by smaller studies in the medical literature, said Dr. Catherine M. Gordon, director of the bone health program at Children's Hospital, Boston.

"We may eventually be at the point of saying that we need to universally screen vitamin D levels," she said in an interview, but "I don't think we're quite there from a cost-effective standpoint. I do think that children should be universally supplemented, but that's a controversial point."

It's hard to drink enough milk to get the recommended 400 IU of vitamin D daily, and most young people "are not real excited about eating mackerel or sardines" to get vitamin D, noted Dr. Gordon, who specializes in pediatric endocrinology and in adolescent medicine. "That pushes us to supplement."

She recommended annual screening of vitamin D levels in children and adolescents at risk for vitamin D deficiency, including those who are obese, those who have problems that lead to malabsorption of vitamin D (such as cystic fibrosis or inflammatory bowel disease), and those who are taking medications that may increase vitamin D metabolism, such as anticonvulsants.

Dr. Greer, a neonatologist, also might screen African American infants who were exclusively breastfed and children whose families practice purdah, an Arabic cultural tradition of covering up before going outside.

There's a growing consensus that 25(OH)D levels of 20 ng/mL or lower constitute vitamin D deficiency in children and adults, Dr. Gordon said. "I'm a believer in trying to keep all of our levels above 30 ng/mL" because the extraskeletal benefits of vitamin D (on the immune system, cell proliferation, and more) are conferred at these higher levels. Levels of 21-30 ng/mL, then, might be considered insufficient. Patients in risk groups may need 800-2,000 IU/day of vitamin D to maintain good serum levels, she noted.

"The problem is, there are not any good guidelines on what a normal level should be," Dr. Greer said. "In the wintertime, everybody in the United States has pretty low levels, but they go up in the summertime, and most of us don't get rickets."

The AAP recommendation to consume at least 400 IU/day of vitamin D is based largely on studies of non-Hispanic white infants and may not be optimal for other races, he added. "Nobody has looked at large numbers of African American infants" and vitamin D.

Meanwhile, the "inflammatory" reports about vitamin D deficiency appearing in the medical literature "are driving people at the NIH [National Institutes of Health] Office of Dietary Supplements crazy," Dr. Greer said.

The study investigators and physicians mentioned in this story reported having no potential conflicts of interest related to these topics. ■