Vitamin D Deficiency Common in Obese Kids

BY ERIK GOLDMAN
Contributing Writer

OLD GREENWICH, CONN. — Vitamin D deficiency, sometimes quite severe, is common in obese adolescents, according to a recent study by Dr. Margarita Smotkin-Tangorra and colleagues at Maimonides Medical Center, N.Y.

Speaking at a meeting of the Eastern Society for Pediatric Research, Dr. Smotkin-Tangorra, of the department of pediatric endocrinology and diabetes at the medical center, said that 55% of a cohort of 217 obese children and adolescents were deficient in serum 25-hydroxyvitamin D (OH D), with blood levels of less than 20 ng/mL; 22% were severely deficient, with serum levels below 10 ng/mL.

Though there are published reports showing correlations between vitamin D deficiency and obesity in adults, there are no prior studies in children or teens. "We know vitamin D deficiency is prevalent in all age groups, including healthy adolescents. In obese adults, we know that it correlates with insulin resistance, progression to diabetes mellitus, metabolic and endocrine problems, and increased risk of cancer. We wanted to see if there were similar correlations in obese kids," she told attendees at the meeting, cosponsored by Children's Hospital of Philadelphia.

The study group included 118 females and 99 males, ranging in age from 7 to 18 years, and with a mean BMI of 32.2 kg/m^2. In addition to measuring 25-OHD, the researchers also measured blood pressure, total cholesterol, LDL, HDL, triglycerides, liver enzymes, thyroid hormones, fasting insulin, and fasting blood glucose.

They found strong correlations between low vitamin D level and elevated BMI, increased systolic blood pressure, lower HDL, and lower alkaline phosphatase. The correlation between vitamin D status and BMI was particularly striking. Those patients who were vitamin D deficient had a mean BMI of 36.2, compared with a mean of 30.6 among patients whose vitamin D levels were sufficient. The association with systolic hypertension was also noteworthy; vitamin D deficient patients had a mean systolic blood pressure of 117 mm Hg, while those with sufficient vitamin D had a mean systolic blood pressure of 111 mm Hg. Mean HDL was 40 mg/dL in the vitamin deficient group, compared with 42 mg/dL in the vitamin sufficient group.

There was no correlation between vitamin D status and fasting blood glucose or thyroid hormone levels. Insulin sensitivity as indicated by a quantitative insulin sensitivity check index score showed a marginally significant correlation with vitamin D, with the deficient children showing a slightly lower score than the sufficient ones.

Vitamin D deficiency is disturbingly common, even among healthy children. Best current estimates are that roughly 20% of all school-age children are deficient. If Dr. Smotkin-Tangorra's data prove to be representative of obese children nationwide, the problem may be greater than previously imagined, especially given what is now known about the long-term impact of chronic vitamin D deficiency.

Increased prevalence of deficiency reflects several general trends, most importantly the diminishing quality of children's diets and lack of outdoor exercise. How it fits into the pathophysiology and etiology of obesity is an open-ended question at this point. Lower levels of vitamin D could well be an indicator of poor overall nutritional status. Dr. Smotkin-Tangorra's team did not study blood levels of any other vitamins or minerals, but their research suggests that the more obese a child is, the more likely that the child's overall nutritional status will be poor.

Fortunately, vitamin D deficiency is one of the few common correlates of childhood obesity that is easy to rectify. "We are routinely supplementing all of our obese kids with Os-Cal, 500 mg, thrice daily, and we are starting to collect data on the outcomes." She advised clinicians working with children and adolescents to stay vigilant for vitamin D deficiency, especially in obese patients, and to supplement with vitamin D and calcium when the levels are low. There's little risk, it is inexpensive, and the potential long-term benefits could be great. ■

ACE Inhibitors Not Best for Some Hypertensive Type 2 Diabetics

BY BRUCE JANCIN
Denver Bureau

SNOWMASS, COLO. — Quick: What's the preferred first-line antihypertensive agent for type 2 diabetic patients with hypertension and macroalbuminuria?

Most nondiabetologists will probably be surprised to learn that it's an angiotensin II receptor blocker (ARB), according to American Diabetes Association's treatment guidelines.

"I suspect most cardiologists would guess it would be an ACE inhibitor," Dr. John S. Schroeder observed at a conference sponsored by the Society for Cardiovascular Angiography and Interventions.

'I think you should really consider ARBs in all patients who have diabetes and hypertension.'

DR. SCHROEDER

For hypertensive type 2 diabetic patients with microalbuminuria—as defined by a 24-hour urinary albumin excretion rate of 30-299 mg—the guidelines list both ACE inhibitors and ARBs as the preferred initial treatment choices, based upon level A data showing that they delay progression to macroalbuminuria (Diabetes Care 2003;26:S33-50).

But ARBs were singled out as the first-line antihypertensive drug class in patients with macroalbuminuria. The guidelines urge that an ARB "should be strongly considered" in such patients on the basis of compelling level A evidence that this drug class reduces the rate of progression to diabetic nephropathy.

The supporting data come from several clinical trials, including the Reduction of Endpoints in NIDDM with the Angiotensin II Antagonist Losartan (RENAAL) study, as well as the Irbesartan Diabetic Nephropathy Trial (IDNT).

But for Dr. Schroeder, the most impressive evidence of the renoprotective benefits of ARB therapy comes from the Irbesartan Microalbuminuria Type 2 Diabetes Mellitus in Hypertensive Patients (IRMA II) trial.

In IRMA II, 590 microalbuminuric type 2 diabetic patients with hypertension were randomized to 150 or 300 mg/day of irbesartan or placebo in addition to other antihypertensive agents as needed to achieve good blood pressure control. The 5.2% rate of progression to nephropathy at 2 years' follow-up in patients treated with 300 mg/day of irbesartan represented a 70% reduction in the relative risk of the primary study end point, compared with placebo (N. Engl. J. Med. 2001;345:870-8).

Most diabetics who are hypertensive "already have some degree of nephropathy and microalbuminuria, and therefore, I think you should really consider ARBs in all patients who have diabetes and hypertension," said Dr. Schroeder, professor of cardiovascular medicine at Stanford (Calif.) University.

The notion that combined ARB and ACE inhibitor therapy might have additive cardioprotective effects superior to those of either agent alone is being put to the test in the randomized, double-blind Ongoing Telmisartan Alone or in Combination with Ramipril Global Endpoint Trial (ONTARGET). The study involves roughly 25,000 patients with a history of cardiovascular disease, stroke, or diabetes who have been randomized to the ARB, ACE inhibitor, or both. Results are due to be reported next year.

Dr. Schroeder is on the speakers' bureau for Boehringer Ingelheim Pharmaceuticals Inc., which markets telmisartan (Micardis) and sponsors ONTARGET. ■

Insulin Therapy May Prevent AFib in Diabetics With HF

BY BRUCE JANCIN
Denver Bureau

ATLANTA — Insulin use appears to protect against atrial fibrillation in diabetic patients with heart failure, Dr. Somjot S. Brar said at the annual meeting of the American College of Cardiology.

If this initial observation in a large community-based population of patients with heart failure is subsequently confirmed by other investigators, it could very well lead to a lower threshold for switching diabetic patients from oral agents to insulin therapy. They might benefit in two ways: improved glycemic control, and protection against the most common sustained arrhythmia, added Dr. Brar of Kaiser Permanente and the University of California, Los Angeles.

These heart failure patients are similar to what most family physicians would see. They're not a special group like patients on a transplant list.

He identified 28,009 patients with heart failure in a managed care data base, 45% of whom were diabetic. Thirty-eight percent of the diabetic patients with heart failure were on insulin therapy.

"These heart failure patients are similar to what most internists, family physicians, and cardiologists would see. It's not a special group like patients on a transplant list," he noted.

Insulin users had an adjusted prevalence of atrial fibrillation that was 20% less than diabetic non–insulin users or nondiabetic heart failure patients in a multivariate logistic regression analysis. The model controlled for numerous potential confounders including age; gender; socioeconomic status; cardiovascular risk factors; and the use of statins, ACE inhibitors, and other drugs that may potentially prevent atrial fibrillation. Insulin's apparent protective effect was equally robust and consistent in men and women of all ages, according to Dr. Brar.

The nature of insulin's effects on atrial electrical activity isn't completely understood, he said.

Dr. Brar and his colleagues came up with the hypothesis that insulin use protects against atrial fibrillation in response to reports in the cardiac surgical literature suggesting that patients on insulin have a lower incidence of postoperative atrial fibrillation. A heart failure population was a logical testing ground for the hypothesis because the prevalence of the arrhythmia is so high. ■